



Land Information Memorandum

Disclaimer

This document has been obtained on behalf of the Vendor and copies have been made available to prospective Purchasers and interested parties for general information purposes only. However, neither the Vendor nor Bayleys in the North (Mackys Real Estate Limited), warrant the accuracy of this copy and they accept no liability for any errors or omissions in the report. It is recommended to all prospective Purchasers and interested parties that they obtain and reply on their own reports and make their own independent enquiries for due diligence purposes.

LAND INFORMATION MEMORANDUM NO: LM2200153**Received: 26 Jan 2022****Issued: 09 Feb 2022****Section 44A, Local Government Official Information
And Meetings Act 1987****APPLICANT**

L C Erceg, N J Erceg
56 Bush Haven Drive
Kamo
Whangarei 0112

SITE INFORMATION

Property ID: 167120
Street Address: 56 Bush Haven Drive
Kamo 0112
Legal Description: LOT 45 DP 507433

This is a Land Information Memorandum only.

Full payment has been made for this Land Information Memorandum.

1: PROPERTY DETAILS.

- Location Map
- Aerial Photo
- Deposited Plan: DP 507433 – deposited 17 July 2017
- Record of Title: 770886 – issued 17 July 2017

This property is subject to a Consent Notice, information attached.

- 10797265.7 – dated 10 July 2017

2: INFORMATION IDENTIFYING EACH (IF ANY) SPECIAL FEATURE OR CHARACTERISTIC OF THE LAND CONCERNED, INCLUDING BUT NOT LIMITED TO POTENTIAL EROSION, AVULSION, FALLING DEBRIS, SUBSIDENCE, SLIPPAGE, ALLUVION, OR INUNDATION, OR LIKELY PRESENCE OF HAZARDOUS CONTAMINANTS, BEING A FEATURE OR CHARACTERISTIC THAT IS KNOWN TO THE WHANGAREI DISTRICT COUNCIL.

This property is located in an area that is included in a report by Tonkin & Taylor Ltd on stability hazard potential, see map attached and refer

<https://www.wdc.govt.nz/Services/Property/Planning/Property-Hazard-Reports-and-Map>

- Stability Hazards map - showing low stability hazard

Regional Policy Statement

The Regional Policy Statement's role is to promote sustainable management of Northland's natural and physical resources. It does this by:

- Providing an overview of the region's resource management issues; and
- Setting out policies and methods to achieve integrated management of Northland's natural and physical resources.

Refer

<https://www.nrc.govt.nz/resource-library-summary/plans-and-policies/regional-policy-statement>

3: INFORMATION ON COUNCIL AND PRIVATE UTILITY (SEWERAGE, WATER & STORMWATER) SERVICES.

Information relating to Council Utility Services for this property is attached.

- Pipeline Asset Services Map

Service Sheet/s (e.g. As-Built, House Connection, House Drainage etc...) for this property from the building file is attached.

- As Built Plan from BC1800051

For further information regarding Council Water Supply please refer <https://www.wdc.govt.nz/Services/Water-services/Water-Supply>

Pursuant to Section 51 of the Building Act 2004 and Section 451 of the Local Government Act 1974, any future building work that encroaches upon any Council Pipe or Utility must obtain written consent from the Waste & Drainage and/or Water Services Manager/s prior to works commencing.

Refer: <https://www.wdc.govt.nz/Council/Council-documents/Policies/Building-Over-Public-Sewers-Policy>

4: INFORMATION RELATING TO VALUATION, LAND, AND WATER RATES. INFORMATION FROM WHANGAREI DISTRICT COUNCIL RECORDS.

Information on Valuation, Rates and Water Meter location (if applicable) for the current financial year, is attached.

Outstanding water balance as at today's date is \$0.00.
A final reading of the water meter will be required.

5: INFORMATION CONCERNING ANY PERMIT, CONSENT, CERTIFICATE, NOTICE ORDER, OR REQUISITION AFFECTING THE LAND OR ANY BUILDING ON THE LAND PREVIOUSLY ISSUED BY THE WHANGAREI DISTRICT COUNCIL OR BUILDING CERTIFIER (WHETHER UNDER THE BUILDING ACT 1991 AND/OR 2004 OR ANY OTHER ACT).

Copy of Whangarei District Council Application/s (e.g. Vehicle Crossing Permit and/or Public Utility Service) for this property are attached.

- VC180011 – Vehicle Crossing – issued 5 April 2018
- PU181021 – Water Meter only – received 24 January 2018

Copy of Building Consent and Code Compliance Certificate issued for this property is attached.

- BC1800051 – New Dwelling – issued 19 February 2018
- Code Compliance Certificate – issued 28 September 2018

Stormwater attenuation may be required on this property for new building work that results in an increase of > 30m² in impervious area including paving, driveways etc.

For the Stormwater Attenuation guidance notes refer <https://www.wdc.govt.nz/Services/Water-services/Stormwater/Stormwater-flood-management>

6: INFORMATION RELATING TO THE USE TO WHICH THE LAND MAY BE PUT AND ANY CONDITIONS ATTACHED TO THAT USE.

ENVIRONMENT:

Living 1 Environment, see map attached and refer to Part 3 Area Specific Matters - Environments.

<https://www.wdc.govt.nz/Services/Property/Planning/Operative-District-Plan>

Please note that this property is subject to Councils Decision - District Plan Environment, see map attached.

- General Residential Zone

For further information please contact the Policy Planner, 09 430 4200.

Urban areas in Whangarei District are currently going through a proposed plan change to create new zones. Refer:

<https://www.wdc.govt.nz/Services/Property/Planning/District-Plan-changes>

7: INFORMATION WHICH IN TERMS OF ANY OTHER ACT HAS BEEN NOTIFIED TO THE WHANGAREI DISTRICT COUNCIL BY ANY STATUTORY ORGANISATION HAVING THE POWER TO CLASSIFY LAND OR BUILDINGS FOR ANY PURPOSE.

Whangarei District Council is not aware of any classification attached to the land or building/s.

8: OTHER INFORMATION CONCERNING THE LAND AS WHANGAREI DISTRICT COUNCIL CONSIDERS, AT COUNCILS DISCRETION, TO BE RELEVANT.

Whangarei District Council recommends that all Whangarei District residents visit the Northland Regional Council website, <https://www.nrc.govt.nz/> for information on Civil Defence hazard response. This information includes Tsunami evacuation zones, maps and community response plans for flooding and extreme weather events etc.

Copies of site plan, floor plan and elevations are attached for your information.

9: INFORMATION RELATING TO ANY UTILITY SERVICE OTHER THAN COUNCILS SUCH AS TELEPHONE, ELECTRICITY, GAS AND REGIONAL COUNCIL WILL NEED TO BE OBTAINED FROM THE RELEVANT UTILITY OPERATOR.

Further information may be available from other authorities; Northland Regional Council; Northpower; Spark; Vector Limited; etc.

DISCLAIMER

Land Information Memoranda (LIM) are prepared under the provisions of Section 44A of the Local Government Official Information and Meetings Act 1987. An inspection of the land or building(s) has not been completed for the purposes of preparing the LIM. It has been compiled from the records held by Whangarei District Council. The information contained in the LIM is correct at the date the LIM report is issued.

A LIM is prepared for the use of the Applicant and may not be able to be relied on by other parties.

Advice from an independent professional such as a lawyer or property advisor should be sought regarding the contents of this LIM and the information contained herewith. Additional information regarding the land or buildings (such as resource consents and other permissions and restrictions), which is not contained in this LIM, may also be held by the Northland Regional Council. The Northland Regional Council should be contacted for that information. Ph (09)4701200 or 0800 002 004 or www.nrc.govt.nz

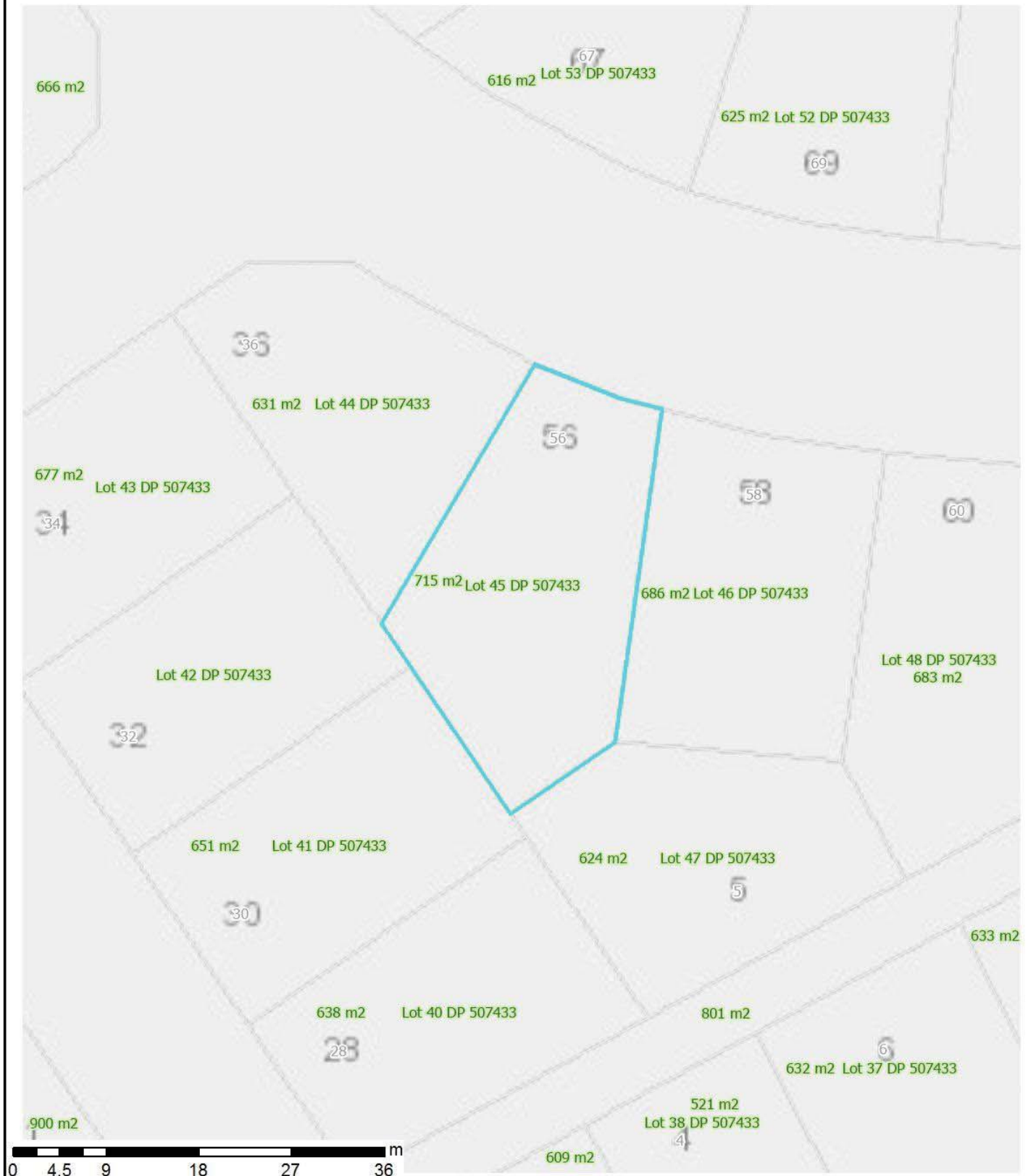
A LIM is not a suitable search of Council's records for the purposes of the National Environmental Standards (NES) for soil contamination of a potentially contaminated site.

Signed for and on behalf of Council:




Ellen Taylor
Property Assessment Officer

Property Map



New Subdivisions

-  Proposed Pre-223
-  223 Certificate

New subdivisions: Proposed as accepted, pre-223 and 223 Certificate with set Conditions.

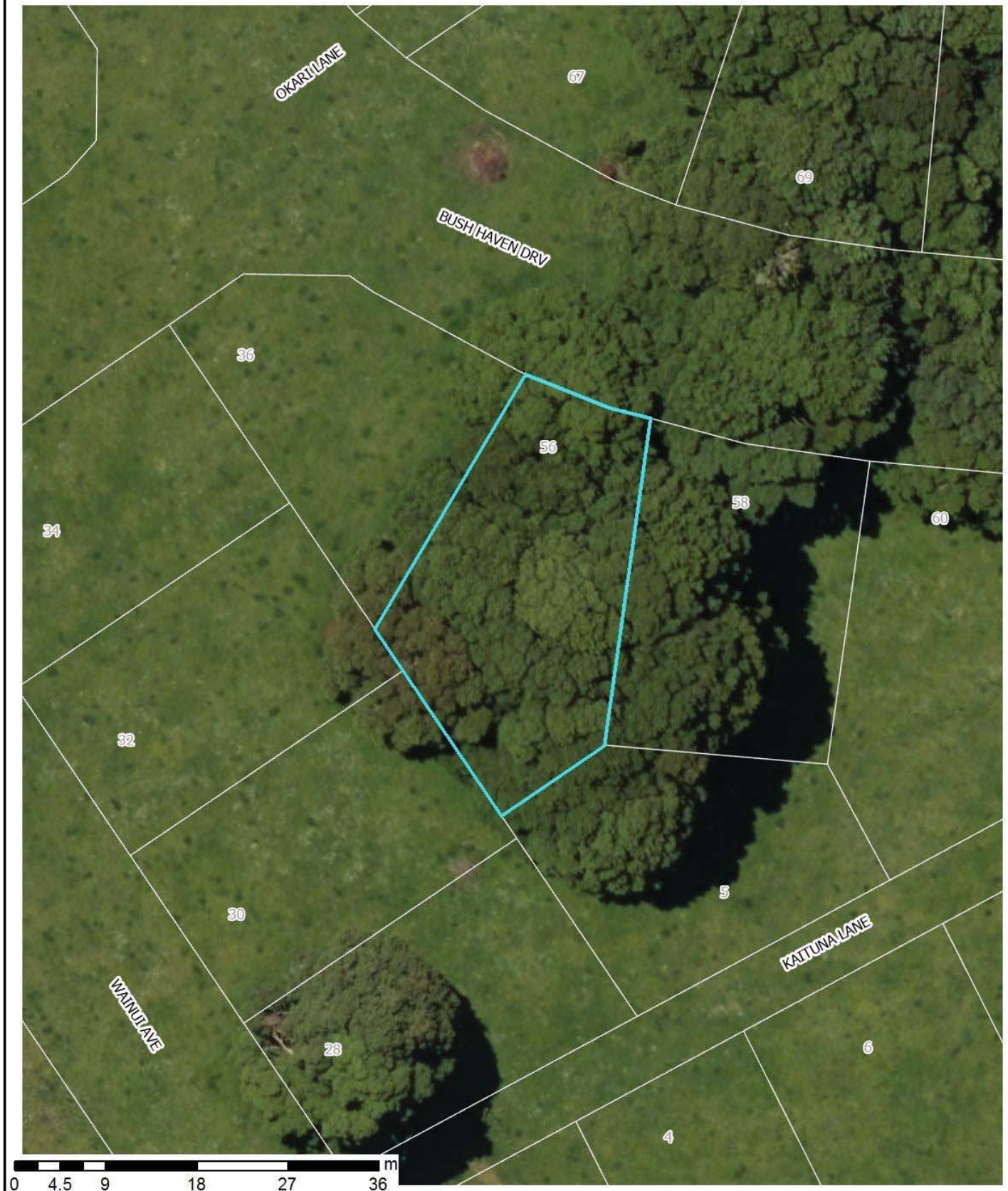
Land Parcel boundaries are indicative only and are not survey accurate. Area measurement is derived from the displayed geometry and is approximate. True accurate boundary dimensions can be obtained from LINZ survey and title plans

Wednesday, February 9, 2022 Scale: 1:500



The information displayed is schematic only and serves as a guide. It has been compiled from Whangarei District Council records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from land Information New Zealand's (LINZ) Core Record System Database (CRS). CROWN COPYRIGHT RESERVED. © Copyright Whangarei District Council.

Aerial Photography



Wednesday, February 9, 2022

Scale: 1:500



This map was last updated in 2018. It includes New Zealand's most current publicly owned aerial imagery and is sourced from the LINZ Data Service.

The information displayed is schematic only and serves as a guide. It has been compiled from Whangarei District Council records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from land Information New Zealand's (LINZ) Core Record System Database (CRS). CROWN COPYRIGHT RESERVED. © Copyright Whangarei District Council.

Title Plan - DP 507433

Survey Number DP 507433
Surveyor Reference 11008 S3
Surveyor Charlotte Frances Nijssen
Survey Firm Blue Wallace Surveyors
Surveyor Declaration I Charlotte Frances Nijssen, being a licensed cadastral surveyor, certify that:
 (a) this dataset provided by me and its related survey are accurate, correct and in accordance with the Cadastral Survey Act 2002 and the Rules for Cadastral Survey 2010, and
 (b) the survey was undertaken by me or under my personal direction.
 Declared on 21 Jul 2017 10:07 AM

Survey Details

Dataset Description Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849
Status Deposited
Land District North Auckland
Survey Class Class A
Submitted Date 21/07/2017
Survey Approval Date 21/07/2017
Deposit Date 17/07/2017

Territorial Authorities

Whangarei District

Comprised In

CT 738169

Created Parcels

Parcels	Parcel Intent	Area	CT Reference
Lot 511 Deposited Plan 507433	Vesting on Deposit for Local Purpose Reserve	0.1655 Ha	770899
Lot 512 Deposited Plan 507433	Vesting on Deposit for Local Purpose Reserve	0.8291 Ha	770899
	Road	0.7932 Ha	
Lot 515 Deposited Plan 507433	Vesting on Deposit for Local Purpose Reserve	0.0246 Ha	770899
Lot 516 Deposited Plan 507433	Vesting on Deposit for Local Purpose Reserve	2.0765 Ha	770898
Lot 517 Deposited Plan 507433	Fee Simple Title	0.1056 Ha	Multiple
Lot 518 Deposited Plan 507433	Fee Simple Title	0.1081 Ha	Multiple
Lot 519 Deposited Plan 507433	Fee Simple Title	0.0800 Ha	Multiple
Lot 520 Deposited Plan 507433	Fee Simple Title	6.0806 Ha	770897
Lot 521 Deposited Plan 507433	Fee Simple Title	15.2945 Ha	770897
Lot 528 Deposited Plan 507433	Vesting on Deposit for Local Purpose Reserve	0.5668 Ha	770899
Lot 529 Deposited Plan 507433	Vesting on Deposit for Local Purpose Reserve	0.1755 Ha	770898
Lot 1 Deposited Plan 507433	Fee Simple Title	0.0893 Ha	770842
Lot 2 Deposited Plan 507433	Fee Simple Title	0.0900 Ha	770843

Title Plan - DP 507433

Created Parcels

Parcels	Parcel Intent	Area	CT Reference
Lot 3 Deposited Plan 507433	Fee Simple Title	0.0827 Ha	770844
Lot 4 Deposited Plan 507433	Fee Simple Title	0.0806 Ha	770845
Lot 5 Deposited Plan 507433	Fee Simple Title	0.0797 Ha	770846
Lot 6 Deposited Plan 507433	Fee Simple Title	0.0859 Ha	770847
Lot 7 Deposited Plan 507433	Fee Simple Title	0.0845 Ha	770848
Lot 8 Deposited Plan 507433	Fee Simple Title	0.0829 Ha	770849
Lot 9 Deposited Plan 507433	Fee Simple Title	0.0804 Ha	770850
Lot 10 Deposited Plan 507433	Fee Simple Title	0.0605 Ha	770851
Lot 11 Deposited Plan 507433	Fee Simple Title	0.0618 Ha	770852
Lot 12 Deposited Plan 507433	Fee Simple Title	0.0632 Ha	770853
Lot 13 Deposited Plan 507433	Fee Simple Title	0.0676 Ha	770854
Lot 14 Deposited Plan 507433	Fee Simple Title	0.0688 Ha	770855
Lot 15 Deposited Plan 507433	Fee Simple Title	0.0700 Ha	770856
Lot 16 Deposited Plan 507433	Fee Simple Title	0.0678 Ha	770857
Lot 17 Deposited Plan 507433	Fee Simple Title	0.0678 Ha	770858
Lot 18 Deposited Plan 507433	Fee Simple Title	0.0666 Ha	770859
Lot 19 Deposited Plan 507433	Fee Simple Title	0.0665 Ha	770860
Lot 20 Deposited Plan 507433	Fee Simple Title	0.0674 Ha	770861
Lot 21 Deposited Plan 507433	Fee Simple Title	0.0674 Ha	770862
Lot 22 Deposited Plan 507433	Fee Simple Title	0.0680 Ha	770863
Lot 23 Deposited Plan 507433	Fee Simple Title	0.0806 Ha	770864
Lot 24 Deposited Plan 507433	Fee Simple Title	0.0672 Ha	770865
Lot 25 Deposited Plan 507433	Fee Simple Title	0.0685 Ha	770866
Lot 26 Deposited Plan 507433	Fee Simple Title	0.0750 Ha	770867
Lot 27 Deposited Plan 507433	Fee Simple Title	0.0830 Ha	770868
Lot 28 Deposited Plan 507433	Fee Simple Title	0.0661 Ha	770869
Lot 29 Deposited Plan 507433	Fee Simple Title	0.0847 Ha	770870
Lot 30 Deposited Plan 507433	Fee Simple Title	0.0804 Ha	770871
Lot 31 Deposited Plan 507433	Fee Simple Title	0.0846 Ha	770872
Lot 32 Deposited Plan 507433	Fee Simple Title	0.0663 Ha	770873
Lot 33 Deposited Plan 507433	Fee Simple Title	0.0668 Ha	770874
Lot 34 Deposited Plan 507433	Fee Simple Title	0.0637 Ha	770875
Lot 35 Deposited Plan 507433	Fee Simple Title	0.0640 Ha	770876
Lot 36 Deposited Plan 507433	Fee Simple Title	0.0633 Ha	770877
Lot 37 Deposited Plan 507433	Fee Simple Title	0.0632 Ha	770878
Lot 38 Deposited Plan 507433	Fee Simple Title	0.0521 Ha	770879
Lot 39 Deposited Plan 507433	Fee Simple Title	0.0609 Ha	770880
Lot 40 Deposited Plan 507433	Fee Simple Title	0.0637 Ha	770881
Lot 41 Deposited Plan 507433	Fee Simple Title	0.0651 Ha	770882
Lot 42 Deposited Plan 507433	Fee Simple Title	0.0651 Ha	770883
Lot 43 Deposited Plan 507433	Fee Simple Title	0.0677 Ha	770884
Lot 44 Deposited Plan 507433	Fee Simple Title	0.0631 Ha	770885
Lot 45 Deposited Plan 507433	Fee Simple Title	0.0715 Ha	770886
Lot 46 Deposited Plan 507433	Fee Simple Title	0.0685 Ha	770887

Title Plan - DP 507433

Created Parcels

Parcels	Parcel Intent	Area	CT Reference
Lot 47 Deposited Plan 507433	Fee Simple Title	0.0624 Ha	770888
Lot 48 Deposited Plan 507433	Fee Simple Title	0.0683 Ha	770889
Lot 49 Deposited Plan 507433	Fee Simple Title	0.0645 Ha	770890
Lot 50 Deposited Plan 507433	Fee Simple Title	0.0626 Ha	770891
Lot 51 Deposited Plan 507433	Fee Simple Title	0.0624 Ha	770892
Lot 52 Deposited Plan 507433	Fee Simple Title	0.0625 Ha	770893
Lot 53 Deposited Plan 507433	Fee Simple Title	0.0616 Ha	770894
Lot 54 Deposited Plan 507433	Fee Simple Title	0.0608 Ha	770895
Lot 55 Deposited Plan 507433	Fee Simple Title	0.0606 Ha	770896
Area A Deposited Plan 507433	Easement		
Area B Deposited Plan 507433	Easement		
Area C Deposited Plan 507433	Easement		
Area D Deposited Plan 507433	Easement		
Area E Deposited Plan 507433	Easement		
Area F Deposited Plan 507433	Easement		
Area G Deposited Plan 507433	Easement		
Area H Deposited Plan 507433	Easement		
Area I Deposited Plan 507433	Easement		
Area J Deposited Plan 507433	Easement		
Area K Deposited Plan 507433	Easement		
Area L Deposited Plan 507433	Easement		
Area M Deposited Plan 507433	Easement		
Area N Deposited Plan 507433	Easement		
Area O Deposited Plan 507433	Easement		
Area P Deposited Plan 507433	Easement		
Area Q Deposited Plan 507433	Easement		
Area R Deposited Plan 507433	Easement		
Area S Deposited Plan 507433	Easement		
Area T Deposited Plan 507433	Easement		
Area U Deposited Plan 507433	Easement		
Area V Deposited Plan 507433	Easement		
Area W Deposited Plan 507433	Easement		
Area X Deposited Plan 507433	Easement		
Area Y Deposited Plan 507433	Easement		
Area Z Deposited Plan 507433	Easement		
Area AA Deposited Plan 507433	Easement		
Area AB Deposited Plan 507433	Easement		
Area AC Deposited Plan 507433	Easement		
Area AD Deposited Plan 507433	Easement		
Area AE Deposited Plan 507433	Easement		
Area AF Deposited Plan 507433	Easement		
Area AG Deposited Plan 507433	Easement		
Area AH Deposited Plan 507433	Easement		
Area AI Deposited Plan 507433	Easement		



Title Plan - DP 507433

Created Parcels

Parcels	Parcel Intent	Area	CT Reference
Area AJ Deposited Plan 507433	Easement		
Area AK Deposited Plan 507433	Easement		
Area AL Deposited Plan 507433	Easement		
Area AM Deposited Plan 507433	Easement		
Area AN Deposited Plan 507433	Easement		
Area AO Deposited Plan 507433	Easement		
Area AP Deposited Plan 507433	Easement		
Area AQ Deposited Plan 507433	Easement		
Area AR Deposited Plan 507433	Easement		
Area AS Deposited Plan 507433	Easement		
Area AT Deposited Plan 507433	Easement		
Area AU Deposited Plan 507433	Easement		
Area AW Deposited Plan 507433	Easement		
Area AX Deposited Plan 507433	Easement		
Area AY Deposited Plan 507433	Easement		
Area AZ Deposited Plan 507433	Easement		
Lot 527 Deposited Plan 507433	Vesting on Deposit for Local Purpose Reserve	2.753011a	770899
Total Area		<hr/> 32.8932 Ha	

Schedule / Memorandum

Land Registration District

NORTH AUCKLAND

Plan Number

DP 507433

Territorial Authority (the Council)

WHANGAREI DISTRICT COUNCIL

Memorandum of Easements			
Purpose	Shown	Servient Tenement	Dominant Tenement
Right of Way	A	Lot 518 DP 507433	Lots 19-28, 50 & 53-55 DP 507433
Right to Convey Electricity, Telecommunications and Computer Media, Gas & Water	B	Lot 519 DP 507433	Lots 33-40, 47 & 49 DP 507433
Right to Drain Sewage and Water	C	Lot 517 DP 507433	Lots 4-15 DP 507433

Schedule of Easements			
Purpose	Shown	Servient Tenement	Dominant Tenement
Right to Drain Sewage	J	Lot 47 DP 507433	Lot 46 DP 507433
	L	Lot 30 DP 507433	Lot 29 DP 507433
	M	Lot 50 DP 507433	Lot 51 DP 507433
	P	Lot 53 DP 507433	Lot 52 DP 507433

Memorandum of Easements in Gross			
Purpose	Shown	Servient Tenement	Grantee
Right of Way	S, T	Lot 520 DP 507433	Whangarei District Council
	W	Lot 521 DP 507433	
Right to Drain Water	R, AU	Lot 24 DP 507433	
	AB, AK, AL	Lot 521 DP 507433	
Right to Drain Sewage & Water	A	Lot 518 DP 507433	
	B	Lot 519 DP 507433	
	C	Lot 517 DP 507433	

Schedule / Memorandum

Land Registration District

NORTH AUCKLAND

Plan Number

DP 507433

Territorial Authority (the Council)

WHANGAREI DISTRICT COUNCIL

Memorandum of Easements in Gross			
Purpose	Shown	Servient Tenement	Grantee
Right to Drain Water	E	Lot 40 DP 507433	Whangarei District Council
	F	Lot 41 DP 507433	
	N	Lot 51 DP 507433	
	O	Lot 52 DP 507433	
	P	Lot 53 DP 507433	
	R, AU	Lot 24 DP 507433	
	AD	Lot 520 DP 507433	
	AK	Lot 521 DP 507433	
	D	Lot 25 DP 507433	
Right to Drain Sewage	G, AJ	Lot 47 DP 507433	
	H	Lot 45 DP 507433	
	I	Lot 44 DP 507433	
	K	Lot 31 DP 507433	
	Q	Lots 26 DP 507433	
	T, U	Lot 520 DP 507433	
	V, W, X, Y,Z, AA, AB,AC	Lot 521 DP 507433	
	AD	Lot 520 DP 507433	

Schedule / Memorandum

Land Registration District

NORTH AUCKLAND

Plan Number

DP 507433

Territorial Authority (the Council)

WHANGAREI DISTRICT COUNCIL

Memorandum of Easements in Gross			
Purpose	Shown	Servient Tenement	Grantee
Right to Convey Electricity	A	Lot 518 DP 507433	Whangarei District Council
	B	Lot 519 DP 507433	
	C	Lot 517 DP 507433	
	AM	Lot 39 DP 507433	
	AN	Lot 38 DP 507433	
	AO	Lot 37 DP 507433	
	AP	Lot 36 DP 507433	
	AQ	Lot 35 DP 507433	
	AR	Lot 33 DP 507433	
	AS	Lot 28 DP 507433	
	AT	Lot 25 DP 507433	
	AU	Lot 24 DP 507433	
	AW	Lot 21 DP 507433	
	AX	Lot 19 DP 507433	

Schedule / Memorandum

Land Registration District

NORTH AUCKLAND

Plan Number

DP 507433

Territorial Authority (the Council)

WHANGAREI DISTRICT COUNCIL

Memorandum of Easements in Gross			
Purpose	Shown	Servient Tenement	Grantee
Right to Convey Electricity, Telecommunications and Computer Media	A	Lot 518 DP 507433	Northpower Limited, Northpower Fibre Limited
	B	Lot 519 DP 507433	
	C	Lot 517 DP 507433	
	AE	Lot 10 DP 507433	
	AF	Lot 12 DP 507433	
	AG	Lot 13 DP 507433	
	AH	Lot 14 DP 507433	
	AI	Lot 15 DP 507433	
	AJ	Lot 47 DP 507433	
	AM	Lot 39 DP 507433	
	AN	Lot 38 DP 507433	
	AO	Lot 37 DP 507433	
	AP	Lot 36 DP 507433	
	AQ	Lot 35 DP 507433	
	AR	Lot 33 DP 507433	
	AS	Lot 28 DP 507433	
	AT	Lot 25 DP 507433	
	AU	Lot 24 DP 507433	
	AW	Lot 21 DP 507433	
	AX	Lot 19 DP 507433	
	AY	Lot 15 DP 507433	
	AZ	Lot 16 DP 507433	

Schedule / Memorandum

Land Registration District

NORTH AUCKLAND

Plan Number

DP 507433

Territorial Authority (the Council)

WHANGAREI DISTRICT COUNCIL

Amalgamation Conditions

(Pursuant to S220 Resource Management Act 1991)

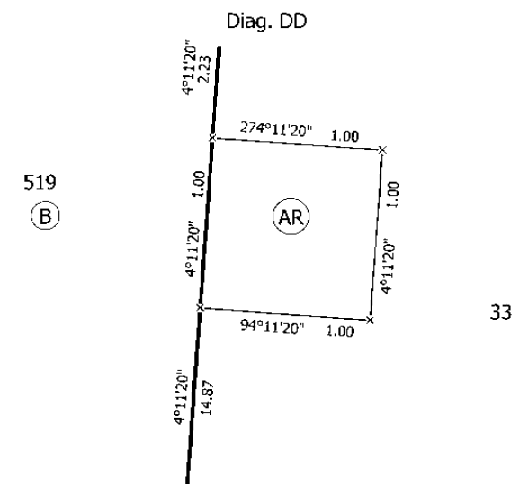
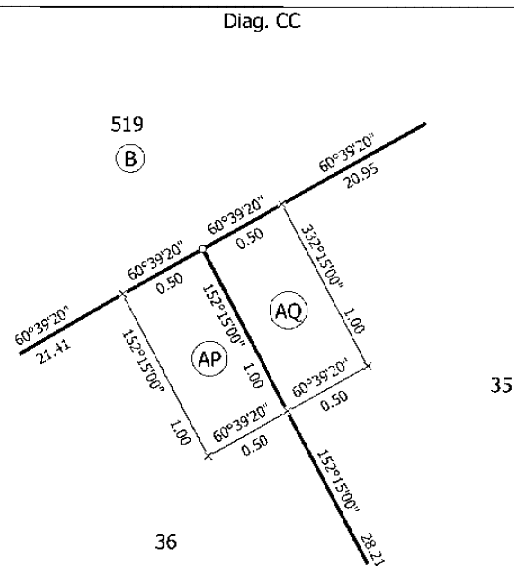
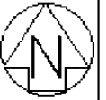
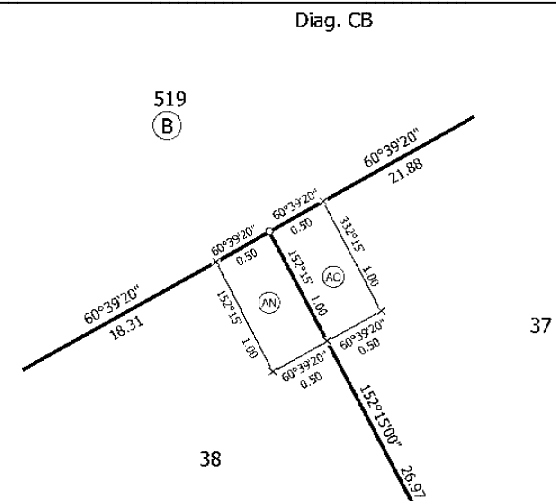
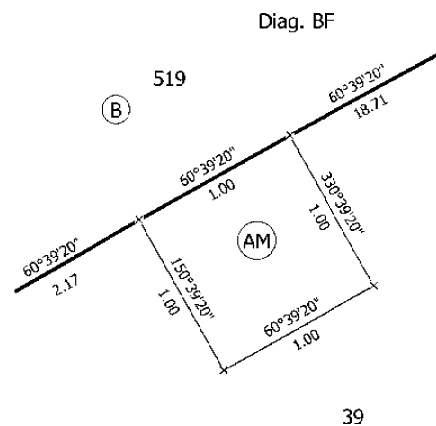
That Lot 517 DP 507433 be held as twelve one-twelfth undivided shares by the owners of lots 4 to 15 DP 507433, and that individual Computer Freehold Registers be issued in accordance therewith.

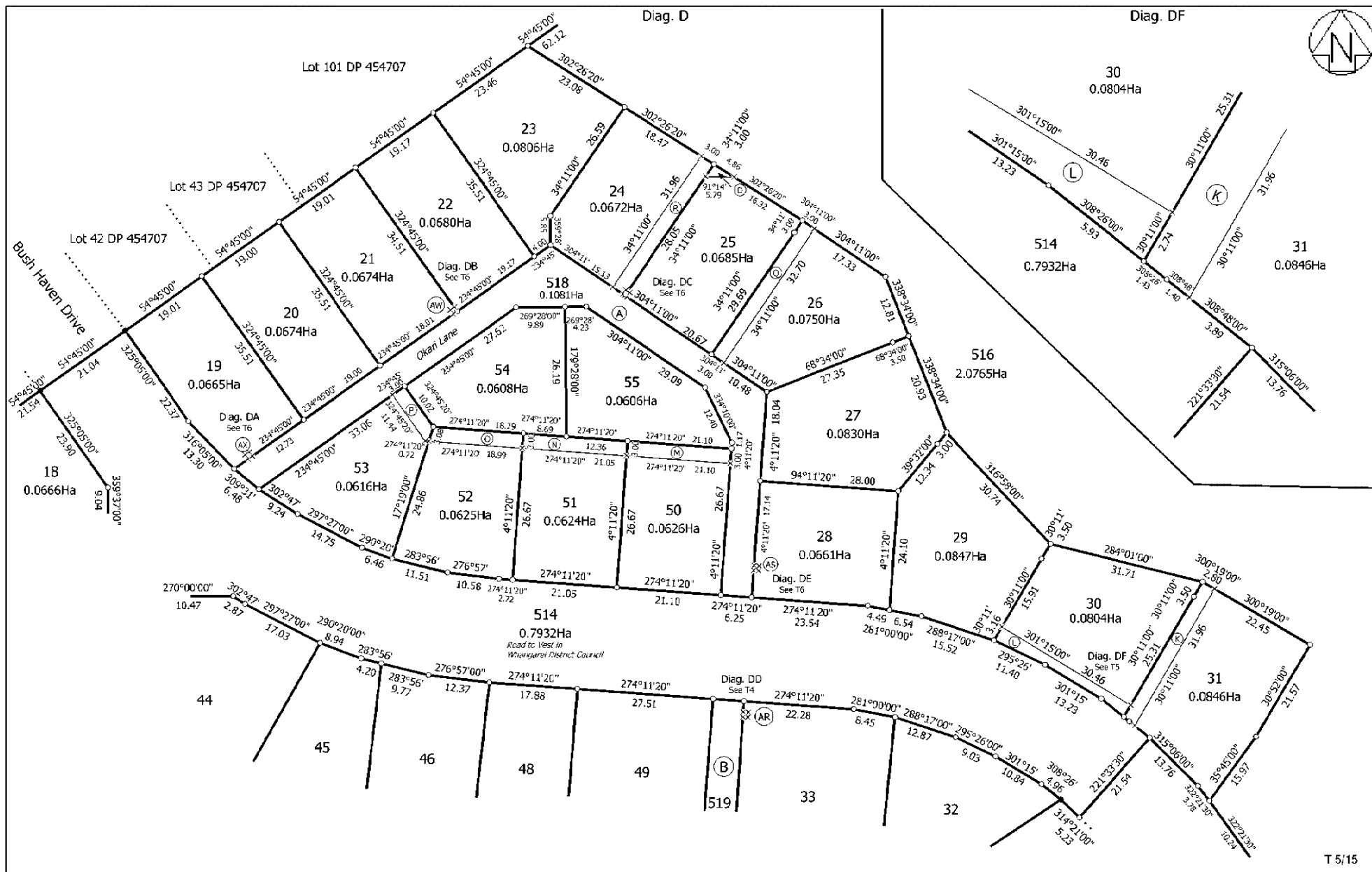
That Lot 518 DP 507433 be held as fourteen one-fourteenth undivided shares by the owners of Lots 19 to 28, 50, and 53 to 55 DP 507433, and that individual Computer Freehold Registers be issued in accordance therewith.

That Lot 519 DP 507433 be held as ten one-tenth undivided shares by the owners of Lots 33 to 40, 47, and 49 DP 507433, and that individual Computer Freehold Registers be issued in accordance therewith.

That Lots 520 & 521 DP 507433 and lot 510 DP 493854 be held in one Computer Freehold Register.

(See LINZ request 1430036)





T 5/15

Land District: North Auckland

Digitally Generated Plan

Generated on: 27/07/2017 2:58pm Page 14 of 24

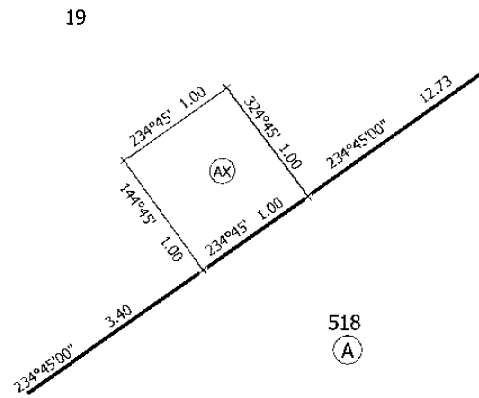
Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849

Surveyor: Charlotte Frances Nijssen
Firm: Blue Wallace Surveyors

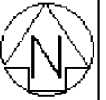
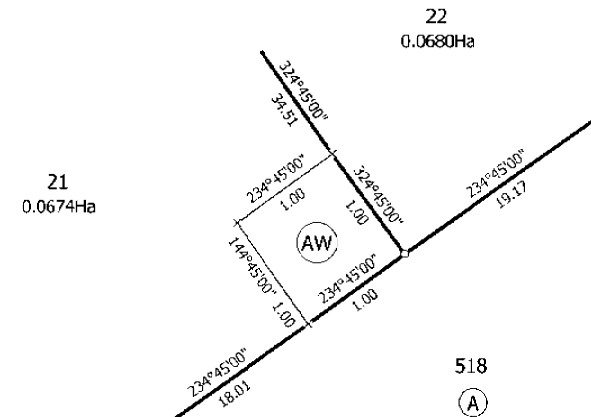
Title Plan
DP 507433

Deposited on: 17/07/2017

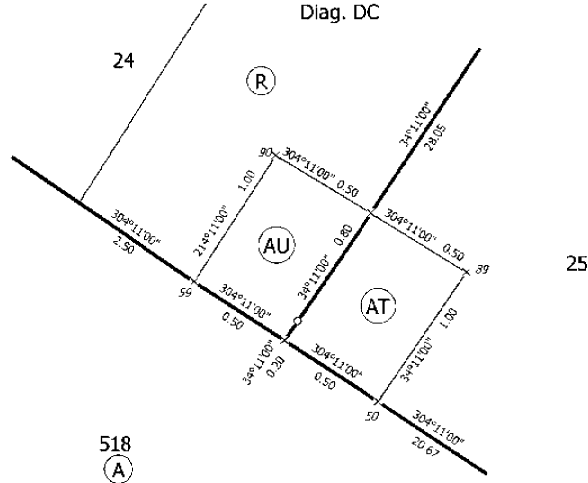
Diag. DA



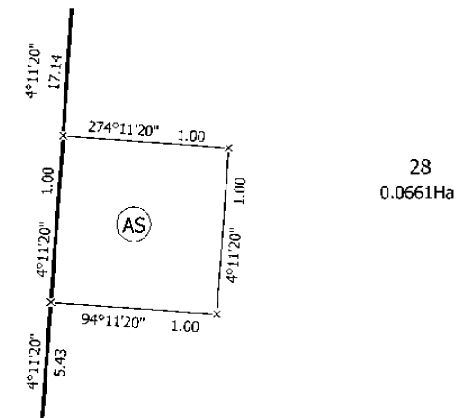
Diag. DB



Diag. DC



Diag. DE



T 6/15

Land District: North Auckland

Digitaly Generated Plan

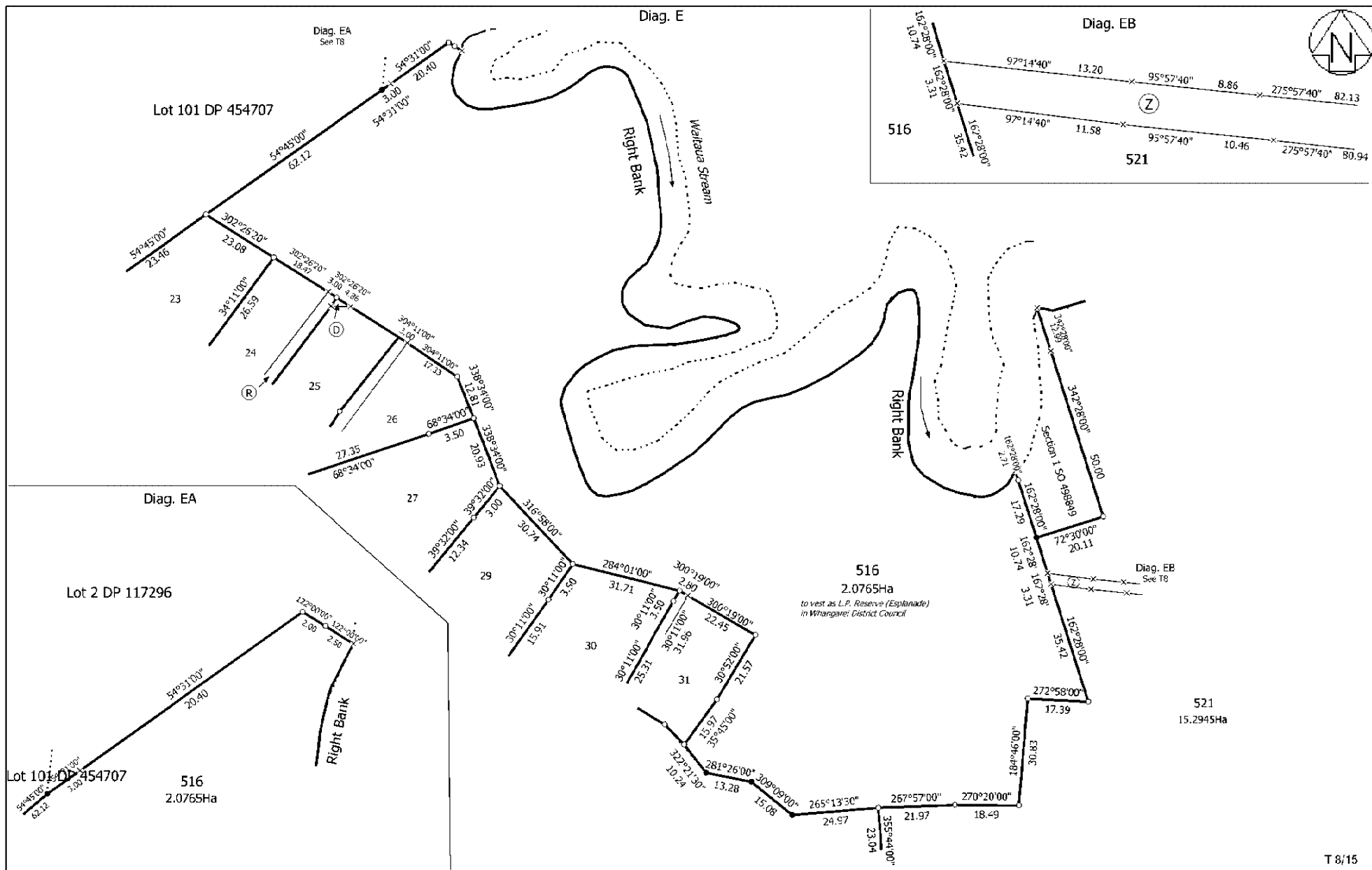
Generated on: 27/07/2017 2:58pm Page 15 of 24

Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849

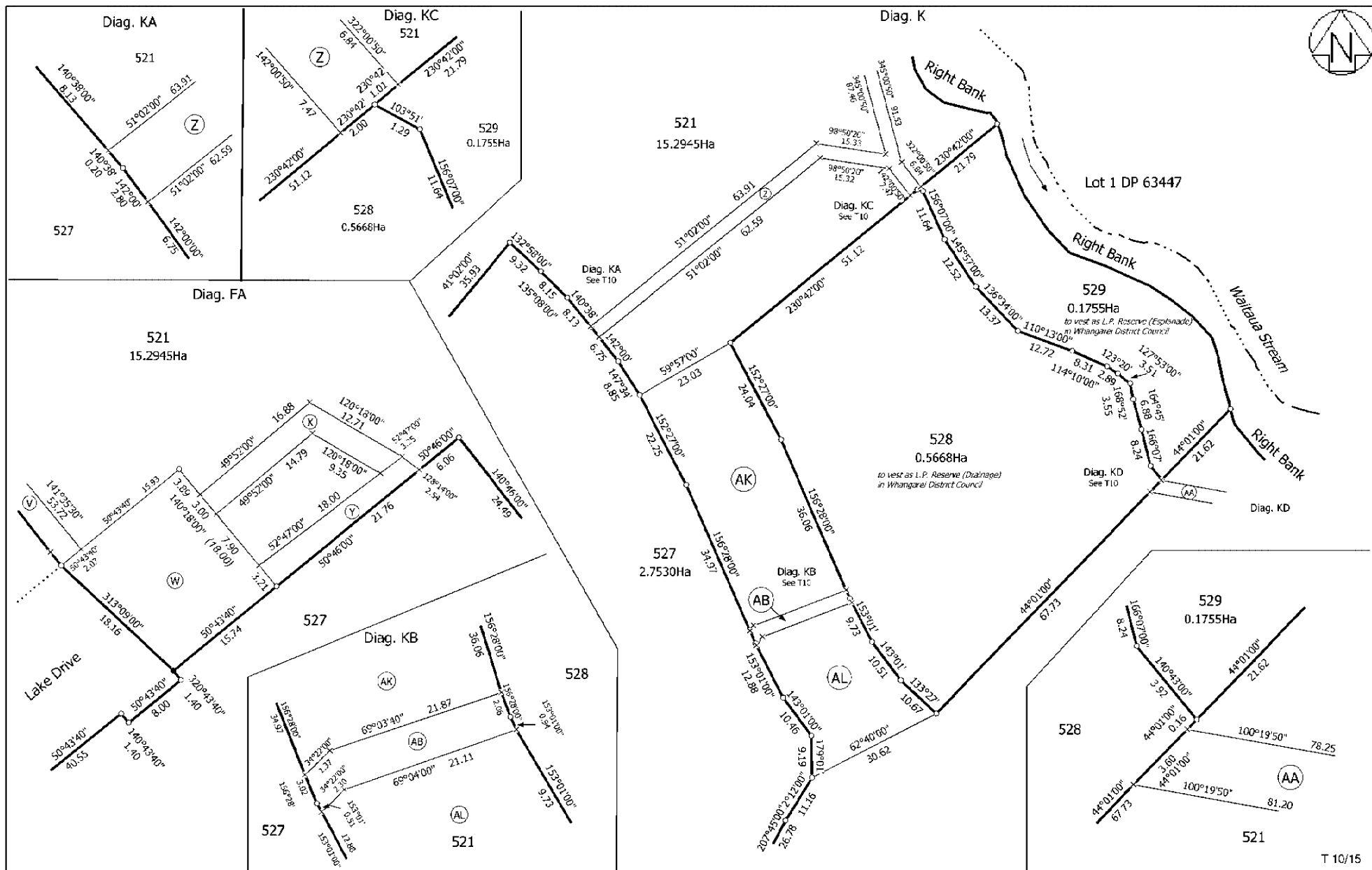
Surveyor: Charlotte Frances Nijssen
Firm: Blue Wallace Surveyors

Title Plan
DP 507433

Deposited on: 17/07/2017



<p>Land District: North Auckland</p> <p>Digitally Generated Plan</p> <p>Generated on: 27/07/2017 2:58pm Page 17 of 24</p>	<p>Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849</p>	<p>Surveyor: Charlotte Frances Nijssen</p> <p>Firm: Blue Wallace Surveyors</p>	<p>Title Plan</p> <p>DP 507433</p> <p>Deposited on: 17/07/2017</p>
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T 10/15

Land District: North Auckland

Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849

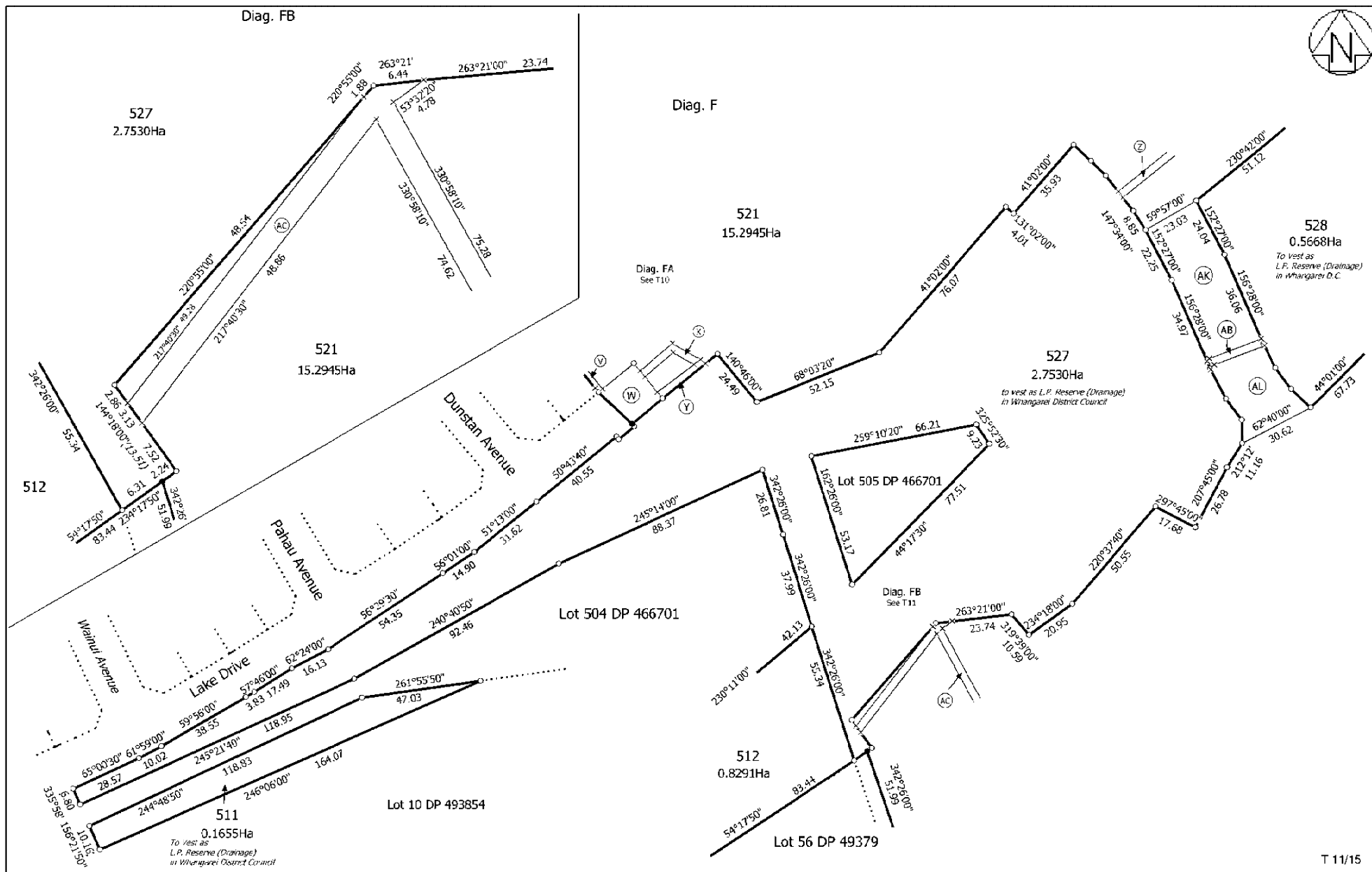
Surveyor: Charlotte Frances Nijssen
Firm: Blue Wallace Surveyors

Title Plan
DP 507433

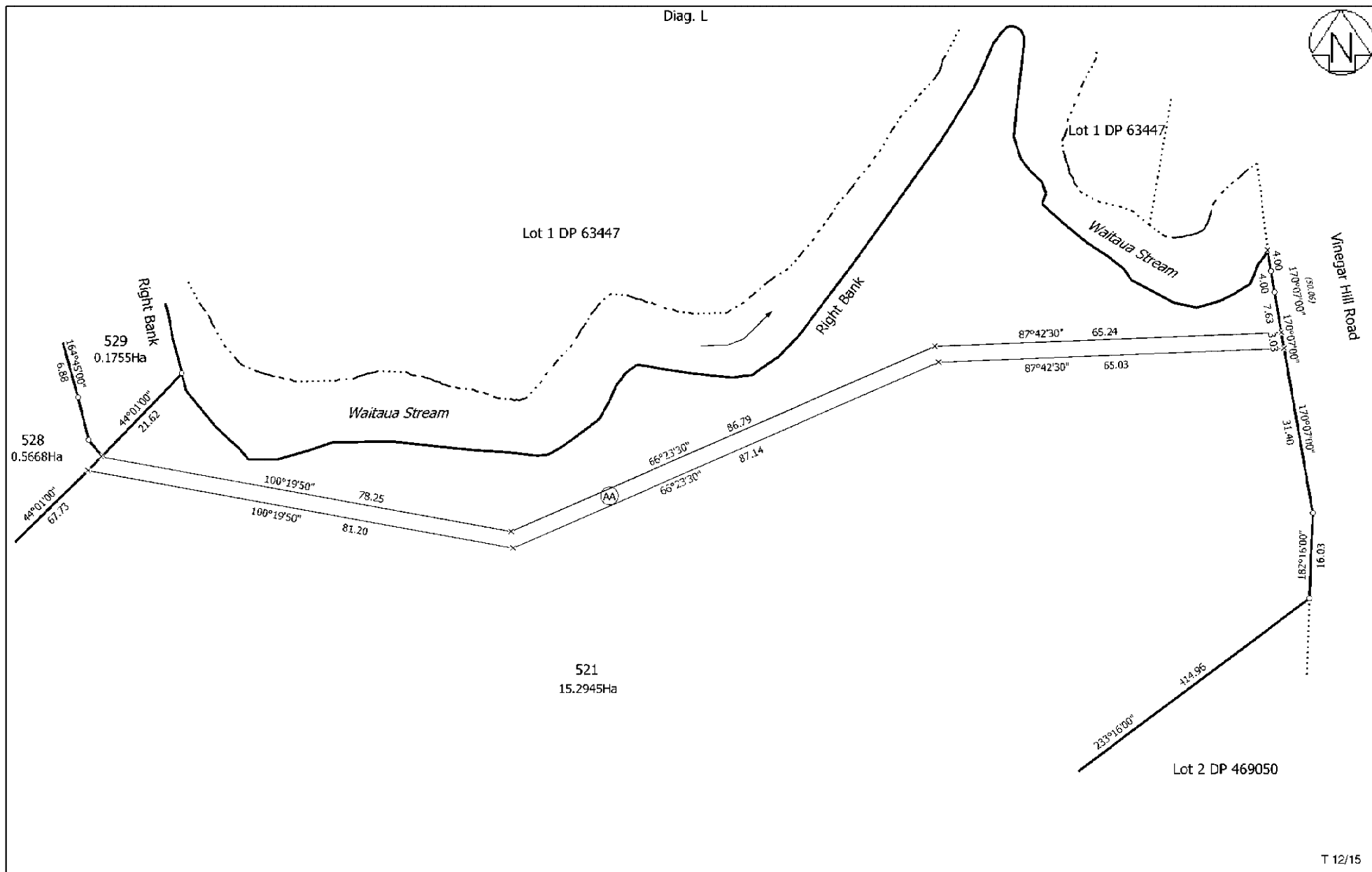
Deposited on: 17/07/2017

Digitaly Generated Plan

Generated on: 27/07/2017 2:58pm Page 19 of 24



<p>Land District: North Auckland</p> <p>Digitally Generated Plan</p> <p>Generated on: 27/07/2017 2:58pm Page 20 of 24</p>	<p>Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849</p>	<p>Surveyor: Charlotte Frances Nijssen</p> <p>Firm: Blue Wallace Surveyors</p>	<p>Title Plan DP 507433</p> <p>Deposited on: 17/07/2017</p>
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T 12/15

Land District: North Auckland

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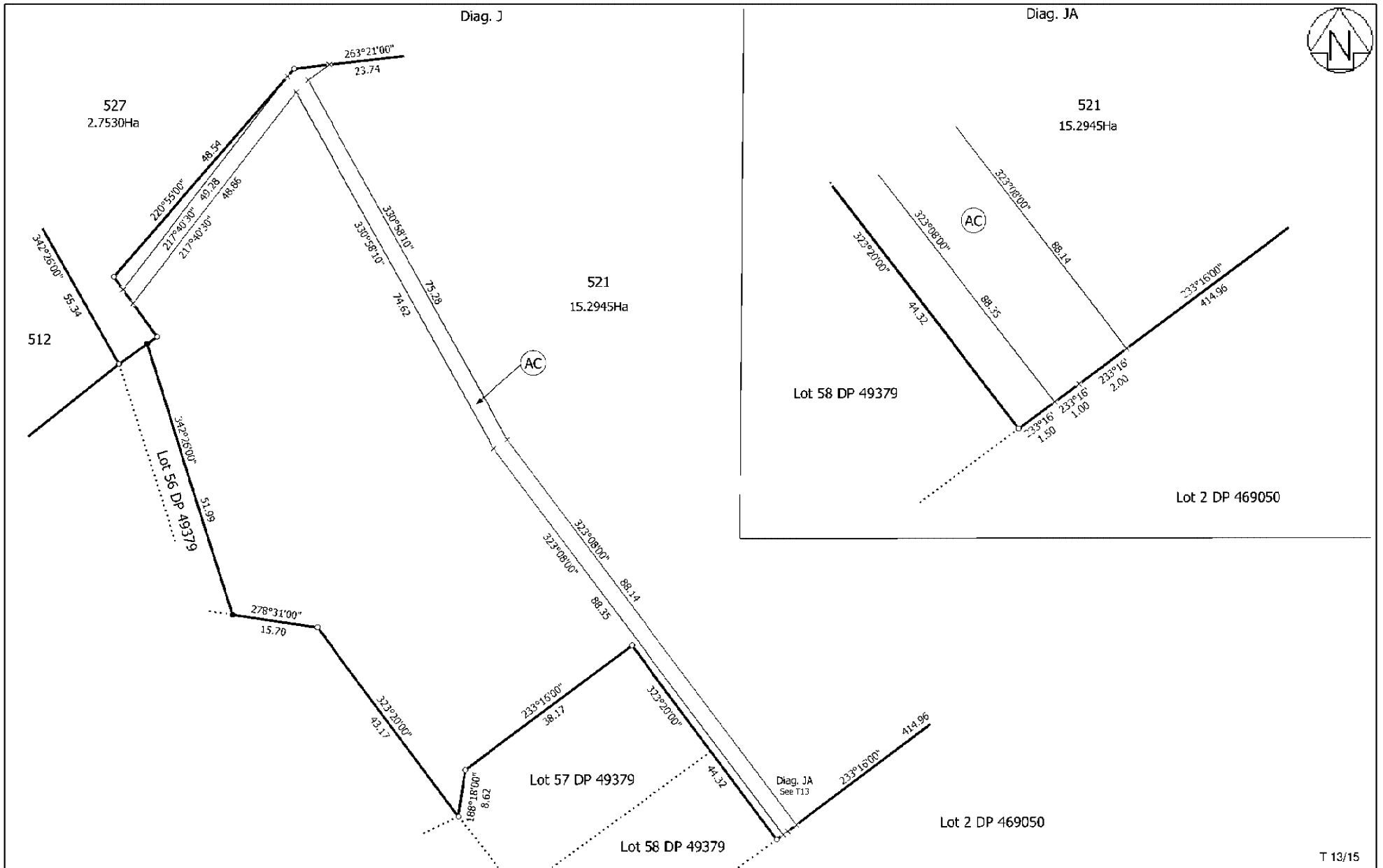
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Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849

Surveyor: Charlotte Frances Nijssen
Firm: Blue Wallace Surveyors

Title Plan
DP 507433

Deposited on: 17/07/2017



Land District: North Auckland

Digitally Generated Plan

Generated on: 27/07/2017 2:58pm Page 22 of 24

Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849

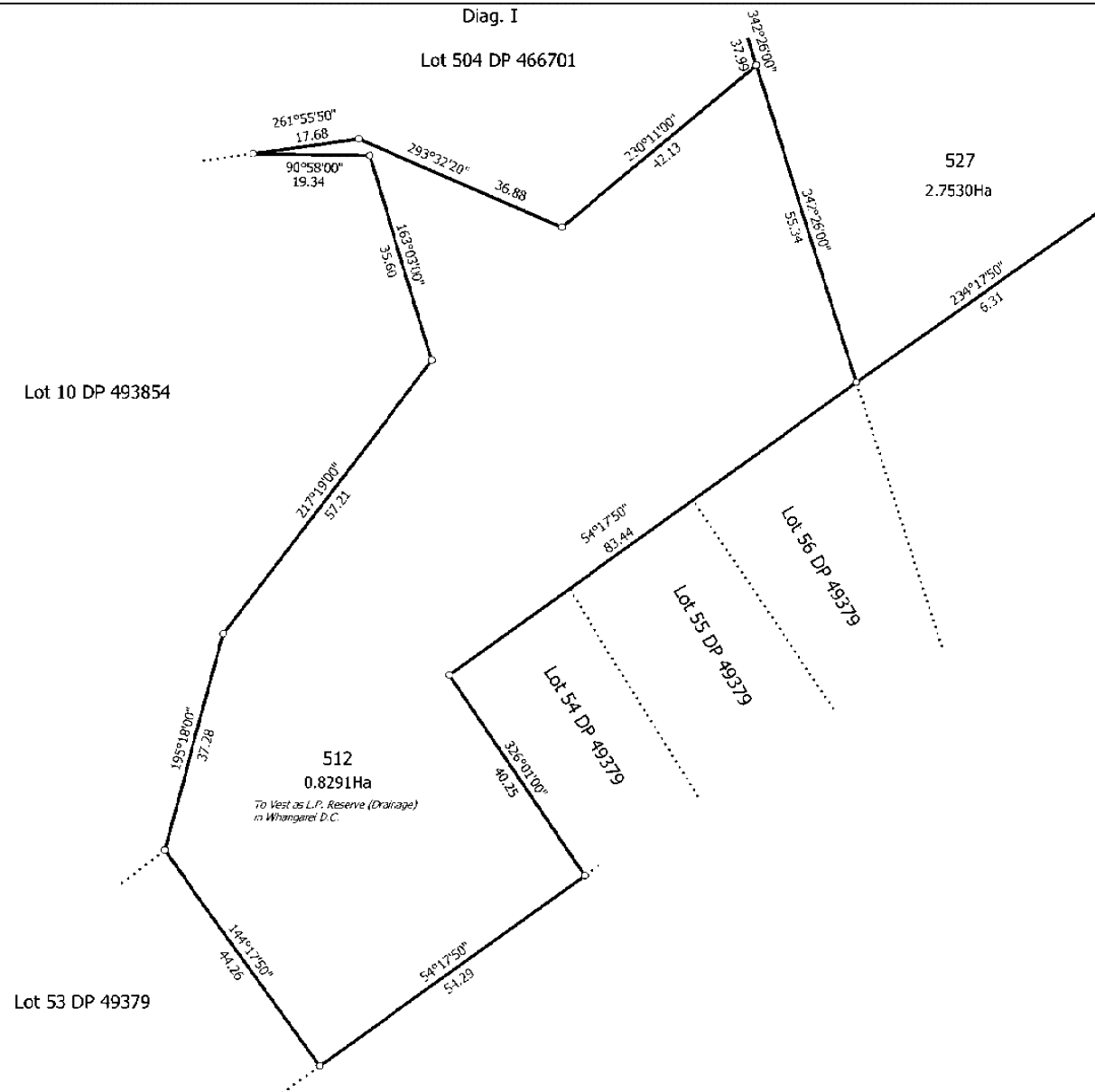
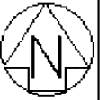
Surveyor: Charlotte Frances Nijssen

Firm: Blue Wallace Surveyors

Title Plan
DP 507433

Deposited on: 17/07/2017

T 13/15



T 14/15

Land District: North Auckland

Digitally Generated Plan

Generated on: 27/07/2017 2:58pm Page 23 of 24

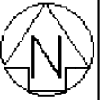
Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849

Surveyor: Charlotte Frances Nijssen

Firm: Blue Wallace Surveyors

**Title Plan
DP 507433**

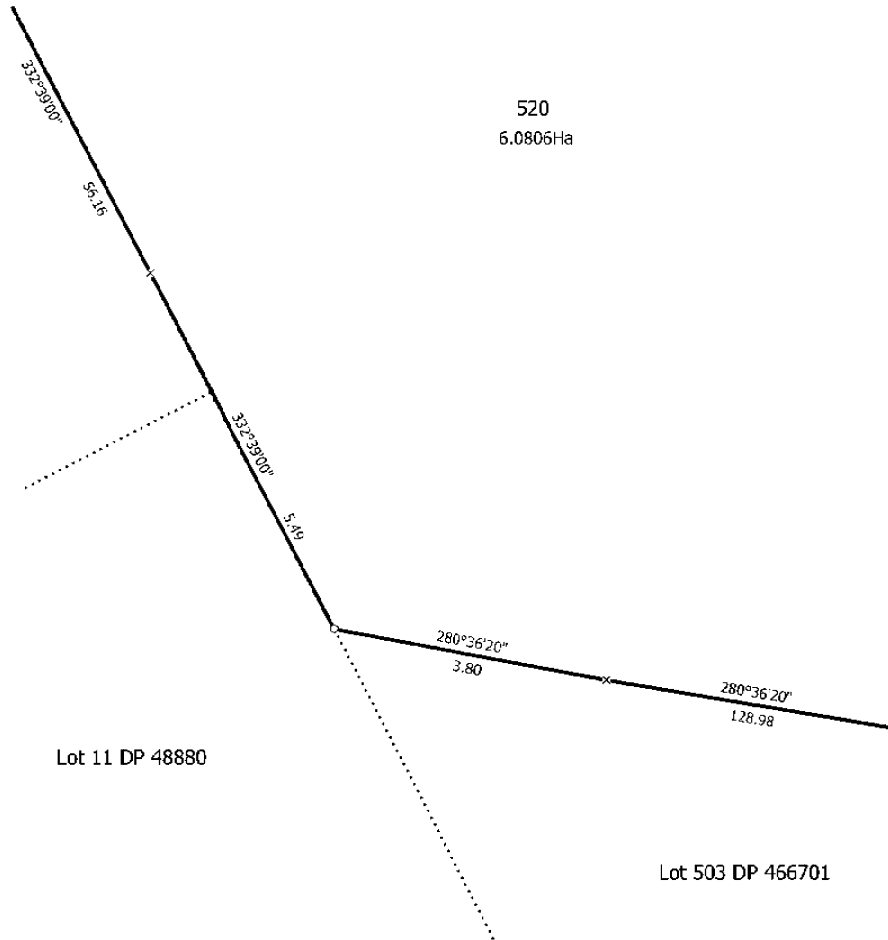
Deposited on: 17/07/2017



Diag. AB

Lot 10 DP 48880

520
6.0806Ha



T 15/15

Land District: North Auckland

Digitally Generated Plan
Generated on: 27/07/2017 2:58pm Page 24 of 24

Lots 1-55, 511, 512 514-521 & 527-529 Being a Subdivision of Lot 509 DP 466701, Lots 511 & 512 DP 493854, Lot 554 DP 498155 & Section 2 SO 498849

Surveyor: Charlotte Frances Nijssen
Firm: Blue Wallace Surveyors

Title Plan
DP 507433

Deposited on: 17/07/2017



**RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy**




R. W. Muir
Registrar-General
of Land

Identifier **770886**
Land Registration District **North Auckland**
Date Issued 17 July 2017

Prior References

738169

Estate Fee Simple
Area 715 square metres more or less
Legal Description Lot 45 Deposited Plan 507433

Registered Owners

Nicholas John Erceg and Linda Christine Erceg

Interests

10797265.7 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 17.7.2017 at 3:08 pm

Subject to a right (in gross) to drain sewage over part marked H on DP 507433 in favour of Whangarei District Council created by Easement Instrument 10797265.10 - 17.7.2017 at 3:08 pm

The easements created by Easement Instrument 10797265.10 are subject to Section 243 (a) Resource Management Act 1991

Land Covenant in Easement Instrument 10797265.13 - 17.7.2017 at 3:08 pm

Fencing Covenant in Transfer 10936059.2 - 9.11.2017 at 12:16 pm

IN THE MATTER of the Resource Management Act
1991 ("the Act")

A N D

IN THE MATTER of a subdivision consent as evidenced
by Land Transfer Plan No. 507433

A N D

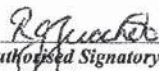
IN THE MATTER of a Consent Notice issued pursuant to
Section 221 of the Act by
**WHANGAREI DISTRICT
COUNCIL** ("the Council")

IT IS HEREBY CERTIFIED that the following conditions to be complied with on a continuing basis by the subdividing owner and subsequent owners were imposed by the Council as conditions of approval for the subdivision as effected by Land Transfer Plan No. 507433 ("the plan")

1. The foundations of any building constructed on Lots 23 through 31 on the plan shall be designed in accordance with the restrictions and recommendations identified in the report 'Subdivision flood levels for Totara Parklands for minimum floor levels' ref: 7320 prepared by Ashby Consulting Engineering Limited dated September 2012, a copy of which is available from the Council under file reference SD1200080, such noting the location of instability and flood susceptible areas on the Council's Geographic Information Systems maps unless an alternative engineering report prepared by a suitably experienced chartered professional engineer is approved in writing by the Council.
2. Any development of Lots 1 through 55 shall comply with the restrictions and recommendations identified in the report 'Subdivision Baseline Geotechnical Investigation' ref 1050-125904-01 compiled by Harrison Grierson Consultants Limited dated June 2008, a copy which is available from Council under file reference SD1200080, unless an alternative engineering report prepared by a suitably experienced chartered professional engineer is approved in writing by the Council.

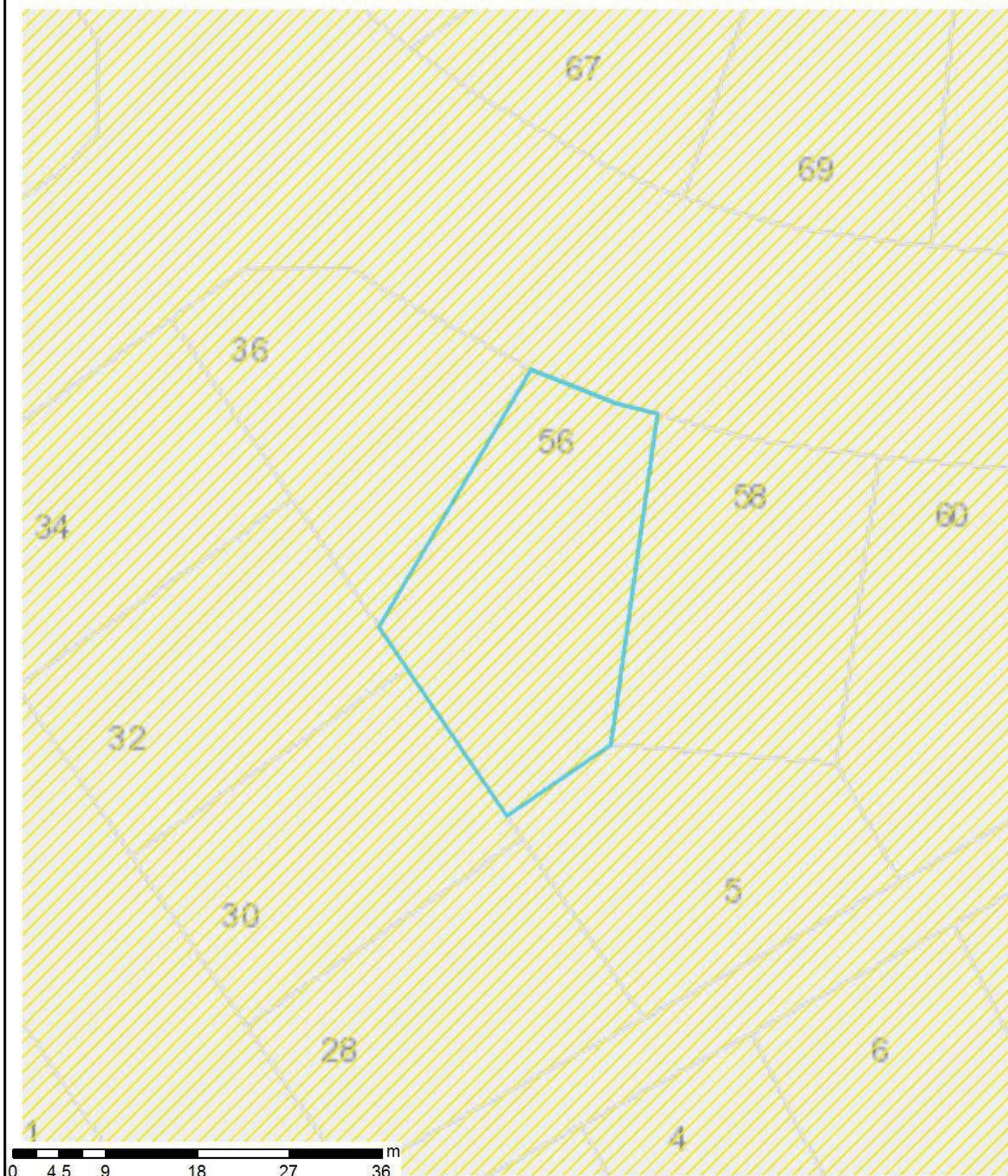
DATED at Whangarei this 10th day of JULY 2017

SIGNED for WHANGAREI DISTRICT COUNCIL pursuant to the authority of the Council given pursuant to the Local Government Act 2002 and the Resource Management Act 1991



Authorised Signatory
Riccardo Giovanni Zucchetto
Post Approval & Development Contributions Officer

Land Stability



This Land Stability hazard information was prepared by Tonkin and Taylor Engineers Ltd.

Hazard information as shown is approximate and should not be used as a replacement for site specific investigation and assessments. The absence of hazard information shown does not mean that there is none, only that the information may not yet have been collected.

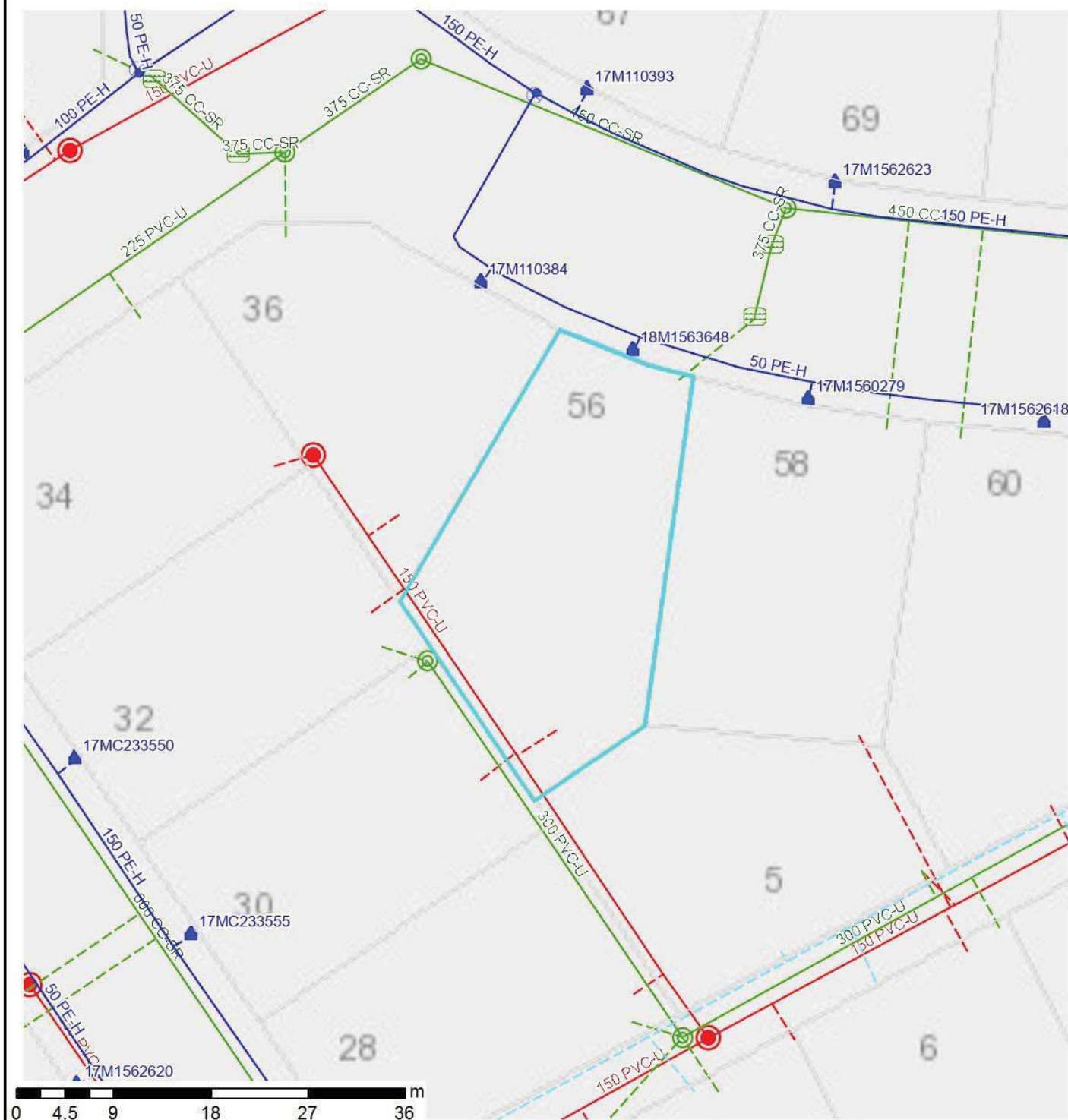
Land InStability

- High Hazard
- Moderate Hazard
- Low Hazard

Wednesday, February 9, 2022 Scale:1:500

The information displayed is schematic only and serves as a guide. It has been compiled from Whangarei District Council records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from land Information New Zealand's (LINZ) Core Record System Database (CRS). CROWN COPYRIGHT RESERVED. © Copyright Whangarei District Council.

Pipeline Assets



Water	Stormwater	Wastewater continued
Dark blue = WDC	Dark green = WDC	Red = WDC
Light blue = Private	Light green = Private	Pink = Private
Water Node	Other	Other
Main Valves	Sump	Manhole
Toby Valves	Inlet/Outlet Node	Nodes
Hydrants	Manholes	Valve
Pump	Storm Water Service Line	Pump
Water Meter	Storm Water Line	Backflow Preventer
Water Backflow	Wastewater	Waste Water Service Line
Water Service Line	Public Pressure Sewer System	Gravity
Water Line	Private Pumping Unit	Rising
		Waste Water Line
		Gravity
		Rising

This information is generalized and shows the approximate location of the Public pipeline services. For digging, the As-Built engineering drawings must be used to accurately locate the services. See WDC Customer Services.

Wednesday, February 9, 2022 Scale: 1:500

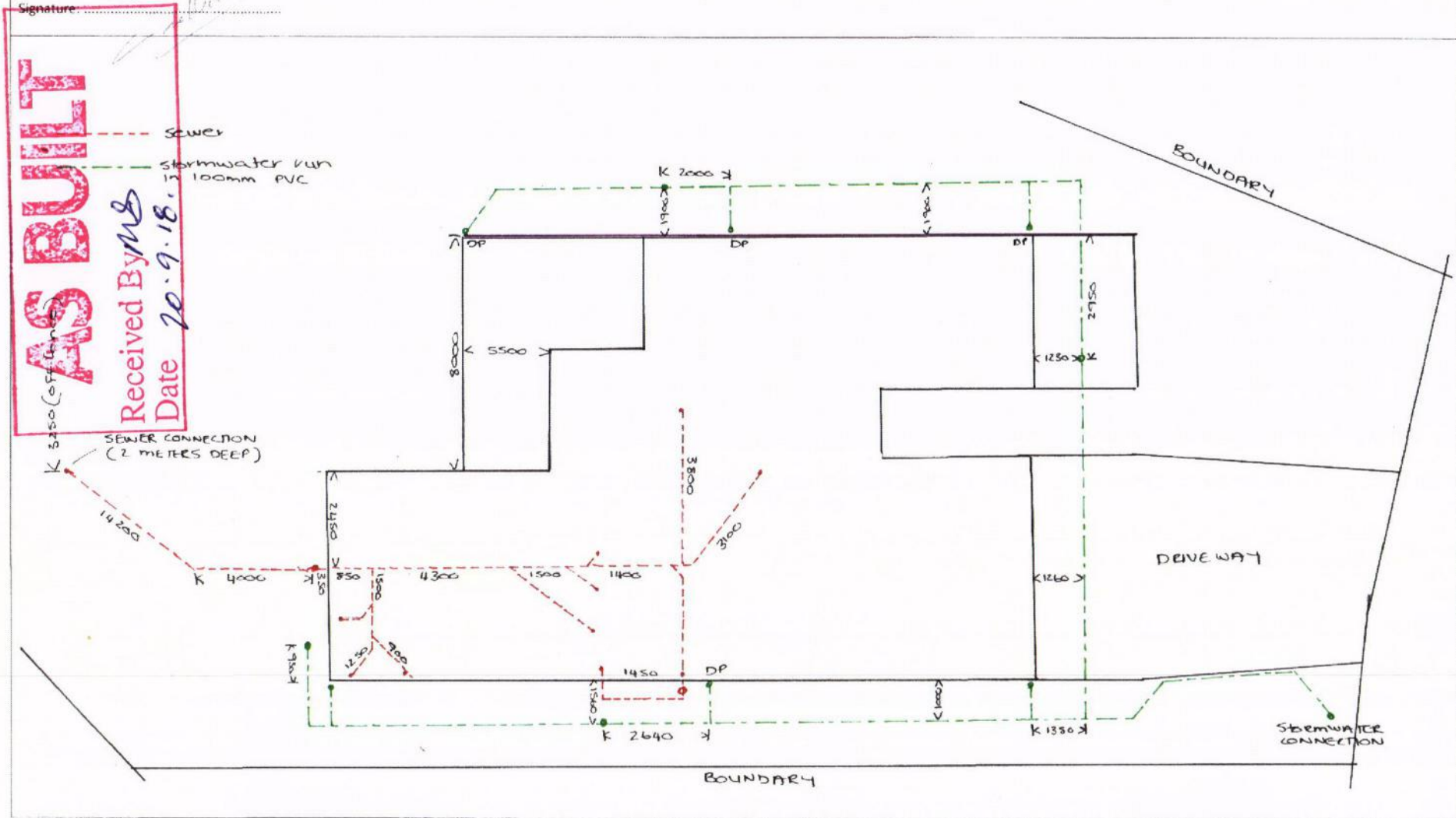


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Date: 15/9/2018

Certifying Drain Layer: Zane Wood License Number: 18224 Business Name: Woods Plumbing & Drainage Ltd

Signature: _____





Whangarei District Council
Forum North - Private Bag 9023
Whangarei New Zealand
Ph:0-9-430 4200 Fax:0-9-438 7632
Email: mailroom@wdc.govt.nz

Rates LIM Report

As at: Wednesday, 9 February, 2022

Property Number 167120
Legal Description LOT 45 DP 507433
Assessment Number 0072205978
Address 56 Bush Haven Drive Kamo 0112
Record of Title(s) 770886
Land Value \$375,000
Capital Value \$880,000
Date of Valuation 01-July-2021
Effective Date (used for rating purposes) 01-July-2022
Meter Location 5.4m LHB, 0.5m FB, #56

Rates Breakdown (up to 30 June 2022)

Rates Charge	Charge Total
General Residential	\$661.47
Sewage Disposal - Residential	\$803.00
Uniform Annual General Charge	\$724.00
Regional Civil Defence & Hazard Management	\$37.88
Regional Council Services	\$132.69
Regional Economic Development	\$6.17
Regional Emergency Services Rate	\$11.84
Regional Flood Infrastructure	\$31.19
Regional Land and Fresh Water Management	\$97.53
Regional Pest Management	\$76.40
Regional River Management - General Catchment Area	\$42.22
Regional Sporting Facilities	\$16.95
Regional Transport Rate	\$23.07
Annual Charge Total	\$2,664.41

Opening Balance as at 01/07/2021 **\$0.00**

Rates Instalments	Total
20/07/2021 Instalment	\$666.41
20/10/2021 Instalment	\$666.00
20/01/2022 Instalment	\$666.00
20/04/2022 Instalment	\$666.00
Rates Total	\$2,664.41

Balance to Clear **\$1,332.00**

FORUM NORTH PRIVATE BAG 9023, WHANGAREI, NEW ZEALAND TELEPHONE 09 430 4200 FAX 09 438 7632

Issue Document

VEHICLE CROSSING PERMIT APPLICATION NO: VC180011
Whangarei District Council Public Places ByLaw
Received: 24 January 2018
Issued: 05 April 2018

Applicant

L C Erceg, N J Erceg
13 Kokako Place (Pvt)
Whangarei 0110

Agent

Site Information

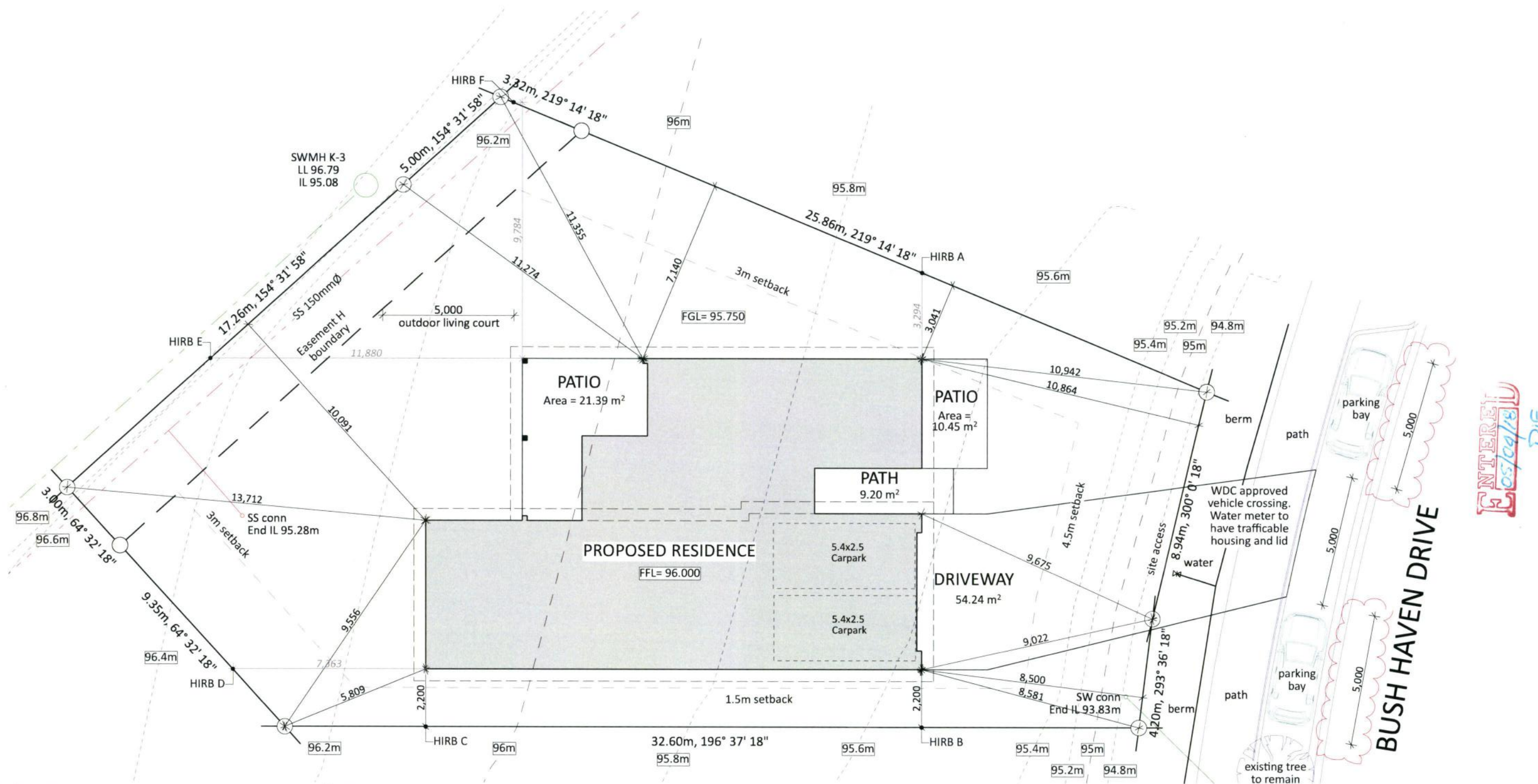
Property ID: 167120
Street Address: 56 Bush Haven Drive
Kamo 0112
Legal Description: LOT 45 DP 507433

Project Information

THIS IS A VEHICLE CROSSING PERMIT APPLICATION ONLY

Fees

COUNCIL'S TOTAL CHARGES FOR THIS VEHICLE CROSSING PERMIT
ARE:
PAYMENTS RECEIVED TO DATE:
RECEIPT NUMBER: DATE: 05 April 2018 AMOUNT: \$392.00



Siteworks notes:

Ensure final building platform & finished ground have an even fall away from building.
All rubbish, noxious matter and organic matter shall be removed from the area to be covered by the building.
Any fill to be dry & approved by engineer & compacted down in accordance with NZS.3604.2011.
• Contractor to confirm on site all boundary bearings, lengths & peg locations on site prior to commencement of works, to ensure house position is correct.
• Contractor to locate all service connections points on site prior to commencement of works. Check invert levels or pipes and manholes.
• Contractor to confirm plumbing routes and fixture positions on site prior to commencement of works.
Any discrepancies found from consented plans, alert design@barretthomes.co.nz prior to continuation of site works.

All dimensions shown are to building foundations (unless stated otherwise)

General notes:

Any encroachments shown are to be confirmed by a registered surveyor prior to commencement of foundations. No liability shall be held by designer with this confirmation.

Sediment Control Notes:

Sediment and runoff control shall be designed and installed by the licensed building practitioner prior to, or, during the siteworks for the project. The sediment controls shall be installed in accordance with the requirements of the District Plan/Council requirements.

Construction & Demolition Hazards

Contractor to install galvanised chainlink netting or hoarding barrier, 2.0m min height to site perimeter to comply with NZBC:F5 Construction & Demolition Hazards, prior to commencing construction.

Toeboards to be installed for prevention of objects falling off storage or access platforms as per NZBC F5 1.4

APPROVED
05-04-18
DIF

NZS3604:2011 WIND ZONE MATRIX	
56 Bush Haven Drive, Totara Parklands	
Wind Region = A	
Lee Zone = No	
Ground Roughness = Urban	
Site Exposure = Sheltered	
Topographic Class = T3	
Calculated Wind Zone = High	



LOT 45
DP: 507433
AREA: 715m²

Site Coverage:
173.02m² (House area) + 17.75m² (eaves over 800mm) / 715 (site area) = 0.26 = 26.6%
Living Zone = Living 1
Max coverage = 35%



design@barretthomes.co.nz		Project No:	WHG010	Sheet:	3	Rev:	E
Wind:	HIGH	Designed:	-	Drawing:	SITE PLAN		
EQ:	1	Drawn:	BS	Client Name:	N + L ERCEG		
Exposure:	C	Check:	CW	Site Address:	LOT 45, 56 BUSH HAVEN DRIVE, TOTARA PARKLANDS, WHANGAREI		
Date:	5/04/2018	Scale:	1:150				

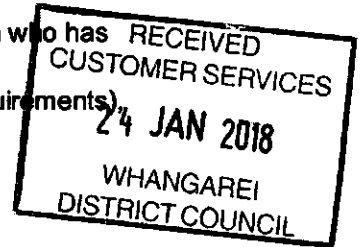
WT028230

**Fast Track - Public Utility Service Application
20mm Water Meter Only**

PU 181021

General Guidance

- All fields must be completed or N/A as appropriate
- The applicant must be the owner of the land, or the lease holder, or a person who has agreed to unconditionally purchase or lease the land
- If a Backflow Preventer is required with the water meter (see application requirements), please complete a 'standard' public utility works application.



Owner / Applicant

Full Name LINDA CHRISTINE + NICHOLAS JOHN ERCEG
Postal address 13 KOKAKO PLACE, HORAMORA, WHANGAREI Post code 0110
Phone 021 896289 / 021 0722192 Mobile _____
Email nick.erceg@gmail.com

Agent

Name BARRETT HOMES
Postal address PO Box 10424, BAYVIEW, MT MONGOMERY Post code 3152
Phone 07 5749009 Mobile _____
Email design@barrett-homes.co.nz

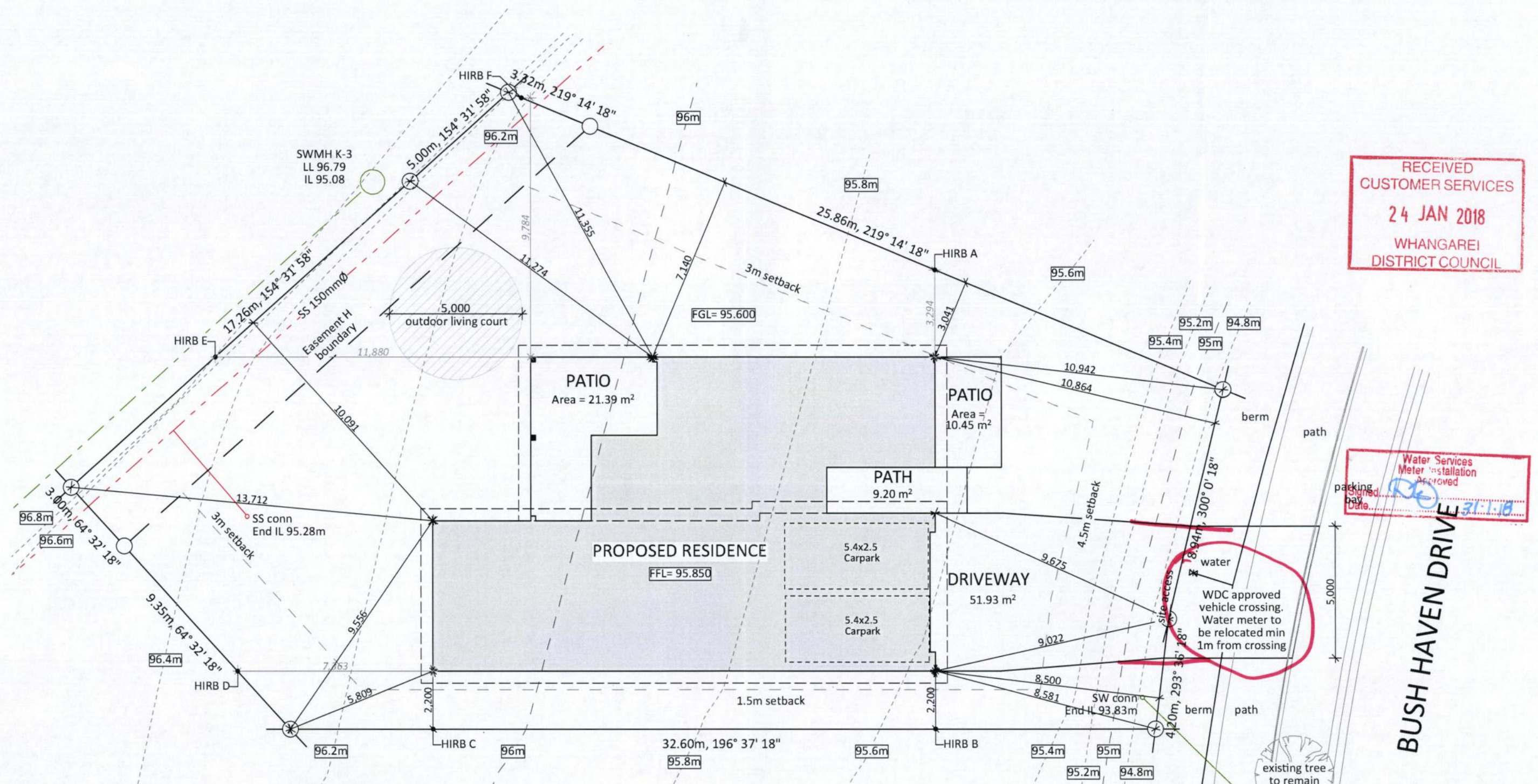
Site Address

Street/Road Number 56 Street/Road Name BUSH HAVEN DR
Town or Area WHANGAREI Lot 45 DP 507433

Office Use Only

Property ID: 167120
LLP number: 129224
Related Consents: -

Date: 23-1-18



RECEIVED
CUSTOMER SERVICES
24 JAN 2018
WHANGAREI
DISTRICT COUNCIL

Water Services
Meter Installation
Approved
Signed
Date 31.1.18

BUSH HAVEN DRIVE

Siteworks notes:

Ensure final building platform & finished ground have an even fall away from building.
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• Contractor to confirm on site all boundary bearings, lengths & peg locations on site prior to commencement of works, to ensure house position is correct.
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LOT 45
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Living Zone = Living 1
Max coverage = 35%



design@barrethomes.co.nz		Project No: WHG010	Sheet: 3	Rev: -
Wind: HIGH	Designed: -	Drawing: SITE PLAN	Council: WDC	
EQ: 1	Drawn: BS	Client Name: N + L ERC EG		
Exposure: C	Check: CW	Site Address: LOT 45, 56 BUSH HAVEN DRIVE,		
Date: 22/01/2018	Scale: 1:150	TOTARA PARKLANDS, WHANGAREI		

Building Consent No: BC1800051

Section 51, Building Act 2004

Issued: 19 February 2018

Project Information Memorandum No: PM1800006

The Building

Street address of building: 56 Bush Haven Drive
Kamo 0112

Legal description of land where building is located: LOT 45 DP 507433
LLP: 129224

Building name: N/A

Location of building within site/block number: N/A

Level/unit number: N/A

The Owner

L C Erceg
N J Erceg
13 Kokako Place (Pvt)
Whangarei 0110

Phone number: N/A

Mobile number: 0210722192

Facsimile number: N/A

Email address: nickerceg1@gmail.com

Website: N/A

Street address/registered office: 56 Bush Haven Drive
Kamo 0112

First point of contact for communications with Council/building consent authority.

Contact Person

Barrett Homes (Northland) Limited
PO Box 10424
Bayfair
Mount Maunganui 3152

Phone number: 075749009

Mobile number: 0220105775

Facsimile number: N/A

Email address: design@barretthomes.co.nz

Website: www.barretthomes.co.nz

Building Work

The following building work is authorised by this consent:

New Dwelling

This building consent is issued under section 51 of the Building Act 2004. This building consent does not relieve the owner of the building (or proposed building) of any duty or responsibility under any other Act relating to or affecting the building (or proposed building).

This building consent also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition, or removal would be in breach of any other Act.

This building consent is subject to the following conditions:

Section 90 Building Act 2004

Section 90 Building Act 2004 Inspections by Building Consent Authorities applies. This building consent is subject to the condition that agents authorised by the building consent authority are entitled at all times during normal working hours or while work is being done to inspect land on which building work is being or is proposed to be carried out and building work that has been or is being carried out on or off the building site and any building.

Nominated Inspections are carried out to ensure that the building work is in accordance with the building consent. Completed Inspections will be classified as pass, or pass subject to remedial work or failed status.

1. See attached schedule of site requirements for inspections and documentation required.
2. To confirm compliance of the specific engineered foundation, structure and durability a Producer Statement PS4 for the construction monitoring is required. This must be appropriate and to the level identified in the Producer Statement PS1 or by agreement with the Building Consent Authority. This is to ensure the building work performed is in accordance with the approved building consent and the engineering assumptions and design parameters are met.
3. To confirm compliance an appropriate Engineer must confirm with a NZS4431 Certificate that the ground conditions supporting the foundation is sufficient for infill or cut prior to slab or foundation inspection.

Compliance Schedule

A compliance schedule is not required for the building.

Attachments

The Project Information Memorandum for the building work covered by this building consent.

Additional Information

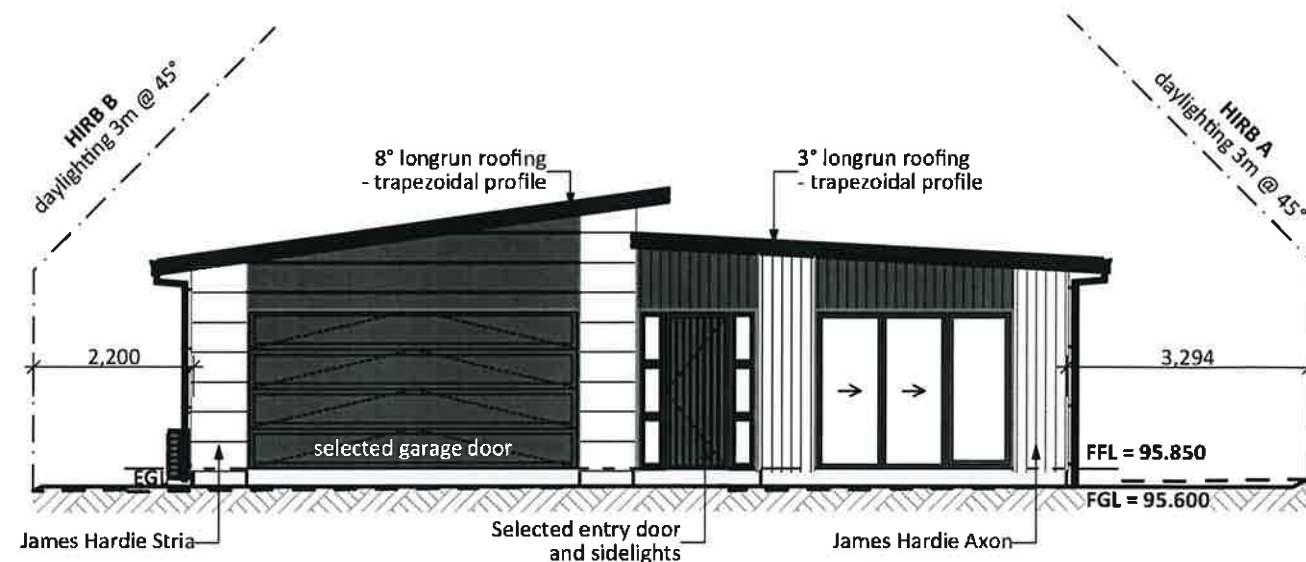
1. The applicant must control dust nuisance created by any site or building works.
2. Toilet facilities must be provided within reasonable distance of the construction site. Ground discharge is no longer acceptable.
3. Lapsing of building consent. For the purposes of S52(b) of the Building Act 2004, the period after which this consent will lapse if the building work to which it relates does not commence will be 12 months from the date of issue.
4. Building advice that a maintenance schedule is recommended for the ongoing performance of the building elements to ensure they meet their serviceable life please consult with your designer to develop a specific maintenance programme or another helpful source of information is the BRANZ web site <http://www.maintainingmyhome.org.nz/maintenance-guides/maintenance-schedule>.
5. To confirm compliance an Energy Works Certificate will be required (Electrical).



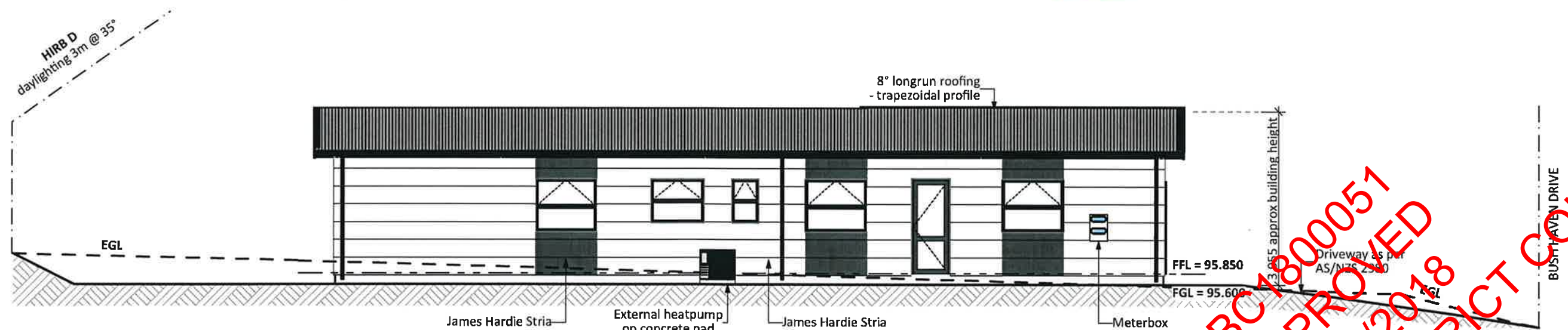
Donna Soanes
Support Assistant – Building Processing
On behalf of Whangarei District Council

19 February 2018

Date



NORTH ELEVATION



EAST ELEVATION

General Notes:

Any encroachments shown are to be confirmed by a registered surveyor prior to commencement of foundations. No liability shall be held by designer with this confirmation.

NZBC D1/AS1 Access

Minimum slip resistance to steps and landings
Concrete or H5 timber step to all access points, min. 150mm below Finished floor level

Foundation:

Raft floor to engineers design (see plan notes & details)

Wall Cladding:

James Hardie Stria cladding
James Hardie Axon cladding on CLD battens

Roof Cladding:

3° and 8° pitch. NZS Colorsteel Endura - trapezoidal profile

Fascia and Spouting:

COLORCOTE 185mm fascia & spouting with 80mm Ø powder coated aluminium downpipes

Joinery:

Selected powder coated aluminium joinery

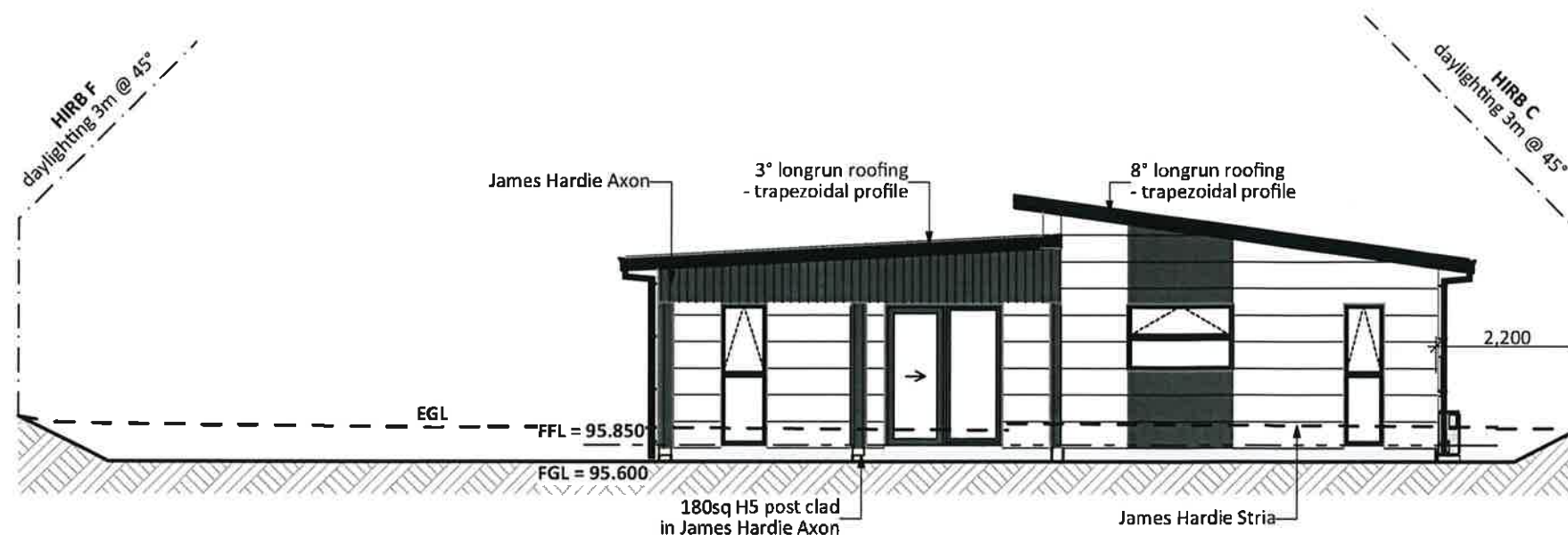
BUILDING ENVELOPE RISK MATRIX

ALL ELEVATIONS

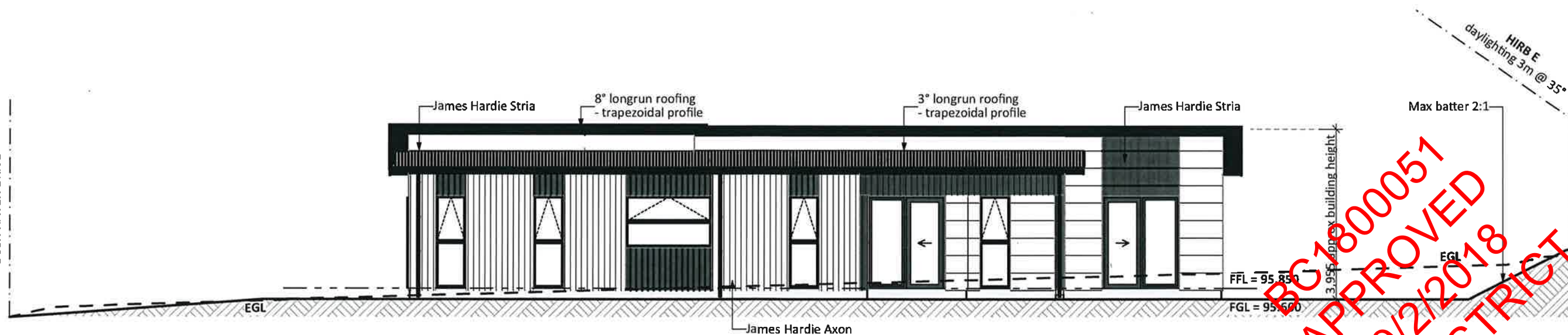
Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roof/wall intersection design	Very high risk	5
Eaves width	Very high risk	5
Envelope complexity	Medium risk	1
Deck design	Low risk	0
Total Risk Score:		12



BC 18000051
APPROVED
19/2/2018
WHANGAREI DISTRICT COUNCIL



SOUTH ELEVATION



WEST ELEVATION

General Notes:

Any encroachments shown are to be confirmed by a registered surveyor prior to commencement of foundations. No liability shall be held by designer with this confirmation.

NZBC D1/AS1 Access

Minimum slip resistance to steps and landings
Concrete or H5 timber step to all access points, min. 150mm below Finished floor level

Foundation:

Raft floor to engineers design (see plan notes & details)

Wall Cladding:

James Hardie Stria cladding
James Hardie Axon cladding on CLD battens

Roof Cladding:

3° and 8° pitch. NZS Colorsteel Endura - trapezoidal profile

Fascia and Spouting:

COLORCOTE 185mm fascia & spouting with 80mm Ø powder coated aluminium downpipes

Joinery:

Selected powder coated aluminium joinery


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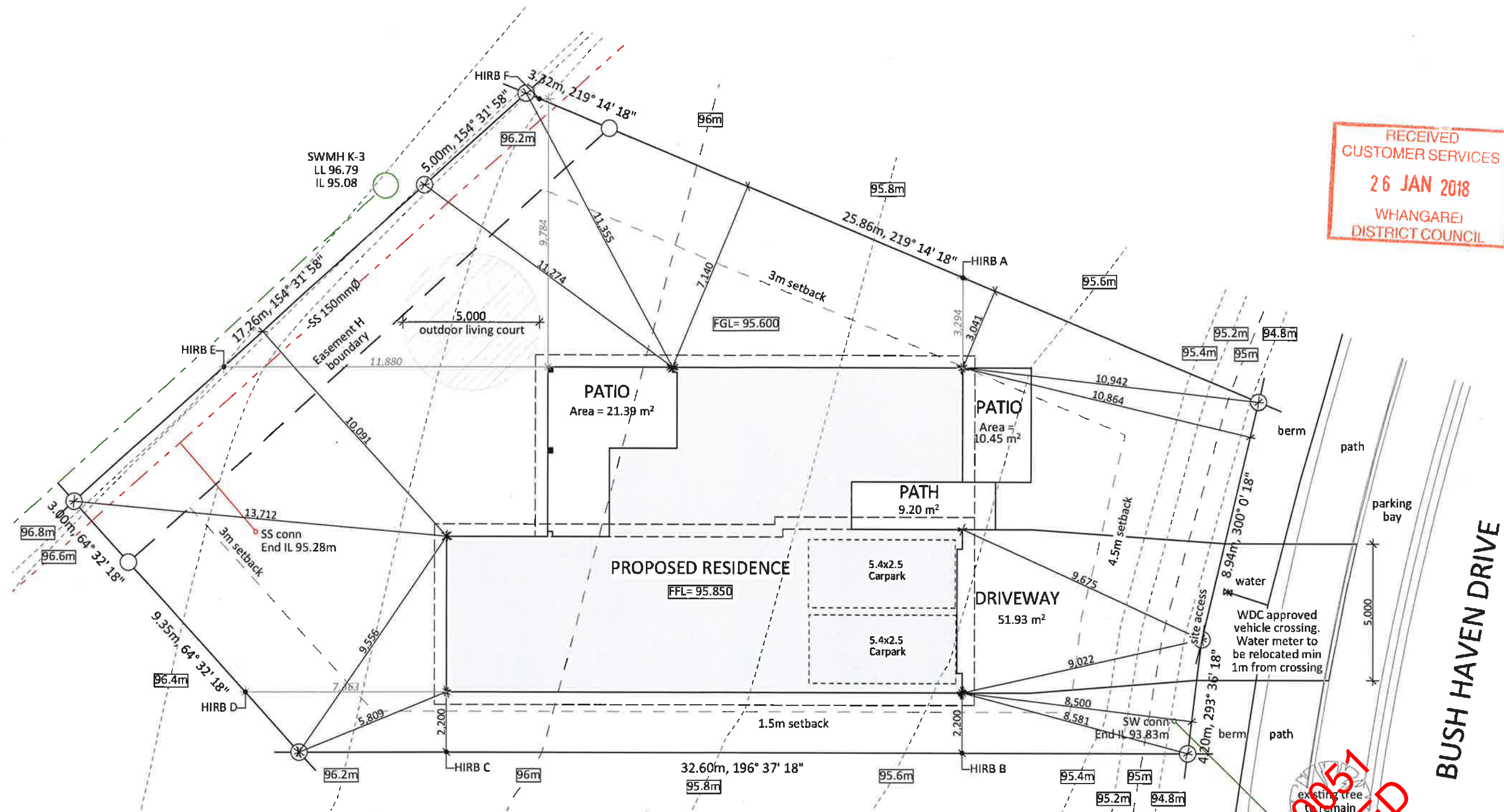
BUILDING ENVELOPE RISK MATRIX

ALL ELEVATIONS

Risk Factor	Risk Severity	Risk Score
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roof/wall intersection design	Very high risk	5
Eaves width	Very high risk	5
Envelope complexity	Medium risk	1
Deck design	Low risk	0
Total Risk Score:		12



		design@barrethomes.co.nz		Project No: WHG010		Sheet: 2	Rev: -
Wind: HIGH	Designed:	Drawing: ELEVATIONS				Council: WDC	
EQ: 1	Drawn: BC	Client Name: N + L ERCEG					
Exposure: C	Check: CW	Site Address: LOT 45, 56 BUSH HAVEN DRIVE,					
Date: 22/01/2018	Scale: 1:100	TOTARA PARKLANDS, WHANGAREI					



Siteworks notes:

Ensure final building platform & finished ground have an even fall away from building.
All rubbish, noxious matter and organic matter shall be removed from the area to be covered by the building.
Any fill to be dry & approved by engineer & compacted down in accordance with NZS.3604.2011.

- Contractor to confirm on site all boundary bearings, lengths & peg locations on site prior to commencement of works, to ensure house position is correct.
- Contractor to locate all service connections points on site prior to commencement of works. Check invert levels or pipes and manholes.
- Contractor to confirm plumbing routes and fixture positions on site prior to commencement of works.

Any discrepancies found from consented plans, alert design@barrethomes.co.nz prior to continuation of site works.

All dimensions shown are to building foundations (unless stated otherwise)

General notes:

Any encroachments shown are to be confirmed by a registered surveyor prior to commencement of foundations. No liability shall be held by designer with this confirmation.

Sediment Control Notes:

Sediment and runoff control shall be designed and installed by the licensed building practitioner prior to, or during the siteworks for the project. The sediment controls shall be installed in accordance with the requirements of the District Plan/Council requirements.

Construction & Demolition Hazards

Contractor to install galvanised chainlink netting or hoarding barrier, 2.0m min height to site perimeter to comply with NZBC:F5 Construction & Demolition Hazards, prior to commencing construction.

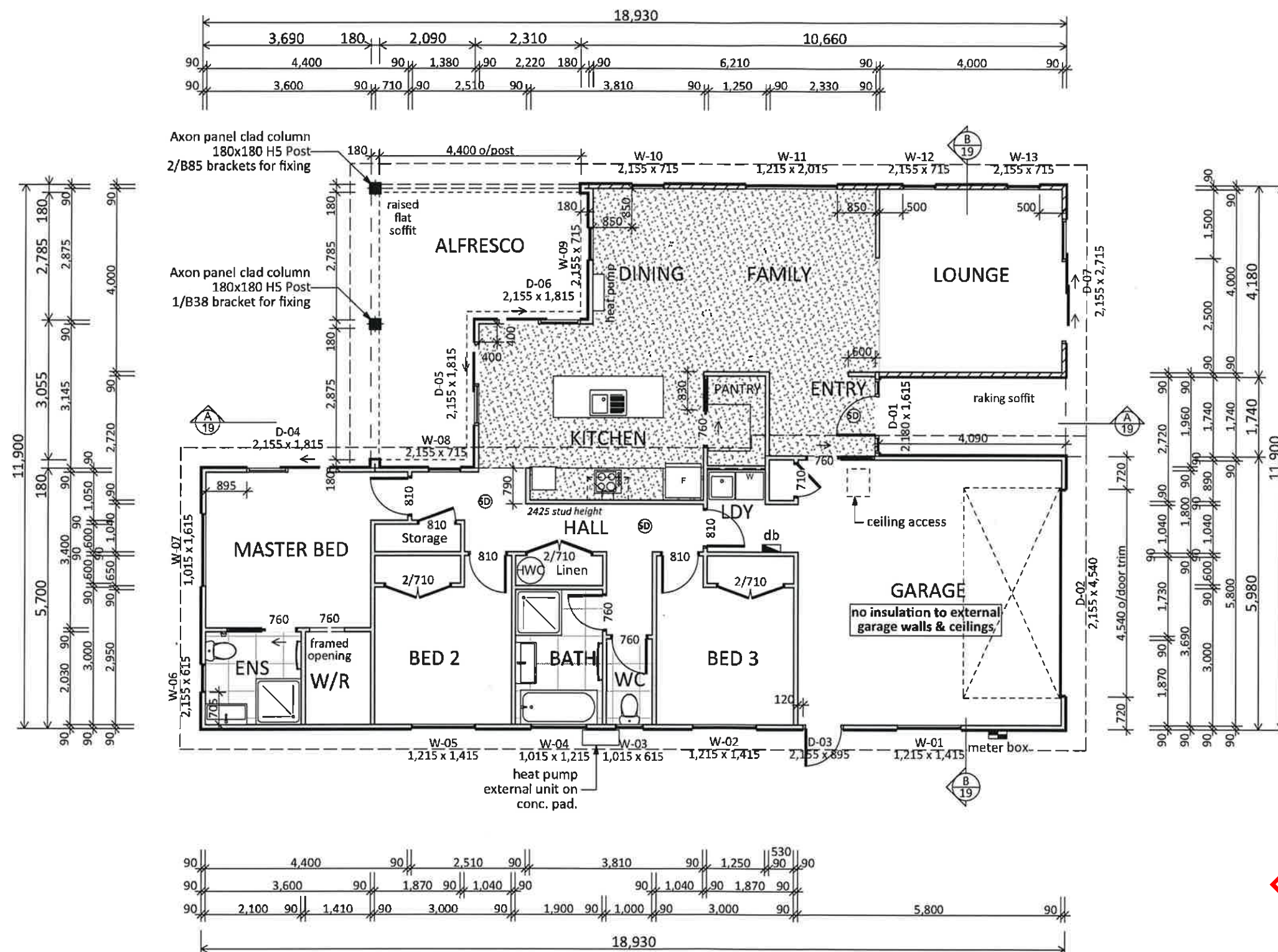
Toeboards to be installed for prevention of objects falling off storage or access platforms as per NZBC F5 1.4

NZS3604:2011 WIND ZONE MATRIX	
56 Bush Haven Drive, Totara Parklands	
Wind Region = A	
Lee Zone = No	
Ground Roughness = Urban	
Site Exposure = Sheltered	
Topographic Class = T3	
Calculated Wind Zone = High	

LOT 45
DP: 507433
AREA: 715m²
Site Coverage: 173.0m² (House area) + 17.75m² (eaves over 800mm) / 715 (site area) = 0.26 = 26.4%
Living Zone = Living 1
Max coverage = 35%



design@barrethomes.co.nz	Project No: WHG010	Sheet: 3	Rev: -
Wind: HIGH	Designed: SITE PLAN	Council: WDC	
EQ: 1	Drawn: BS	Client Name: N + L ERCEG	
Exposure: C	Check: CW	Site Address: LOT 45, 56 BUSH HAVEN DRIVE,	
Date: 22/01/2018	Scale: 1:150	TOTARA PARKLANDS, WHANGAREI	



General notes:

Always cross reference the foundation plan with the floor plan prior to setting out

All joinery sizes specified are to be confirmed with an on-site measure up prior to joinery fabrication. No liability shall be held by the Barrett Homes for incorrect supply of joinery.

Refer to attached pre-cut design & documents for all lintel sizes, truss & top plate fixings. Contractor to refer to truss manufacturers producer statements for any further load bearing footing / slab thickenings that may be required to support roof loads. This layout is preliminary. Read in conjunction with final PS1 & pre-cut design & documents.

Refer to all written dimensions, DO NOT scale off drawings.

2.425 stud height throughout, 2460 u/side of truss (unless specified)

Full height joinery 2.155m

Mains pressure 180L HWC with tempering valve & seismic restraint in accordance with NZBC: 2004 section G12.

Electric hobs with vented r/hood. Polybutylene water supply pipes. Hot water supply pipes shall be thermally insulated to comply with H1/AS1 5.0

Please confirm plumbing fixture locations before foundation commences

Confirm shower tray size before commencing wall framing

SD - Approved smoke detectors required within 3.0m of any sleeping space - first alert of similar

Engineering

Plans are to be read in conjunction with The Engineer Limited engineering report and details. Reference: 18011810 (21/1/2018)

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Wall Key:
JH Stria
JH Axon

Floor Area: 173.02m² o/frame

Symbol	Legend
Smart Meter	
Distribution board	
Smoke Detector (first alert or similar)	



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design@barrethomes.co.nz	Project No:	WHG010	Sheet: 8	Rev: -
Wind: HIGH	Designed:	FLOOR PLAN	Council:	WDC
EQ: 1	Drawn:	N + L ERCEG		
Exposure: C	Check:	Site Address:	LOT 45, 56 BUSH HAVEN DRIVE,	
Date: 22/01/2018	Scale: 1:100	TOTARA PARKLANDS, WHANGAREI		



EARTHWORKS COMPLETION REPORT

TOTARA PARKLANDS ESTATE, WHANGAREI

STAGE 3

Project Reference: 1548-3
2 June 2017



1 INTRODUCTION

LDE were engaged by Totara Estate to supervise the construction of stage 3 of the 8 proposed stages for Totara Park Estate development. This development comprises residential Lots 1-49.

Preliminary site investigations for the subdivision were undertaken by Harrison and Grierson and reported in:

- Ref. No 1050-125904-01, Geotechnical Investigation Report, dated June 2008.

The geotechnical Investigation Report concluded that the site was generally suitable for the proposed sub divisional development, subject to specific conditions imposed for foundation types. The report classified the site into 8 areas which are identified in the report as areas 1-8. The information contained in this completion report should be read in conjunction with this original geotechnical report which supplements the information provided in this report only where areas of concern were identified during construction.

All of the proposed lots for Stage 3 fall within "Area One" of this original geotechnical report and no areas of concern were identified during construction. The original information including foundation recommendation for all the proposed lots contained within stage 3 are therefore applicable.

The scope of work covered by this completion report includes:

- Review of geotechnical investigation reporting for the site,
- Monitoring and certification of earthworks operations,

This completion report is limited to Stage 3, consisting of 49 residential lots, numbered 1 to 49 inclusive.

2 PLANT

Earthworks were undertaken during late 2016 - mid 2017 by Broadspectrum and their subcontractors.

Various earthworks equipment was used to complete the works, comprising dump trucks, compactors, rollers, bulldozers and a number of excavators. This plant generally carried out all construction earthworks.

Installation of services was undertaken under Broadspectrum control by various sub-contractors, and took place in conjunction with the earthworks operations.



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Specialist contractors and plant were brought onsite for pavement construction.

3 CONSTRUCTION PROGRAM

Subdivisional earthworks across the site commenced towards the end of 2016 and was completed mid 2017. The majority of roading and other civil services were installed progressively and were completed by the end of December 2015.

Key earthworks components included:

- Stripping of vegetation, organic materials and topsoil to stockpile,
- Installation of underfill drainage systems to intercept groundwater flows,
- General cut to fill earthworks operations including a 4m high MSE retaining wall and 1-4m of engineered fill over approximately 50% of stage 3,
- Installation of roading and services.

The construction involved the formation of the road area by cutting and filling areas of the existing ground away. The filling works affects all of the lots within stage three developed area.

The "Depth of Cut and Fill As-Built" plan attached 11008-03-AB-200 shows the extent of works in each Lot.

This as-built drawing was prepared by Blue Wallace Surveyors, showing the as-built contours, the cut/fill areas and depths.

4 BEARING CAPACITY FOR BUILDING FOUNDATIONS

All Stage 3 lots fall within Area 1 of the original geotechnical report by Harrison Grierson Consultants Ltd dated June 2008 and as such all the report recommendations apply to these 49 residential lots contained within Stage 3.

The recent earthworks undertaken within stage 3 Lot areas consists of engineered fill within a number of the lots including an MSE wall adjacent to the stream, the installation of sewer and storm water infrastructure and the formation of the roads. The road construction and testing has been supervised and approved by LDE Ltd.

The filling work undertaken for stage three has been supervised and tested and can be assumed to be engineered fill for any design purposes with the same recommendations as original ground for any foundation designs.



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No additional testing has been undertaken within any of these proposed lots for Stage 3 other than the areas of engineered fill and roads, therefore the initial building recommendations from the original geotechnical report are still appropriate for all of these lots.

These lots are numbered 1 through to 49 on the attached earthworks plan labelled Stage 3 As-built Plan Earthworks final contour dated May 2017.

5 DRAINAGE

Subsoil drainage within Stage 3 is limited to under kerb drainage which are expected to be maintenance free. No additional subsoils have been installed that are likely to be encountered during future site development within the lot areas.

If a drain is encountered or damaged, repairs should be observed by a Chartered Professional (Geotechnical) Engineer familiar with this report, and notified to Whangarei District Council.

6 STORMWATER CONTROL

Public stormwater services have been installed across the subdivision. Stormwater and runoff from roofs, decks and paved areas, together with discharges from any future retaining wall drains and other subsoil drains should connect directly into the public stormwater drainage network. On no account should any uncontrolled runoff or concentrated stormwater discharges be directed on to open ground, into soakage pits or into subsoil drainage systems.

7 SERVICE LINES

Although some compaction work was undertaken on the service trenches, backfill should be generally considered as non-engineered / non-certified fill within service trench locations.

Where building envelopes lie adjacent to or across service lines, all foundations should extend and be founded below the 45 degree zone of influence line from pipe inverts. This requirement is to avoid the potential for unacceptable differential settlements resulting from the presence of under-compacted backfill, to avoid excessive pipe surcharges, and to allow for future maintenance of the system without detrimentally affecting adjacent structures. The extent of this zone may be reduced if testing of the natural ground and the trench backfilling confirms that compaction has been carried out to a suitable standard.



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Equally, and subject to approval from Whangarei District Council, foundations may extend and bridge over service lines provided specific foundation design is undertaken.

We understand from the subdivision design that no services should have an impact on building positions and foundations but this should be checked at building consent application stage.

8 ROAD SUBGRADES

Based on the monitoring and site observations during development, filled and natural ground within the road and vehicle access and pedestrian access lots is considered generally suitable for the proposed residential pavements. Subgrade strength testing was carried out following excavation to formation levels along the road alignments. These sub grade test results were passed on to Whangarei District Council.

9 CONCLUSION

The Contractor confirms that the work undertaken has been completed in accordance with the drawings, specifications and any variations issued and is consistent with the inspections and observations carried out by LDE Ltd.

On the basis of our observations and inspections together with the information supplied by others, including the Contractor's Completion Certificate, it is my professional opinion, not to be construed as a guarantee that:

- The earthworks shown on the attached drawings titled Stage 3 As built Plan, Earthworks – Final Contour is an accurate representation of the works undertaken on the site.
- The completed earthworks give due regard to land slope and foundation stability considerations.

10 UNEXPECTED GROUND CONDITIONS

Our assessment is based on interpolation between site observations and periodic earthworks control visits. Local variations in ground conditions may occur. Although highly unlikely, unfavourable ground conditions may be encountered on some lots. Design assistance is available as required to accommodate any unforeseen ground conditions present.



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OTHER CONSIDERATIONS

Opinions given in this report are based on visual methods, and subsurface investigations at discrete locations. The nature and continuity of the subsurface materials between these locations are inferred and it must be appreciated that actual conditions could vary from that described herein. We should be contacted immediately if the conditions are found to differ from that described in this report.

For and on behalf of LDE Ltd



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Senior Civil Engineer



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HARRISON GRIERSON CONSULTANTS LIMITED

Document Control Record

Client TASMASTER INVESTMENT LTD

Project Proposed Subdivision, 1a Gillingham Road, Kamo

HG Ref. 1050-125904-01

Doc Ref. rep-til-GE001V2-mm-k-jag

Document Subdivision Baseline Geotechnical Investigation Report

ISSUE AND REVISION RECORD

Status Final

Date of Issue June 2008



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Co-Author

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1.0 INTRODUCTION

Harrison Grierson Consultants Limited (HGCL) was engaged by Tasmaster Investment Limited (Tasmaster) to undertake geotechnical investigation and assessment for proposed subdivision at 1a Gillingham Road in Kamo.

The investigation was undertaken in order to assess the subsurface conditions and to identify potential geotechnical issues and recommended solutions for the proposed subdivision. The objective of the investigation was also to provide geotechnical information to support Subdivision and Landuse Consent applications to the local Territorial Authority.

A geotechnical investigation was carried in December 2007 at this site followed by interpretation of the results and geotechnical assessment.

The investigation comprised a site walkover assessment, machine excavated test pits, machine borehole drilling and insitu testing. This was accompanied by a desk study and was followed by laboratory testing and engineering assessment. The site's current stability was assessed together with the site's suitability for development. The assessment took into consideration the Whangarei District Council (WDC) requirements for subdivision consent.

This report presents the factual results of the investigation together with the results of the geotechnical assessment. The report summarises the evaluation of geotechnical constraints and provides engineering recommendations where appropriate.

2.0 SITE DESCRIPTION

2.1 LOCATION

The site is located approximately 1.5km North-East of Kamo Township and approximately 5km North of Whangarei Central Business District (CBD).

The site consists of three adjoining properties with a total area of approximately 57ha. The legal description of the site consists of three amalgamated titles.

These are:

- LOT 1 DP 389692
- LOT 2 DP 389692
- LOT 6 DP 1583

There is a paper road showing crossing the site towards the north. As shown in HGCL Drawing No. 125904-GE01, the site is irregularly shaped and is mostly

pastoral land. Residential properties border most of the site along the western and southern boundaries. Vacant land borders the site along the eastern portion of the southern boundary. There is a school on the south-western corner of the site, near a 90° bend along Corks Road.

The northern boundary is bordered by residential properties and vacant land. Along the eastern boundary, the meandering Waitaua Stream borders the site.

2.2 TOPOGRAPHY

The attached site plan (HGCL Drawing No. 125904-GE01) includes contour lines of the existing ground levels. The site is predominantly north and northeast facing and slopes moderately (average slope angles of 5° to 10°) from Gillingham and Corks Road towards Waitaua Stream, where it becomes reasonably flat. The site is divided into the following main areas of differing topographical features: (refer Drawing No. HGCL 125904-GE05).

- Area 1: The ground within the central part of the site, north of the watercourse, slopes generally at 5°. This area occupies approximately 50% of the site total area.
- Area 2: This is the area on the southern side of the watercourse behind the residential properties along Corks Street. The ground also generally slopes to the northeast at 5°.
- Area 3: The area within the south-eastern corner of the site. The ground generally slopes to the north at 5°. It is divided by a short watercourse which is identified in the WDC GIS map to be a potential flood zone. This flood zone extends to the site's southern boundary where it runs through vacant land.
- Area 4: The area within the north-western corner of the site. On average the ground slopes at 10°-15°. It is bordered by residential properties along the northern and western boundaries.
- Area 5: The area near the south-western corner below Lot 7 of DP 1583, which is currently occupied by a school, is sloping down towards the north and northeast by 10° and 5° respectively. The ground in this area has been identified in the WDC GIS map to be within a Mining Hazard Area 3.
- Area 6: A narrow watercourse runs through the middle of the site starting at the Corks Road end of the site, and runs the entire length of the site towards the east. The ground on both sides of the watercourse has moderate to steep sloping ground (10° to 20°) towards the watercourse within the upper portion of the watercourse. The ground in this area has been identified in the WDC GIS map to be within a potential flood zone as well as a Mining Hazard Area 3 area.

- Area 7: The ground on both sides of the watercourse becomes moderately sloping (5° to 10°) along the majority of the watercourse until it joins up with the Waitaua Stream. This area has been identified in the WDC GIS map to be within a potential flood zone.
- Area 8: This is the area along the western bank of the meandering Waitaua Stream, which is rather complex, with the ground topography varying from a flat to a steeply sloping topography towards the stream. Steep banks are present at some locations with slope angles of up to 20°. This area has been identified in the WDC GIS map to be within a potential flood zone. There are some trees leaning towards the stream or growing in a curved direction due to slope movement downslope or towards the stream.

Basalt outcrops were observed at various locations along the Waitaua Stream as well as within the lower portion of the watercourse. Basalt boulders were observed at various locations within the north-eastern portion of Area 1 as well as within Waitaua Stream and the lower portion of the watercourse.

The locations of the above areas are shown on the attached HGCL Drawing No. 125904-GE05.

2.3 DRAINAGE AND FLOODING

The site generally drains into the above-mentioned watercourse and also directly into the Waitaua Stream. No evidence of surface water ponding was observed throughout the site except for the low-lying areas in the immediate vicinity of the watercourse and Waitaua Stream as well as areas near the water troughs and dirt track in the centre of the site.

No flood assessment has been carried out as part of the investigation. However, the GIS maps of the WDC indicate a potential flood zone along the banks of the Waitaua Stream and the watercourse as discussed in Section 2.2.

2.4 VEGETATION AND TREES

At the time of fieldwork, the site was predominantly vegetated by pasture. Shrubs and mature small and large trees are located along the boundaries and along the watercourse and stream. Groves of tall Totara trees were also scattered around the site with the main grove located towards the north-eastern end of the site. These were roughly twenty to thirty meters in height. Some other small and large trees were found scattered throughout the site.

2.5 EXISTING STRUCTURES

The site is currently vacant, mostly covered in fenced grass paddocks used for grazing cattle. Although the site appears cleared of most of the original native

vegetation, it does not appear to have been developed for any other use in the past.

There is a residential building and garage located at the Gillingham Road entrance. A large shed is located near the Gillingham Road entrance, which is used to house farm equipment and a tractor. There is also a very large hay shed located amongst the large grove of Totara trees towards the north-western section of the site.

For ease of access of livestock and farm machinery the watercourse is bridged in places by concrete culverts. The remains of what appears to be an old concrete weir were observed within the south-eastern portion of the stream.

Water troughs are scattered throughout the site, which are fed by black 30mm diameter PVC flexible piping, which runs down the centre of the site from the entrance, off Gillingham Road.

The presence of an approximately 100mm diameter PVC pipe was noted running from the centre of the site down slope towards the south of the site and exiting near the watercourse. This most probably is transporting ponding water that collects near the livestock water troughs and dirt track in the centre of the site.

A WDC GIS map shows a municipal concrete sanitary sewage pipe is connected to the residential properties along Corks Road and Gillingham Road. The pipe is approximately 400mm in diameter, generally buried beneath the ground surface at varying depths and connected by a series of manholes. The pipe is exposed above ground at various sections along its route where the ground's elevation is too low. This is notable in the north-eastern portion of the site where Waitaua Stream enters the site.

The pipeline runs along the north-eastern boundary of the site, along and crossing Waitaua Stream. The pipeline is supported above ground on concrete piers and is bridging a low-lying section of the stream.

A similar pipeline runs along the bottom of the watercourse joining up with the northern end pipeline where the watercourse joins the Waitaua Stream. Another pipeline runs along the boundary line on the north-western corner of the site where a section of the pipeline runs along the boundary parallel to Gillingham Road. There is also a section of a sanitary sewage pipeline that runs along the boundary parallel to Corks Road that leads into the adjacent school property site.

3.0 PROPOSED DEVELOPMENT

The proposed development is understood to consist of a residential subdivision comprising residential lots of varying sizes.

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It is also understood that it is intended to preserve the existing watercourse and the trees near the north-western corner. The access to the future subdivision will be via vacant access lots on the site's western and southern boundaries, as shown on the attached site plan. Typically, internal roads and Rows' will be required to access the subdivision lots.

In order to undertake the proposed development, some earthworks will typically be required involving cut and fill operations to prepare building platforms and the internal roads. Bridges or culverts may be required to allow vehicle access over the existing watercourse as well as connections to the underground services.

Given the size of the site drainage measures will also be required and are envisaged to utilise the existing watercourse and Waitaua Stream.

4.0 EXISTING DEVELOPMENTS IN THE VICINITY OF THE SITE

Residential properties are present along the site's south-eastern and south-western boundaries as well as along the north-western boundary. The types of buildings vary from lightweight timber frame structures to brick and tile ones.

A new subdivision has been developed near the north-western boundary. The types of buildings under construction were brick and tile over a slab on grade on likely a rib-raft foundation system. The new development included minor cut and fills for the building platforms.

There is also the possibility, since the land is being used as pasture and grazing land, the presence on site of buried silage pits, offal pits, buried animals, dips and rubbish pits even though none were found during the investigation.

5.0 GEOLOGY

In assessing the geology of the site we have referred to the following geological map:

- White, P.J.; Perrin, N.D. 2003. Geology of the Whangarei Urban Area. Scale 1:25000. IGNS Geological Map 26, Lower Hutt, New Zealand.

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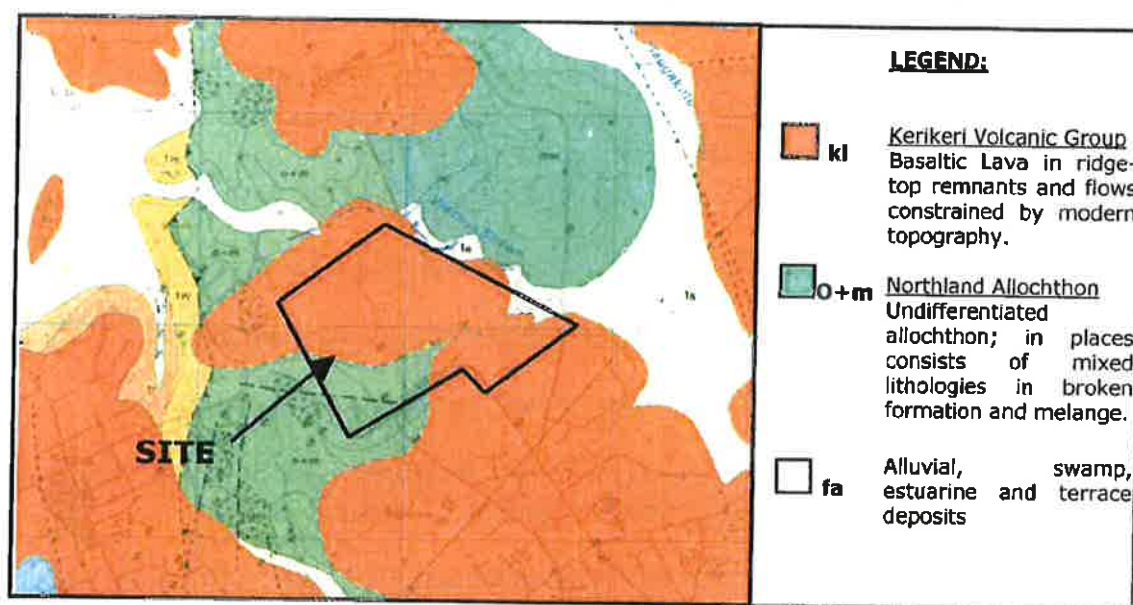


Figure 1: Geological Map of the Site from IGNS, Map 26, 1:25000, 2003.

The geological map, as shown in Figure 1, indicates that the area to the north of the watercourse and bordered by Waitaua Stream is underlain by basaltic lava of the Kerikeri Volcanic Group. On the southern side of the watercourse the site is inferred to be underlain by undifferentiated Northland Allochthon. The formation can include material of the Motatau Complex and the Mangakahia Complex. These materials consist of a mixture of sheared and shattered muddy limestone, calcareous sandstone and mudstone, as well as siliceous mudstone. Alluvial soils including swamp deposits are also shown to be present along the banks of the Waitaua Stream along the site's eastern boundary.

According to the geological map, the age of Kerikeri Volcanic Group has been estimated as Late Pliocene (5-1.8 million years ago) to Late Pleistocene (1.8 to 10,000 years ago). The Northland Allochthon is much older with the age estimated as Early Cretaceous (144 to 65 million years ago) to Early Oligocene (34-24 million years ago). The alluvial deposits are estimated as Pleistocene age.

Areas shown in the geological map to be historic landslides with unknown ages have been identified on the other side of Gillingham Road near the site northeast and southwest corners. The map also shows a short fault line to the southwest of the site, running mostly within the school and extending into the site's south-western corner. There is no available information at the time of writing to indicate whether the fault is active. The fault has not been listed in the GNS "Active Faults Database Web Map".

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6.0 EVIDENCE OF INSTABILITY

No signs of large mass movement on the site were noted. However, numerous shallow-seated slumps and minor erosion channels were observed in the vicinity of the watercourse and Waitaua Stream. The following is a summary of the observations made and assessment made by WDC for each area on this site.

- Area 1: No obvious signs of land instability were observed.
- Area 2: No obvious signs of land instability were observed.
- Area 3: No obvious signs of land instability were observed.
- Area 4: No obvious signs of land instability were observed. However, the site is assessed to have a potential for land movement.
- Area 5: This area has been identified in the WDC GIS map to have minor potential for instability and to be within area designated as Mining Zone 3.
- Area 6: The ground within this area has been identified in the WDC GIS map to have moderate potential of instability and to be within an area designated as Mining Zone 3. Evidence of previous instability was observed in the form of steep slopes and erosional features near the edges of the watercourse.
- Area 7: Evidence of previous instability was observed in the form of steep slopes, and erosion features along the edges of the watercourse.
- Area 8: Evidence of previous instability was observed in the form of near vertical slopes, small amphitheatre shaped erosion features, translational slides and slip/slump debris.

7.0 FIELDWORK

7.1 METHODS

The fieldwork phase of the geotechnical investigation was carried out during the period of 10 to 20 December 2007. It comprised of a site walkover assessment, the excavating of 41 test pits and 5 machine drilled boreholes. Approximate test pit and machine borehole locations can be found on the attached Harrison Grierson Consultants Limited Drawing No. 125904-GE01.

The fieldwork was carried out under the direction of a Geotechnical Engineering Engineer and Technician, who nominated sampling and testing depths, and logged the recovered soil and rock cores. The descriptions of the soils and rocks were logged in accordance with the New Zealand Geotechnical Society (NZGS) Guidelines for Soil and Rock Descriptions.

7.2 MACHINE BOREHOLES

The machine drilled exploratory boreholes were advanced using rotary coring techniques, with in-situ testing by Standard Penetration Test (SPT).

SPT comprises the measurement of the penetration resistance of the soil or rock to a 60kg hammer falling 760mm driving a 50mm diameter split sampler tube or solid nose cone. The number of blows to drive an initial 150mm (for "seating" the apparatus into the testing stratum) is recorded, and similarly the number of blows required to drive the next two increments of 150mm is also recorded.

The number of blows required to drive 300mm following the seating is summed as the Raymond (or "N") number. In cases where the hammer is bouncing on the anvil, and where the resistance results in negligible penetration, or where the total number of blows following "seating" reaches 50, then "SPT refusal" is deemed to have occurred. This is not intended to imply that rock has been encountered, however.

7.3 MACHINE EXCAVATED TEST PITS

The test pits were to be excavated to a target depth of 5.0m below the existing ground level, with in-situ shear vane readings taken on undisturbed soil samples at nominal intervals of 0.5m. The shear vane values obtained from in-situ testing are shown on the attached borehole logs.

7.4 SOIL SHEAR STRENGTH

Shear Vane testing provides a measure of the in-situ shear strength of the soil. The peak and remoulded shear strengths were measured, and the dial readings were corrected in accordance with BS1377. The results are reported in terms of undrained shear strength (c_u , in kPa).

It is important to note, that shear vane testing is only appropriate in soils exhibiting cohesive properties (i.e. clays and silts), shear vane readings in granular soils are not applicable.

In instances where the vane could not be pushed the required 70mm into the intended soil stratum, a strength designation of UTP (Unable To Penetrate) is assigned. On the logs, this is recorded as approximately 229+UTP.

7.5 PIEZOMETERS

Standpipe piezometers (50mm PVC) were installed in two machine boreholes (MB02, and MB03) and were screened from 1.5m and 2.0m bgl respectively to 7.0m bgl. The standpipe piezometers were installed in order to monitor groundwater conditions that may be influential during construction and to assist in stormwater design.

8.0 LABORATORY TESTING

Laboratory testing in accordance with New Zealand Standards NZS 4402:1986 "Methods Of Testing Soils For Civil Engineering purposes" has been carried out by *geolab* (the trading name of the soil laboratory of Harrison Grierson Consultants Limited) on selected samples from the boreholes and test pits. The following tests were carried out:

- Four Particle Size Distribution (hydrometer method) tests
- Four sets of Atterberg Limits and Linear Shrinkage tests
- Three Clay Index tests
- Three Standard Compaction tests

Details of the sample depths and the test results are summarised in tables 4 and 5 in Appendix 1. The full test reports are attached as Appendix 3.

The basic objective of particle size analysis is to determine the composition and distribution of particle sizes within the soils sampled. The objective of the Atterberg Limits, Linear Shrinkage and Clay Index tests is to determine the engineering characteristics of the soils. Standard Compaction tests were undertaken in order to determine the optimum compaction parameters, such as the maximum dry density, optimum moisture content and the relevant percentage of air voids that will be required to set a compaction specification.

The laboratory test results are discussed in the following sections for assessing the characteristics of the subsurface soils, the geotechnical constraints and the engineering solutions.

9.0 GROUND CONDITIONS

9.1 GEOTECHNICAL PROFILE

The results of the machine borehole and test pit investigations were used to assess the ground conditions at this site. Based on the borehole and test pit data there appears to be some discrepancy between the actual ground conditions and the published geological map in some areas of this site. The actual ground conditions encountered are more complex than what is shown in the geological map. The typical soils recovered during the investigation are inferred to be predominantly ash and alluvial soils. The alluvial soils are inferred to be derived from the insitu ash and residual Northland Allochthon soils. Residual soils of the Northland Allochthon Group were encountered. Basalt of the Kerikeri Volcanic Group was encountered at some locations underlying alluvial and ash soils. Siltstone of the Northland Allochthon was also encountered at some locations. Alluvial soils were also encountered overlying

residual soils of the Northland Allochthon in some locations and basalt cobbles and boulders in some other locations. No obvious voids (cavities) were encountered in the investigative boreholes and test pits, in areas 5 and 6 in particular, where these areas are designated to be within a Mining Zone 3 area.

The depositional model of the site, post the deposition of the Northland Allochthon is inferred to include the following:

- The site was underlain by Northland Allochthon residual soils overlying Northland Allochthon rock. Two paleo-gullies were inferred along the existing watercourse and the Waitaua Stream. Residual Northland Allochthon soils were encountered in the borehole (MB02) drilled in the north-western portion of the site.
- Following a regional volcanic event, basalt lava infilled the paleo-gullies which covered the entire areas 3 and 8 as well as the eastern portions of areas 1, 2 and 7. The basalt lava extended to the middle portions of areas 1 and 2 as encountered in boreholes MB03 and MB04.
- Some basalt cobbles and boulders were deposited in the watercourse and Waitaua Stream (areas 7 and 8) and Area 3.
- Alluvial soils derived from Northland Allochthon soils were deposited over the basalt lava and covered the majority of the site.
- Ash soils were deposited on site following another volcanic event in the region. Thick ash deposits are present within area 4 and the western portion of Area 1.
- Alluvial soils derived from volcanic ash were deposited over the basalt lava and covered the majority of the site.

The ground conditions encountered in each area are summarised below:

- Area 1: The majority of the site is underlain by ash over alluvial (Northland Allochthon derived) deposits overlying residual Northland Allochthon at depth. Within the eastern portion, the ground conditions comprise thick alluvial deposits overlying basalt at depth.
- Area 2: The site within the western portion is underlain by ash over alluvial (Northland Allochthon derived) deposits overlying residual Northland Allochthon at depth. Within the eastern portion, the ground conditions comprise thick alluvial deposits overlying basalt at depth.
- Area 3: Thick alluvial deposits (Northland Allochthon and volcanic ash derived), gravely cobbles and boulders, and possibly basalt lava at some locations, at depth.

- Area 4: Ash over alluvial (Northland Allochthon derived) deposits overlying residual Northland Allochthon at depth.
- Area 5: Ash over alluvial (Northland Allochthon derived) deposits overlying residual Northland Allochthon at depth.
- Area 6: Ash over alluvial (Northland Allochthon derived) deposits overlying residual Northland Allochthon at depth.
- Area 7: Alluvial deposits (Northland Allochthon and volcanic ash derived) overlying cobbles and boulders, and possibly basalt lava at some locations, at depth.
- Area 8: Alluvial deposits (Northland Allochthon and volcanic ash derived) as well as swamp deposits were encountered along the banks of the Waitaua Stream. Numerous basalt boulders were observed scattered throughout the banks of the stream. Basalt outcrops were also observed at some locations along the western bank of the stream.

The geotechnical profiles throughout the site are represented by cross sections A-A' through E-E', inclusive. The locations of these cross-sections are shown on the attached HGCL Drawing No. 125904-GE01. The cross sections are shown on the attached drawings 125904-GE02 to GE04 inclusive.

9.2 CHARACTERISTICS OF MATERIALS ENCOUNTERED

The following is a brief characterisation of the soils encountered in the boreholes and test pits.

Topsoil

Topsoil was encountered in the all investigative boreholes and test pits, with layer thicknesses ranging from 100mm at most of the tests locations to 500mm in TP22. The topsoil encountered was generally described as organic silt with trace to minor amounts and clay, dark brown in colour, low to moderately plastic and moist. The topsoil is typically a weak material that will require removal from the footprint of any development apart from landscaping.

Volcanic Ash

Thick deposits of the Kerikeri volcanic ash were encountered in the majority of the boreholes and test pits carried out to the north of the watercourse. The material is generally described as brown to orange silt with minor clays. The insitu shear strength measurements in the boreholes and the test pits in the ash were generally high indicating a stiff to very stiff consistency. The material was described to have a low to moderate plasticity and a moderate sensitivity.

Two ash silt samples were tested in the laboratory (TP12 at 1.0m bgl and TP40 at 1.0m bgl). The results indicate high Liquid Limits (76 and 82%) as well as high Plasticity Indices (37 and 35) for these samples respectively. The Linear Shrinkage for these samples was 19 and 17 respectively. The grading test results confirm the classification of the soils to be clayey sandy silt with clay content in the order of 35%. The Clay Index was 6.2 and 5.7 respectively. The clay content will significantly influence the engineering properties of the ash. The permeability of the silts is therefore assessed to be moderate.

Three standard compaction tests were carried out on samples of TP12 at 1.0m bgl, TP29 at 1.25m bgl and TP40 at 1.0m bgl. The results indicate optimum moisture content (OMC) ranging from 32.5 to 44%, and maximum dry density (MDD) ranging from 1.18 to 1.26t/m³. The laboratory test results indicate that the natural moisture content ranges from 43 to 51%.

Based on the borehole and test pit data, the compressibility of the ash soils at this site is assessed to be generally moderate.

Alluvial Soils

The majority of the alluvial soils encountered in the boreholes and test pits are derived from Northland Allochthon soils. Alluvial soils derived from volcanic ash were also encountered in the low-lying areas. The characteristics discussed here are for the Northland Allochthon derived alluvials.

These Northland Allochthon derived alluvial soils comprise of silts and clays, which were encountered in the majority of the boreholes and test pits underlying the topsoil and ash soils to variable depths throughout the site. The material can be described to be generally brown in some areas and creamy grey in colour in some other areas.

The silts had a variable content of sands and clays intermittently throughout the depth of the boreholes in the test pits. The silts were described to have generally low to moderate plasticity. The clays were described to be generally highly plastic. Two clay samples were tested in the laboratory (MB01 at 8.0m bgl and MB03 at 5.0m bgl). The results indicate very high Liquid Limits (103 and 130%), very high Plasticity Indices (75 and 99) for these samples respectively. The Linear Shrinkage for these samples was high, 20 and 22 respectively. The Clay Index of sample MB01 at 8.0m was 16.5.

The Northland Allochthon residual soils typically include montmorillonite rich clays (in the siliceous soils in particular). These soils are typically highly plastic and have a high susceptibility to shrinkage and swelling with change to the soil moisture content. The alluvials are assessed to retain the properties of the residual soils. The results of the laboratory testing on (MB01 at 8.0m bgl and MB03 at 5.0m bgl) confirm this assessment.

The Residual Northland Allochthon soils are known for their low shear strength and high tendency to creep at relatively moderate slope angles. However, the shear strength measurements in the boreholes and the test pits were generally high indicating a stiff to very stiff consistency with soil sensitivities generally being insensitive to moderately sensitive (<2 to 4). Area 5 and 6 had a sensitive (4 to 8) soil layer between 2.0 and 2.5m bgl as well as the lower regions of area 1 at a depth of 1.5 to 2.0m bgl. Area 3 exhibited an extra sensitive (8 to 16) layer at 2.0m bgl in places. Low shear strengths were recorded in some of the boreholes and test pits, as well as low SPT 'N' values, which indicate the presence of soft zones underlying the site.

The grading tests on the clays indicate a clay content of up to up to 70%. Due to the cohesive nature of the materials of the Northland Allochthon, they typically have low permeability.

Alluvial soils derived of the volcanic ash are also assessed to retain some of the properties of the insitu soils. These soils are much younger than the Northland Allochthon derived alluvials. They are assessed to be generally weaker and have higher susceptibility to erosion in comparison to the Northland Allochthon derived alluvials.

Alluvial soils within shallow depths below ground level are typically normally consolidated. Based on the borehole and test pit data, the compressibility of the alluvial soils at this site, except soils within areas 7 and 8, is assessed to be generally moderate. Within areas 7 and 8, the shallow depth alluvial soils are assessed to have high compressibility.

Cemented Silt

A hard whitish grey silt layer was encountered in some of the test pits that were located randomly scattered on both sides of the watercourse within the central and western portions of the site (TP13, TP15, TP18, TP20, TP22, TP23 and TP27). This layer was initially thought to be residual soils of the insitu Northland Allochthon material. However, as basalt rock of the Kerikeri Formation was encountered below this material in borehole MB03 and MB04, the material was inferred to be possibly cemented calcareous silts of Northland Allochthon derived alluvials.

Residual Northland Allochthon

Residual soils of the Northland Allochthon were not clearly identified in the boreholes and the test pits. However, it was encountered at approximately 9.0m bgl in borehole MB02. The material was characterised by its blocky fabric and the high SPT 'N' values, which ranged between 26 to 28 blows/300mm. These soils are assessed to be very stiff and have low compressibility.

Northland Allochthon rock was not encountered in any of the boreholes and test pits carried out at this site during this investigation.

Cobbles and Boulders

Basaltic rounded and sub-rounded cobbles and boulders were encountered in the test pits that were positioned in areas 3, 7 and 8, particularly in the flood potential zones. The test pits that cobbles and gravels were encountered are; TP01, TP03, TP06, TP08, TP11, TP26, TP28, TP30, TP31, TP32 and TP38.

Refusal was encountered at shallow depths during the excavation of some other test pits positioned in areas 3, 7 and 8. As no samples of the hard material were recovered, the hard material was inferred to be either basalt lava or a matrix of cobbles and boulders. These test pits are; TP02, TP04, TP05, TP07, TP10, TP12 and TP14. TP12 is positioned within the lower portion of Area 2.

These cobbles and boulders are believed to be present in matrix of alluvial soils underlain by the Kerikeri Group Basalt. The boulders in some test pits were able to be excavated however some of the tests pits were ended at shallow depths due to the presence of large numbers of cobbles and boulders that were encountered.

The material will present a problem for foundation excavations if encountered at shallow depth. Although a matrix of cobbles and boulders should generally provide a suitable platform for buildings and embankments, construction would be accompanied with some risk if soft alluvial deposits underlay the cobbles and boulders. This is assessed to be possible in areas 7 and 8.

Basalt

Basalt of the Kerikeri Volcanic Group was encountered at approximately 9.3 and 8.9m bgl in boreholes MB03 and MB04 respectively. Basalt was also inferred to be underlying the cobbles and boulders and/or at the refusal depth encountered in the test pits positioned in areas 2, 3, 7 and 8, as is discussed above.

The basalt lava flow is described as dark grey, strong and moderately to slightly weathered. The measured SPT 'N' values were significantly greater than 50 blows/300mm. Rock Quality Designation (RQD) of the basalt lava was measured to be generally high. Based on our experience, the unconfined compressive strength of basalt is typically high (greater than 3000kPa).

9.3 GROUNDWATER

The depths of the groundwater level as encountered in the test pits and machine boreholes during the fieldwork are recorded in Table 4 in Appendix I. It should be noted that the investigation was carried out during a period of heavy rain. However, summer 2007 was relatively a very dry season.

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Typically, groundwater levels measured in machine boreholes immediately after drilling may not be accurate due to the use of drilling water. Standpipe piezometers were installed in boreholes MB02 and MB03 following drilling. The groundwater level can be measured and monitored to measure the actual groundwater levels. The groundwater levels measured in the test pits are more accurate and were used in establishing inferred groundwater levels shown in the geotechnical cross sections A-A', B-B' and C-C'. It is important to note that groundwater levels and flows are transient, and are affected by such factors as soil and rock permeability, integrity of buried services and preceding climatic conditions.

Below is a general assessment of the likely depth of the groundwater level below the existing ground level in each area established based on the borehole and test pit data:

- Area 1: 4.0 to 5.0m bgl.
- Area 2: 4.0 to 5.0m bgl.
- Area 3: 4.0 to 5.0m bgl in the high areas and 1.0 to 2.0m bgl in the low-lying areas.
- Area 4: 4.0 to 5.0m bgl.
- Area 5: 3.0 to 4.0m bgl.
- Area 6: 4.5 to 5.0m bgl. The groundwater level is expected to be shallower closer to the watercourse.
- Area 7: 2.0 to 3.0m bgl. The groundwater level is expected to be shallower closer to the watercourse.
- Area 8: Generally between 3.0 and 5.0m bgl above the bank. The groundwater level is expected to be shallower closer to the stream.

As mentioned, the groundwater level is expected to be shallower in some locations (areas 6, 7 and 8). This is basically due to the test pits being excavated at some distance away from the water and also due to the presence of impervious mantle of alluvial and residual soils overlying the porous basalt and basalt cobbles and boulder matrix.

10.0 GEOTECHNICAL ASSESSMENT

10.1 GENERAL

The geotechnical assessment and recommendations contained below relate to the existing ground conditions with reference to the inferred concept of the



subdivision development. In this assessment, consideration was made to the requirements of WDC in terms of site stability and suitability for development.

10.2 STABILITY

A qualitative assessment was carried out for the stability of the existing ground profiles on site. A similar approach was used for assessing the stability of the envisaged earthwork profiles of the proposed development as limited earthworks are envisaged to be undertaken as part of the subdivision development and no major cutting and filling will be required.

As discussed in sections 2.2 and 6.0, there are numerous features indicating previous creep movement in the shallow soils towards the watercourse and Waitaua Stream (areas 7 and 8). As these areas are within a flood zone, no development is expected to take place, unless a detailed assessment was carried out. Any earthworks within these areas should be subject to careful assessment and design to avoid influencing the flood capacity of these zones.

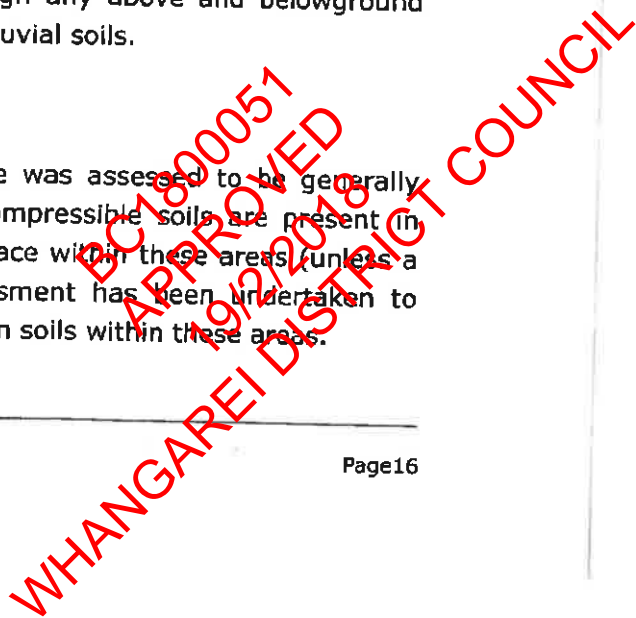
Area 4 has been assessed to be relatively steep. Although no signs of instability were observed, earthworks in this area should be limited to minor reshaping to avoid any risk of instability to the adjacent properties that may result from cutting. There are also areas 5 and 6, which are highlighted by the WDC GIS map to have potential of instability and to be within an area designated as Mining Zone 3. Development in area 6 should be restricted. However, should any cutting be required, earth retention systems (retaining walls) or slope mitigation measures (such as counterfort drains, or palisade pile in-ground wall) will likely be required for both areas.

For areas 1, 2 and 3 the stability of the existing ground profiles appear to be stable at this stage. As limited earthworks are envisaged to take place, we don't envisage that there will be any instability issues for development in these areas.

Nevertheless, due to the site being predominately underlain by Northland Allochthon derived alluvial soils, it would be prudent to allow for creep in the design of earthworks near the boundaries of all the eight areas categorised in this report. It would also be prudent to design any above and belowground structure for the potential of creep within the alluvial soils.

10.3 POTENTIALLY COMPRESSIBLE GROUND

The natural soil strata encountered at the site was assessed to be generally moderately compressible. However, highly compressible soils are present in areas 7 and 8. As no development will take place within these areas (unless a detailed assessment is carried out), no assessment has been undertaken to estimate the potential consolidation settlement in soils within these areas.



Typically, further assessment will be undertaken of the ground settlement issue by a geotechnical engineer during construction. If soft alluvial soils and non-engineered fill is encountered during earthworks, depending on the thickness of the deposits, the materials should be:

- Excavated and either sorted or removed from site and replaced/compacted to the design level with additional soils sourced onsite, or
- The materials are improved by methods such as preloading or dynamic compaction.

10.4 BEARING CAPACITY

Except areas 7 and 8, the subsurface soils are assessed to have in general a geotechnical ultimate bearing capacity of 300kPa for shallow foundations founded at 0.6m below the existing ground level. The allowable and dependable bearing capacity is assessed to be 100kPa and 150kPa respectively.

As limited earthworks is envisaged to take place as part of the site development, this assessment will still apply for shallow foundations in areas 1 to 6, subject to further investigation and assessment for each building platform.

If pile foundations will be required, for bridges crossing the watercourse for instance or for buildings, piles can be designed to geotechnical ultimate end bearing capacity of 540kPa if embedded in soils. The allowable and dependable end bearing capacity is assessed to be 270kPa and 180kPa respectively. The geotechnical ultimate shaft resistance is estimated to be in the order of 40kPa. The allowable and dependable shaft resistance is assessed to be 20kPa and 13kPa respectively.

10.5 EXPANSIVE SOILS

Expansive soils are clays and silts that undergo significant volume change (swelling and shrinking) in response to changes in the soil moisture content.

The effect of such changes is to cause distortion of inflexible construction materials due to desiccation and shrinkage of the surface layers, with the consequent loss of support. Such effects can generally not be entirely eliminated, but with careful design and choice of appropriate building materials, they can be minimised.

With reference to NZS3604: 1999 "Light Timber-Framed Buildings" soils with Liquid Limit (LL) greater than 50% and Linear Shrinkage (LS) greater than 15% are classified as expansive.

As discussed in Section 9.2, both the ash and alluvial soils (whether ash or Northland Allochthon derived) are assessed to be expansive based on the Liquid

Limit and the Linear Shrinkage determined on samples of both materials tested. The ash silt samples are classified as moderately to highly reactive (M to H) soils, "which can experience moderate to high ground movement from moisture change". The Northland Allochthon clay samples are classified as highly reactive (H) soils, "which can experience high ground movement from moisture change".

The potential effects of expansive soils must therefore be taken into consideration in the foundation design of residential buildings on this site.

10.6 COMPLIANCE WITH THE DEFINITION OF "GOOD GROUND"

Residential buildings for the proposed subdivision development will typically be in accordance with NZS3604: 1999 "Light Timber-Framed Buildings". NZS 3604:1999 includes details for "standard" footings constructed on "good ground". The definition of "Good Ground" in NZS3604: 1999 is as follows:

"Any soil or rock capable of permanently withstanding an ultimate bearing capacity of 300kPa (i.e. an allowable bearing pressure of 100kPa using a factor of safety of 3.0), but excludes":

- a) Potentially compressible ground such as topsoil, soft soils such as clay which can be moulded easily in the fingers, and uncompacted loose gravel which contains obvious voids;
- b) Expansive soils being those that have a liquid limit of more than 50% when tested in accordance with NZS 4402 Test 2.2, and a linear shrinkage of more than 15% when tested in accordance with NZS 4402 Test 2.5, and
- c) Any ground which could foreseeable experience movement of 25mm or greater for any reason including one or a combination of:
 - Land instability
 - Ground creep
 - Subsidence
 - Seasonal swelling and shrinking
 - Frost heave
 - Changing groundwater level, erosion
 - Dissolution of soil in water, and
 - Effects of tree roots

Based on the results of the field investigation and laboratory testing, it is considered that the soils at the site do not satisfy the definition of "Good Ground", with respect to items a), b) and c) above.

11.0 RECOMMENDATIONS

11.1 SUITABLE BUILDING AREAS

Based on the results of the geotechnical assessment the suitability of different areas of the site has been assessed and summarised below.

- Area 1: The area is generally suitable for residential development taking into account the potential effects of swell-shrinkage and differential settlement in the foundation design and subject to further investigation within the footprint of each building platform.
- Area 2: The area is generally suitable for residential development taking into account the potential effects of swell-shrinkage and differential settlement in the foundation design and subject to further investigation within the footprint of each building platform.
- Area 3: The area is generally suitable for residential development taking into account the potential effects of swell-shrinkage and differential settlement in the foundation design and subject to further investigation within the footprint of each building platform.
- Area 4: This area can be developed in a similar way to areas 1, 2 and 3 and subject to further investigation within the footprint of each building platform. However, the foundations should be specifically designed for a potential creep in the soils due to the moderate sloping of the existing ground. Earthworks should be minimised as much as possible to avoid cutting along the boundaries of the existing residential properties. Should significant cutting (greater than 0.5m in depth) be required, and then a retaining wall should be specifically designed to avoid exposing the cut for a length of time without support.
- Area 5: This area can be developed in a similar way to areas 1, 2 and 3 and subject to further investigation within the footprint of each building platform. However, the foundations should be specifically designed for potential creep in the soils due to the moderate sloping of the existing ground. Earthworks should be minimised as much as possible to avoid cutting along the boundaries with the existing residential properties and school. Should significant cutting (greater than 0.5m in depth) be required, then a retaining wall should be specifically designed to avoid exposing the cut for long term without support.

- Area 6: Buildings should be restricted in this area due to the potential instability and flooding issues unless a detailed assessment is carried out.
- Area 7: Buildings should be restricted in this area due to the potential instability and flooding issues unless a detailed assessment is carried out.
- Area 8: Buildings should be restricted in this area due to the potential instability and flooding issues unless a detailed assessment is carried out.

Development within areas suitable for building should be constructed in accordance with the New Zealand Building Code and relevant standards. These areas do not require remedial action against slope instability unless earthworks will involve significant cutting and filling. Buildings should not be constructed on slopes with a gradient steeper than 1V:3H without specific geotechnical investigation and structural design.

11.2 GEOTECHNICAL SOIL AND ROCK PARAMETERS

The following soil and rock parameters are estimated based on the borehole and test pit data and are presented here only for preliminary analysis and design purposes.

Table 1: Soil and Rock Parameters				
Material	Unit Weight γ (kN/m ³)	Effective Cohesion c' (kPa)	Effective Friction Angle ϕ' (°)	Undrained Shear Strength S_u (kPa)
Ash	18	5	30	80
Alluvium (Ash Derived)	17	3	28	60
Alluvium *(Northland Allochthon derived) FOR SLOPE STABILITY ANALYSIS	17	0	25	30
Alluvium (Northland Allochthon derived) FOR BEARING CAPACITY	17	3	28	60
Residual Northland Allochthon	18	5	30	80
Basalt	22	500	50	1500

* - The behaviour of the soil varies depending on the orientation of the applied stresses.

If the earthworks will involve substantial cutting and filling, then it is recommended that further geotechnical assessment and testing is carried out to provide refined parameters for the detailed design of earthworks.

Construction of temporary steep cut batters to allow construction of retaining walls is a common practice. We are unable to make any recommendations with regard to how long a cut face will remain stable, due to the large number of

variable parameters involved that cannot be readily assessed. Consideration should be given to temporary support of excavations where practicable.

The selection of safe temporary cut slopes is therefore at the discretion of the contractor based on the soils encountered in the excavated face, surcharges, prevalent weather conditions, season or time of year, and their previous experience with these types of soils.

Wet weather may cause an increase in soil pressure and potentially cause instability in the cut slope. It is with that in mind that we make the following recommendations:

Protection of the cut slopes against infiltration and overland flow should be incorporated while unretained during construction.

All excavations of the cut slopes are to be completed in stages. It is suggested that retaining walls are completed during these stages in order to protect the exposed slope from collapse.

11.3 FOUNDATIONS AND RETAINING WALLS

The preliminary design of foundations (for residential buildings and small bridges) and retaining walls can be carried out using the parameters summarised in Table 1 above.

The design for shallow and deep foundations should be carried out in accordance with the New Zealand Building code and the relevant standards (NZS3604: 1999). Capacity reduction factors must be applied in accordance with the building code. Preliminary design parameters are also provided in Section 10.4.

Where only minor cut and fill will be required, residential buildings can be designed using a rib-raft system or short piles if assessed suitable by the structural engineer.

The design of the retaining walls can be based on Rankin active and passive earth pressures where deflections of up to 10% of the wall height are tolerable. Where zero deflection is required, then the earth pressures will need to be assessed based on at-rest (K_0) conditions.

All surcharge, including loading due to sloping backfill and dead and live loads on the supported slope are to be assessed.

Due to the geotechnical issues at this site, a cantilever timber pole wall system constructed in staged excavation is assessed as the most suitable and practical.

Any other relevant criteria should also be assessed by the designer of the foundations and the retaining walls. The parameters in Table 1 can be modified by further specific investigation for each building platform.

11.4 SLOPE STABILITY

Following the preparation of a concept earthworks plan the stability of the site will require re-evaluation and if necessary (for significant cuts and fills) slope stability analysis to be carried out for any proposed cuts and fills. The analysis should be carried out using a computer program such as Slope/W or similar capable of undertaking Limiting Equilibrium Analysis for different groundwater scenarios. These scenarios will include normal and elevated groundwater levels. Surcharge loads will be applied as required. For slope stability analysis, the parameters provided in Table 1 can be used as a preliminary stage.

11.5 EARTHWORKS

All earthworks required to develop the site should be undertaken to the requirements of NZS 4431:1989 "Code of Practice for Earthfill for Residential Development" and must be carried out under the control of an Engineer experienced in earthworks construction and familiar with the contents of this report.

Particular attention should be paid to all earth moving operations undertaken adjacent to Restricted Building Areas (flood zone) in order to mitigate the potential for activating slope instability. (HGCL drawing No. 125904-GE05).

11.5.1 Site Preparation

The following suggested site preparation measures are provided for inclusion into the earthworks program where the natural ground surface is to be subject to earthworks.

- Strip all vegetation, topsoil and root-affected soil and stockpile for landscaping purposes or else remove from the site.
- Excavate to the design level in areas of cut (if any). Excavations deeper than 0.5m should be observed by an Engineering Geologist or Geotechnical Engineer during construction in order to advise of potential instability due to defects of unforeseeable orientation. Adequate temporary or permanent support is to be engineered for all natural slopes and excavations unless battered flatter than 1V:3H and protected against erosion.
- Proof-Roll the exposed surface in the presence of a Geotechnical Engineer or experienced soil technician in order to detect any soft/loose zones that should be either excavated and replaced with approved material or else subjected to engineered ground improvement techniques.

11.5.2 Excavation

Excavations may be required following preliminary earthworks. Excavations in engineered fills and firm to stiff natural soils should be supported by an engineer-designed retaining wall or else battered at 1V:3H, or flatter and protected against erosion. The maximum depth of excavations without specific geotechnical appraisal is to be 0.5m. Excavations should not be carried out at the toe of slopes without specific geotechnical assessment.

Due to the presence of cobbles and basalt at the site, cognisance should be taken of their possible implications upon earthworks and subsequent development. In particular, the need for specialised equipment required for their removal and complications associated with the installation of services and or drainage. It is also recommended that all boulders be removed prior to backfilling service trenches and replaced with compacted hardfill or suitable soils sourced onsite, where appropriate.

Other precautions that should be addressed include the avoidance of external load from construction vehicles and unearthed spoil being stockpiled too close to excavations. Upon construction, particular attention should be paid to the prevention of excessive surface water entering the excavations. This can largely be achieved through prudent placement of plastic sheeting along trench margins.

11.5.3 Filling

Filling, where required, should be placed in accordance with the guidelines stated in Section 11.5.

As a general rule, soils compacted to $\pm 3\%$ of it's optimum moisture content generally achieve a reasonable compaction level provided normal compactive effort is applied. For natural soils outside this range, drying or wetting is generally required.

Based on the laboratory test results and as discussed in Section 9.2, the natural moisture content of the insitu soils appears to be generally on the wet side of the optimum.

The following are the preliminary compaction parameters to be used as a guide during the fill operations:

Optimum Moisture Content = 40 to 47%

Maximum Dry Density = 1.18 to 1.27t/m³

% Of Air Voids at Optimum Moisture Content = 5 to 7%

Undrained Shear Strength at Optimum Moisture Content = 184 to 194kPa

Fill should be supported by an engineer-designed retaining wall or else battered at 1V:3H or flatter, and protected against erosion.

Details of filling earthworks in excess of 0.5m vertical are to be provided to a Geotechnical Engineer in order to assess the impact on the stability of the works.

11.6 PAVEMENTS AND ROADING

11.6.1 Pavements

Based on the information gathered across the site, it is suggested that the design of pavements should be based on a preliminary design subgrade California Bearing Ratio (CBR) of 5%. All pavements should be designed with adequate engineered drainage.

This value may be reviewed depending on the earthworks plan and compactive effort anticipated on engineered earthfill during bulk earthworks.

11.6.2 Roading

A minimum shoulder width of 2.0m is required either side of any proposed roadway in order to provide a suitable setback from the crest of the batter to the roadway against potential slope instability of surficial soils. This minimum shoulder width is also required to provide adequate space for trenching of potential services that may need to be placed.

It is anticipated that roading culverts are to be possibly constructed over the waterway that runs the length of one end of the site.

The drainage measures for the culverts should be designed and constructed in cognisance of the statements made in Section 11.5, a batter slope of 1V: 3H is considered appropriate for the fill material anticipated (i.e - sourced onsite).

11.7 STORMWATER DISCHARGE

On-site trench soakage of stormwater is considered inappropriate, due to the potential geotechnical issues. Stormwater should be collected from each building developed in the future and discharged to the local stormwater system, which may include the existing watercourse and Waitaua Stream.

Appropriate scour protection must be provided for all open drains, culvert outlets and overland flowpath routes. If inadequate attention is paid to scour protection, small drains can possibly become very rapidly deep chasms.

12.0 CONCLUSIONS

Based on the results of the geotechnical investigation and assessment, the site is suitable for the proposed residential subdivision development providing that the recommendations made in this report are followed. The following is a summary of the main results and recommendations:

- The site has been divided into eight areas based on the ground conditions encountered and the geotechnical issues assessed.
- The typical soils encountered during the investigation, comprise generally Kerikeri volcanic ash overlying alluvial soils and basalt. The alluvial soils are derived from the insitu ash and residual Northland Allochthon soils. Residual soils of the Northland Allochthon were encountered at depth underlying the alluvial soils in the north western corner of the site. Basalt of the Kerikeri Volcanic Group was encountered at the eastern and south eastern areas of the site underlying alluvial and ash soils.
- Groundwater was encountered in most of the investigation boreholes and test pits. The water table is deep (3.0 to 5.0m bgl) within the majority of areas within the central and western portions (areas 1, 2, 4 and 5) as well as in the western portion of Area 3. The water table is shallower (2.0 to 3.0m bgl) within the lower portions of the site (ie areas 7 and 8 and the eastern portion of Area 3). These areas are in the vicinity of the watercourse and Waitaua Stream.
- No obvious voids (cavities) were encountered in the boreholes and test pits positioned in areas 5 and 6, where these areas are shown on the WDC GIS map to be within a Mining Zone 3.
- There are no current issues in regards to instability in areas 1,2 and 3 in general as well as in Area 4. However, due to moderate steepness and the presence of existing buildings on the uphill side of Area 4, instability could be a potential if earthworks were to be undertaken. The ground within areas 5 and 6 has been identified in the WDC GIS map to have minor and moderate potential of instability according to the WDC GIS map. Instability is evident in areas 7 and 8, which are within a flood zone according to the WDC GIS map.
- Nor major cuts and fills are envisaged to be required for the proposed residential subdivision development at this site. The stability of the site based on the concept earthworks plan will require evaluation and detailed slope stability analysis for significant cuts and fills.
- A geotechnical ultimate bearing capacity of 300kPa has been estimated for shallow foundations founded at 0.6m below the existing ground level.

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Recommended design parameters for shallow and deep foundations are provided.

- The natural alluvial soils encountered in areas 1 to 6 are assessed to have in general moderate compressibility. The natural alluvial soils encountered in areas 7 and 8 are assessed to have high compressibility.
- Laboratory tests carried out on samples of the ash silts and the Northland Allochthon derived alluvials indicate the materials to be moderately to highly reactive (M-H) highly reactive (H), respectively.
- The soils at the site do not satisfy the definition of "Good Ground" as defined in NZ 3604:1999. The proposed residential development on this site will therefore require a specific foundation design to AS 2870:1996 requirements.
- A rib-raft slab or short pile is likely to be required for residential buildings for reasonably level platforms where minor cut and fill has taken place, in accordance with recommendations made above regarding the suitability of areas 1 to 8 for development and subject to assessment by a structural engineer.
- Areas 1, 2 and 3 are generally suitable for residential development taking into account the potential effects of swell-shrinkage and differential settlement in the foundation design and subject to further investigation within the footprint of each building platform.
- Any development within areas 4 and 5 can be undertaken in a similar way to areas 1, 2 and 3 subject to further investigation within the footprint of each building platform. The foundations will require specific design for potential creep in the soils. Earthworks should be minimised as much as possible to avoid cutting along the boundaries with the existing residential properties and school. A retaining wall will be required for cuts greater than 0.5m in depth.
- Due to the potential instability and flooding issues, buildings should be restricted in areas 6, 7 and 8 unless a detailed assessment is carried out.
- For any earth retention works a cantilever timber pole walls constructed in staged excavations is assessed to be the most suitable and practicable wall system. Soil parameters are provided for the purpose of preliminary design. Any retaining wall design will require specific geotechnical investigation to confirm the design parameters.
- Laboratory test carried on soils samples collected from shallow depths are assessed suitable for standard earthworks operations subject to adjustment of the moisture content. In some areas (in the vicinity of the

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watercourse and Waitaua Stream in particular), the insitu soils will require significant drying prior to use in the fill operation.

- All earthworks should be undertaken to the requirements of NZS 4431:1989, and be carried out under the control of an Engineer experienced in earthworks construction and familiar with the contents of this report. Recommended specifications are provided together with preliminary compaction parameters.
- Earth filling should be monitored on the basis of % compaction as well as soil undrained shear strength testing or scala penetrometer testing, with additional monitoring of moisture contents.

13.0 LIMITATIONS

This report has been prepared for the particular project described to us and its extent is limited to the scope of work agreed between the client and Harrison Grierson Consultants Limited. No responsibility is accepted by Harrison Grierson Consultants Limited or its directors, servants, agents, staff or employees for the accuracy of information provided by third parties and/or the use of any part of this report in any other context or for any other purposes.

The recommendations and opinions contained in this report are based on our visual reconnaissance of the site, information from geological maps, and the data from the field investigation. Inferences about the nature and continuity of sub surface conditions away from and beyond the borehole logs are made, but cannot be guaranteed. The descriptions detailed on the borehole logs are based on the NZ Geotechnical Society Guidelines for the Field Description of Soils and Rocks for Engineering Purposes.

During construction, an engineer competent to judge whether the conditions are compatible with the assumptions made in this report should examine the site. In all circumstances, if variations in the sub surface conditions occur which differ from those described or assumed to exist, then the matter should be referred back to Harrison Grierson Consultants Limited.

This report is for the use by Tasmaster Investment Limited only, and should not be used or relied upon by any other person or entity or for any other project, with the exception that the relevant Territorial Authority and Regional Council can rely on it for the purpose of processing those consent applications for which this report has been prepared.

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Form 7

Code Compliance Certificate BC1800051

Section 95, Building Act 2004

Issued: 28 September 2018

The Building

Street address of building: 56 Bush Haven Drive
Kamo 0112

Legal description of land where building is located: LOT 45 DP 507433

LLP: 129224

Building name: N/A

Location of building within site/block number: N/A

Level unit number: N/A

Current, lawfully established use: Detached Dwelling

Year first constructed: 2018

The Owner

N J Erceg
L C Erceg
56 Bush Haven Drive
Kamo 0112

Phone number: N/A

Mobile number: 0210722192

Facsimile number: N/A

Email address: nickerceg1@gmail.com

Website: N/A

First point of contact for communications with the building consent authority:

Contact Person

GM Projects Limited
PO Box 10424
Bayfair
Mount Maunganui 3152

Phone number: 075749009

Mobile number: 0275020906

Facsimile number: N/A

Email address: N/A

Website: N/A

Street address/registered office: 56 Bush Haven Drive
Kamo 0112



Building Work

Building Consent Number:

Issued by:

New Dwelling

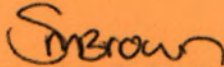
BC1800051

Whangarei District Council

Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that -

- (a) The building work complies with the building consent.



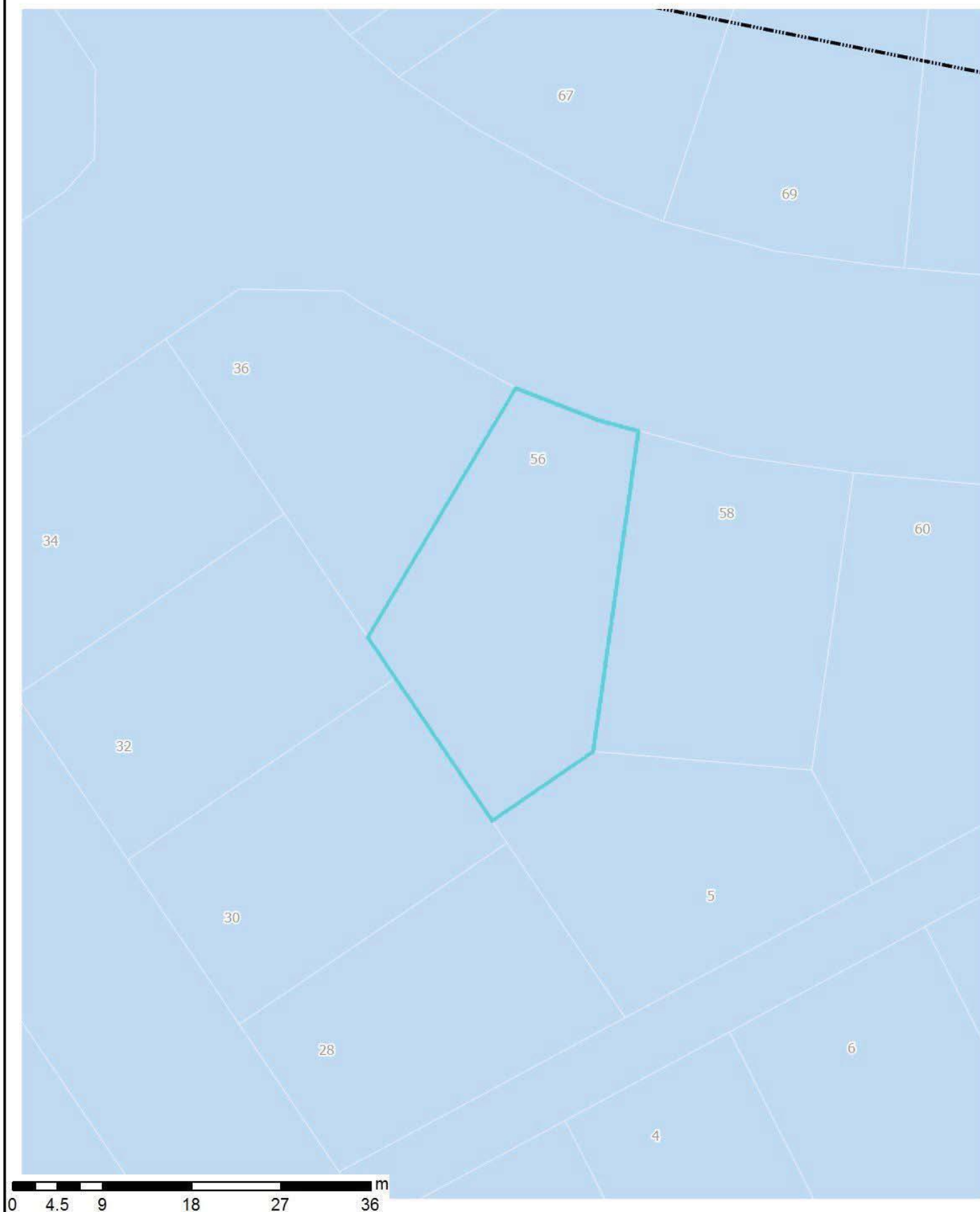
Stephanie Brown

Support Assistant – Building Processing
On behalf of Whangarei District Council

28 September 2018

Date

Operative District Plan - Environments



Wednesday, February 9, 2022

Scale: 1:500



The information displayed is schematic only and serves as a guide.

It has been compiled from Whangarei District Council records and is made available in good faith but its accuracy or completeness is not guaranteed. Cadastral Information has been derived from land Information New Zealand's (LINZ) Core Record System Database (CRS).

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Operative District Plan – Map Legend

Environment Maps

	Northpower Critical Overhead Lines CEL		Strategic Rural Industry
	Northpower Critical Underground Lines CEL		Fonterra Kauri Milk Processing SRIE – Ancillary Irrigation Farms
	Multi Title Site		Business 1
	Rescue Helicopter Flight Path		Business 2
	State Highway		Business 3
	Arterial Road		Business 4
	Collector Road		Town Basin
	Local Road		Port Nikau
	Designation		Marsden Point Port
	Scheduled or Overlay Area: S# label		Airport
	Oil Refinery Overlay		Living 1
	Living Overlay		Living 2
	Rural (Urban Expansion)		Living 3
	Rural Living		Kamo Walkability
	Rural Production		Marsden Primary Centre
	Rural Village Centre		Urban Transition
	Rural Village Industry		Ruakaka Equine
	Rural Village Residential		Open Space
			Papakāinga <small>Rule PKA 1.5.1 indicative only, Main Land Court data</small>
			Future Marine Village
			Future Environment <small>The colour indicates the particular environment</small>

Resource Areas Maps

	Notable and Public Trees		Coastal Area
	Heritage Buildings, Sites & Objects		Outstanding Natural Feature
	Sites of Significance to Maori		Outstanding Natural Landscape
	Building Line Restriction		
	Esplanade Priority Area		
	Runway		
	Air Noise Boundary		
	Outer Control Boundary		
	Coastal Hazard 1		
	Coastal Hazard 2		
	Flood Susceptible Areas		
	Mining Hazard Area 1		
	Mining Hazard Area 2		
	Mining Hazard Area 3		
	Scheduled Historic Area		
	Scheduled Area or Overlay Area		
	Fonterra Noise Control Boundary		
	Helicopter Hovering Area		
	QRA Quarrying Resource Area		
	QRA Mining Area		
	QRA Buffer Area		
	QRA 500m Indicative Setback		
	Goat Control Areas		

Coastal Areas Maps

	Coastal Area
	Outstanding Natural Character Area
	High Natural Character Area

All District Plan Maps

	Northpower Tower CEL-Cat1
	National Grid Tower
	Northpower Overhead Critical Line Cel-Cat1
	National Grid Line
	Indicative Road
	Coastline
	Coast, rivers and streams

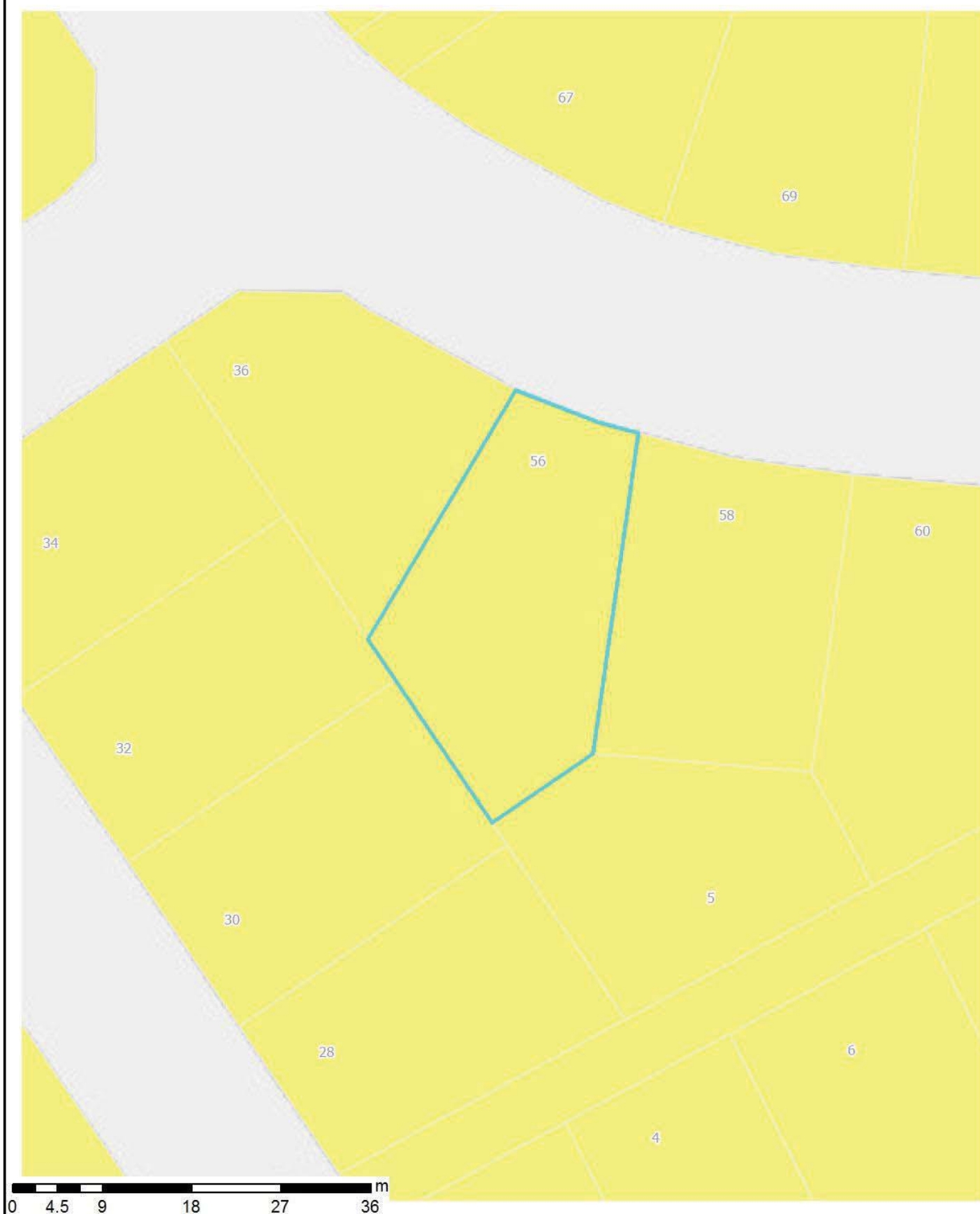
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District Plan Appeals Version - Zones



Wednesday, February 9, 2022

Scale: 1:500



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District Plan Appeals Version – Map Legend

Zone Maps

	Northpower Critical Overhead Lines CEL		Ruakaka Equine Zone
	Northpower Critical Underground Lines CEL		Large Lot Residential Zone
	Multi Title Site		Low Density Residential Zone
	Rescue Helicopter Flight Path		General Residential Zone
	Designation		Medium Density Residential Zone
	Papakāinga <small>Rule PKA 1.5.1 indicative only; Maori Land Court data</small>		Neighbourhood Centre Zone
	Precincts and Development Areas		Local Centre Zone
	Rural (Urban Expansion) Zone		Commercial Zone
	Rural Living Zone		Shopping Centre Zone
	Rural Production Zone		Mixed Use Zone
	Rural Village Centre Sub-Zone		Waterfront Zone
	Rural Village Industry Sub-Zone		City Centre Zone
	Rural Village Residential Sub-Zone		Light Industrial Zone
	Strategic Rural Industries Zone		Heavy Industrial Zone
	Fonterra Kauri Milk Processing SRIE – Ancillary Irrigation Farms		Airport Zone
	Marsden Primary Centre		Hospital Zone
			Port Zone
			Development
			Open Space Zone
			Sport and Active Recreation Zone
			Natural Open Space Zone

Appeals

	NZTA and KiwiRail
	Kainga Ora
	Other

Resource Areas Maps

	Notable and Public Trees		Flood Susceptible
	Heritage Buildings, Sites & Objects		Mining Hazard Area 1
	Sites of Significance to Maori		Mining Hazard Area 2
	Runway		Mining Hazard Area 3
	Air Noise Boundary		Scheduled Historic Area
	Outer Control Boundary		Fonterra Noise Control Boundary
	Esplanade Priority Area		Helicopter Hovering Area
	Coastal Hazard 1		QRA Quarrying Resource Area
	Coastal Hazard 2		QRA Mining Area
	Strategic Railway Line Protection Area		QRA Buffer Area
	Strategic Road Protection Area		QRA 500m Indicative Setback
	Indicative Road		Goat Control
	Road Hierarchy		Coastal Area
	National		Outstanding Natural Feature
	Regional		Outstanding Natural Landscape
	Arterial		
	Primary Collector		
	Secondary Collector		
	Low Volume		
	Access		

Coastal Areas Maps

	Coastal Area
	Outstanding Natural Character Area
	High Natural Character Area

All District Plan Maps

	Northpower Tower CEL-Cat1
	National Grid Tower
	Northpower Overhead Critical Line Cel-Cat1
	National Grid Line
	Coastline
	Coast, rivers and streams

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