16 November 2023

Robyn Dene Lewis
40 Victoria Street,
Coromandel

EMAIL TO: thames@bayleys.co.nz

Dear Sir/Madam

Land Information Memorandum: 40 Victoria Street Coromandel

Attached is the land information memorandum as requested. This provides information held by Council relating to this site and is provided in relation to section 44A of the Local Government Official Information & Meetings Act 1987.

The memorandum comes from a search of the Council's records only. Your attention is drawn to the terms of the disclaimer attached to the memorandum.

If you have any further queries regarding this property, please contact Council's Customer Service Representatives.

Yours faithfully

M Benton

Maureen Benton
Land Information Officer
LAND INFORMATION TEAM

THAMES-COROMANDEL DISTRICT COUNCIL
LAND INFORMATION MEMORANDUM

DISCLAIMER

This Land Information Memorandum has been prepared for the purposes of section 44A of the Local Government Official Information & Meetings Act 1987 and contains information found by the Council to be relevant to the land as described in section 44A (2). It is based on a search of Council records only and there may be other information relating to the land, which is unknown to the Council. Council records may not show illegal or unauthorised building or works on the property. The applicant is responsible for ensuring that the land is suitable for a particular purpose. The memorandum does not include information found or recorded on records of title and does not replace a search of the title or titles for the property or a physical inspection of the property. Council does not accept any responsibility for the accuracy or otherwise of information supplied by third parties whether that be way of reports, letters or other forms of communication.

PROPERTY IDENTIFICATION

Application Date:	6 November 2023
Property Number:	423536
Property Address:	40 Victoria Street Coromandel
Legal Description:	Lot 3 DP 471265
Area (ha):	0.0854

SECTION A: RATES AND CHARGES

Current Annual Rates Assessed for July 2023 to 2024	$3315.21
Arrears Outstanding: (Any amount accrued prior to current rating year)	0.00

The current annual rates figure is the amount assessed and does not consider any payments made or penalties imposed during the current rating year.

WATER METER CHARGES

Water meters are read every 6 months and the invoice is sent to the owner of the property.

Water Meter Account: 815607	**Meter No: H17au012743**
NB: Final Reading Fee - $35.00 Plus Actual Consumption	
Arrears Outstanding: $0.00	

REGIONAL COUNCIL RATES

This property ***will also be liable for rates from Waikato Regional Council***.
Refer to the web site for details. http://www.waikatoregion.govt.nz/Council/Rates/

NOTE: Tararu, Te Puru, Waiomu, Tapu and Coromandel communities have had works undertaken to alleviate the effects of flood hazards experienced in these areas. The associated cost of these works may be reflected in the assessment of Regional Council Rates for the identified areas of benefit.

SECTION B: PERMIT/CONSENT HISTORY

BUILDING INFORMATION

Permits listed below were issued prior to the Building Act 1991.
Prior to 1992 there was no legal requirement for a final inspection on permits issued.

YEAR	DESCRIPTION OF PERMIT
	No Information Located

Consents listed below were issued under either the Building Act 1991 or the Building Act 2004 shown in Council records and their status. Where the work is signed off as complete it is noted as YES, if not completed or no final inspection has been made then it is noted as NO.

Council issues a code compliance certificate "*CCC*" on any Building consents issued after 1 July 1992 when satisfied that all work complies with the Building Act (1991 or 2004) and any fees applicable have been paid.

A certificate of acceptance *"COA"* can be issued for certain work done after 1 July 1992.
A *COA* has some similarities to a Code Compliance Certificate in that it may provide some verification for a building owner or future owners that part or all certain building work complies with the Building Code.

Copies of any CCC's or COA's issued are attached.

YEAR	CONSENT No	DESCRIPTION OF CONSENT	CCC or COA ISSUED YES / NO
2018	ABA20180266	Construct Single Level Two-Bedroom Dwelling With Solid Fuel Heater.	YES
		No Further Information Located	

Any relevant (approved) permit/consent plans are attached at the rear of this report.
To view further information relating to building permits/consents for this property, please go to our website https://trackconsents.tcdc.govt.nz/ consent tracker - track your application using the property address.

EXEMPT WORK NOTIFICATION, REQUISITIONS, NOTICES OR REQUIREMENTS	
Exempt work notification	NO
Copy attached	N/A
Requisition/notice or requirement	NO
Copy attached	N/A

Form 7
Code compliance certificate
Section 95, Building Act 2004

The building

Street address of building:	40 VICTORIA STREET, COROMANDEL
Legal description of land where building is located:	Lot 3 DP 471265
Building name:	Nil
Location of building within site/block number:	40 VICTORIA STREET, COROMANDEL
Level/unit number:	1
Current, lawfully established, use:	2.0 Housing: 2.0.2 Detached Dwelling
Year first constructed:	2019

The owner

Name of owner:	R D Lewis
Contact person:	R D Lewis
Mailing address:	40 Victoria Street, Coromandel 3506
Street address/registered office:	40 Victoria Street, Coromandel 3506
Phone number:	Landline: Nil Mobile: 0274429922
Daytime:	Landline: Nil Mobile: 0274429922
After hours:	Landline: Nil Mobile: 0274429922
Facsimile number:	Nil
Email address:	robynlewis.earthart@gmail.com
Website:	Nil

First point of contact for communications with the council/building consent authority:
R D Lewis; Mailing Address: 40 Victoria Street, Coromandel 3506 ; Mobile: 0274429922; Email: robynlewis.earthart@gmail.com

Building work

Building consent number:	ABA/2018/266
Description:	Construct new single level two bedroom dwelling with solid fuel heater. Amendment 1: Small retaining wall on end of slab
Issued by:	Thames-Coromandel District Council

Code compliance

The building consent authority named below is satisfied, on reasonable grounds, that -
the building work complies with the building consent.

Signature: David Silva
Position: Building Unit Team Leader - Inspections
On behalf of: Thames-Coromandel District Council
Date: 17 June 2020

ELECTRICAL CERTIFICATE OF COMPLIANCE AND ELECTRICAL SAFETY CERTIFICATE

ELECTRICAL WORKERS REGISTRATION BOARD

Reference/Certificate ID No: Lewis

This form has been designed to be used by licensed electrical workers to certify that installations or Part installations under Part 1 or Part 2 of AS/NZS 3000 are safe to be connected to the specified system of electrical supply.

Location Details: 40 Victoria Street Coromandel.

Contact Details: (Name and address) Robin Lewis (as above)

Name of Electrical worker: David King

Registration/Practising licence number: E5860

Organisation/company: Dave King Electrical Ltd

Phone and email: 0274446274 dkelectrical@xtra.co.nz

Name of person(s) supervised:

CoC

Type of work: ☐ Additions ☐ Alterations ☑ New work

The prescribed electrical work is: ☐ Low risk ☐ General ☑ High risk (Specify): Mains/Switchboard

Reference Standards: ☐ Part 1 of AS/NZS 3000 ☑ Part 2 of AS/NZS 3000

☐ Additional Standards:

Description of Work: (including date/s of work and type of supply system)

Install mains cable + wire new home sept 19. 1PH 230V.

Signature.....

Date.....ABA

I certify that the completed prescribed electrical work to which this Certificate of Compliance applies has been done lawfully and safely, and the information in the certificate is correct in that the installation, or part of the installation:

Select those that apply:

- ☑ Has been installed in accordance with the specified certified design[1]
- ☑ Has an earthing system that is correctly rated (where applicable)
- ☑ Contains fittings that are safe to connect to a power supply
- ☐ Relies on a supplier Declaration of Conformity[1]
- ☐ Relies on a manufacturer's instructions[1]
- ☑ Has been satisfactorily tested in accordance with the Electricity (Safety) Regulations 2010
- ☑ Is safe to connect

Test Results	
Polarity (Independent earth):	✓
Insulation resistance:	100MΩ.
Earth Continuity:	✓
Bonding:	✓
Fault Loop Impedance	.45Ω.
Other (specify):	498A.

Electronic/Other reference: J.A. Russell/Voltex

Certifier's signature:

Date: 5-9-19.

1 Attach or reference. If it is impractical to attach a copy of a particular manufacturer's instructions, or of any certified design or supplier declaration of conformity, provide a reference to where the documents can be found, in a readily accessible format, by electronic means.

ESC

I certify that the installation, or part of the installation, to which this Electrical Safety Certificate applies is connected to a power supply and is safe to use.

Certifier's name: MARK SHEEHAN

Registration/Practising licence number: I268126

Certificate Issue Date: 5-9-19

Connection Date: 5-9-19

VER 04/06/14 This certificate also confirms that the electrical work complies with the building code for the purposes of Section 19(1)(e) of the Building Act 2004.

CUSTOMER COPY – THIS IS AN IMPORTANT DOCUMENT AND SHOULD BE KEPT FOR A MINIMUM OF 7 YEARS

CERTIFIER COPY – THIS IS AN IMPORTANT DOCUMENT AND SHOULD BE KEPT FOR A MINIMUM OF 7 YEARS

Thames-Coromandel District Council
Documentation Reviewed and Approved

Signature.....

Date 6/9/19 ABA 2018/266

GASFITTING CERTIFICATE OF COMPLIANCE – GAS SAFETY CERTIFICATE

Client Name: R Lewis

Reference / Job #: | **ICP (if known):**

Address of work: 40 Victoria St

Suburb: | **Town / City:** coromandel

Description of gasfitting work: (If different gasfitting work was done by different people, state who did what gasfitting.)

Run 20 yellow from 2 Stage reg to IGWH
Run 15 yellow Branch in 32 PVC sleave under floor to gas Hob fit with Bayret & flex.
Reg on post away from Building

Gas supply pressure 2.75 kPa **Risk classification** (tick one) ☐ Low-Risk ☑ General ☐ High-risk

Gas type (tick one) ☐ Natural gas ☑ LPG ☐ Biogas ☐ Other (specify)

The work has been done in accordance with a certified design: ☐ Yes ☑ No

☐ Copy of certified design attached (or provide reference) N/A

The work relies on manufacturer's instructions: ☐ Yes ☑ No

☐ Copy of manufacturer's instructions attached (or provide reference) N/A.

The work has been done in accordance with means of compliance (specify):

☑ Yes – AS/NZS 5601.1 sections 3 to 6 ☑ Yes – AS/NZS 5601.2 sections 3 to 9 ☐ No

Were any other standards required for compliance?

☐ Yes (specify) | ☑ No

Parts of the gas installation that are safe to connect to a gas supply?

☑ All ☐ Parts (specify)

Date or dates on which the work was done: 5.9.19

Name and registration number of anyone who carried out work under supervision: D. Sowerby.

☑ **I confirm that I am satisfied that the work described in this certificate of compliance has been done lawfully and safely, and that the information on this certificate is correct.**

Certifier name: S. Sowerby

Registration number: 11711 **Certificate Issue Date:** 5-9-19

Certifier Signature:

Outline any additional information attached:

☑ **I confirm that the work described in this Gas Safety Certificate, and the installation or part installation is connected to a gas supply and is safe to use.**

Name of person who connected the work: S. Sowerby

Registration number: 11711 **Date of completion:** 5-9-19

Signature:

This certificate confirms that the gasfitting work complies with the building code for the purposes of Section 19(1)(e) of the Building Act 2004.

SWIMMING POOLS:

If the property has a swimming or spa pool, it must be fenced as required by the Building (Pools) Amendment Act 2016.

The Building (Pools) Amendment Act 2016 (the Act) includes an exemption for Small Heated Pools to be compliant without the need for a pool fence, or to be listed on a Council Register.
To qualify for this exemption, the Small Heated Pool must meet the requirements contained in the Act and/or in F9/AS2 "Covers for small, heated pools". Refer to the web site below for further information.

https://www.building.govt.nz/assets/Uploads/building-code-compliance/f-safety-of-users/f9-restricting-access-residential-pools/asvm/f9-restricting-access-to-residential-pools.pdf

POOL REGISTER NUMBER	
No Pool Recorded	

LICENCES & ENVIRONMENTAL HEALTH No Information Located

BUILDING COMPLIANCE SCHEDULE & WARRANT OF FITNESS

If you own a building that contains specified systems, the Building Act requires you to have a Compliance Schedule and you must ensure the effective operation of all the specified systems for the life of the building.

If this property has either Building Warrant of Fitness or Compliance schedule it will be noted as such and copies will be attached.
NOTE: Transfer of ownership MUST be notified to the Council within 14 days.

Refer to web site below for further information.
https://www.building.govt.nz/assets/Uploads/managing-buildings/bwof-guidance/bwof-guidance.pdf

Please Note:
There is ***no*** Compliance Schedule Registered on this property.

EARTHQUAKE–PRONE BUILDINGS

Under the Building (Earthquake–prone Buildings) Amendment Act 2016 Council will be contacting owners of properties that require an initial seismic assessment.

This property may be one of the properties affected.

*The Act applies to commercial buildings and **some** residential buildings.*

Residential buildings are **only** covered under the act if they comprise ***three or more household units being two or more storeys and or are used as hostels, boarding houses, or other types of specialised accommodation.***

POTENTIALLY EARTHQUAKE PRONE BUILDING (PEPB) No Information Located	
Details Attached	**NO**

Please contact Customer Services Thames Coromandel District Council for further details.

PLANNING CONSENTS

YEAR	FILE REF	DESCRIPTION OF CONSENT
2006	SUB20060008	Subdivision to create 65 residential lots, roads to vest in Council, local purposes reserves & esplanade reserves.
2008	SUB20070152	To change the conditions of consent of the approved subdivision (SUB2006.8) to vary the staging of the subdivision & to allow a minor boundary adjustment with the adjoining lot 2 DPS 28253. *(Consent Notice & Plan Attached)*

It is the responsibility of the property owner to ensure that all conditions of any land use consents listed above have been met.

Where a consent notice is registered on the Record of Title, any conditions imposed under that consent notice may be a minimum standard and may be superseded by more onerous standards such as The Thames - Coromandel District Plan or other legislative requirements that have come into force since the imposition of the consent notice.
Contact Thames Coromandel District Council Customer Service Representative if further detail is required.

Planning Consent Decisions, Approved Plans & associated documents can be viewed through our website. http://www.tcdc.govt.nz – select consent tracker - track your application using the file reference number.

The Waikato Regional Council may hold resource consent authorising certain activities on this land. Waikato Regional Council may also hold information pertaining to flooding and other environmental matters which fall within their responsibilities, under current legislation.

THAMES
COROMANDEL
DISTRICT COUNCIL

CONSENT NOTICE PURSUANT TO SECTION 221

RESOURCE MANAGEMENT ACT 1991

IN THE MATTER of Lots 1 - 3, 6, 7 and 24 - 47, 66 - 68 and 70 DP467530 being a subdivision of Lots 2, 3, 6, 7 & 24 DP 397312

AND

IN THE MATTER Subdivision Consent pursuant to Sections 104B, 106 and 108 of the Resource Management Act 1991.

Pursuant to Section 221(1) of the Resource Management Act 1991 the **THAMES-COROMANDEL DISTRICT COUNCIL**, by way of resolution passed on the 8th day of June 2006, and as varied by way of resolution passed on 21st day of January 2008, imposed the following conditions on subdivision decision SUB/2006/8 and variation to subdivision SUB/2007/152 - (DP 471265):

a. An application for a vehicle crossing to serve Lots 1, 6, 7, 24 – 40, 43 – 47, 68 and 70 shall be made to Council at the time of building consent application for a garage or dwelling. The vehicle crossing shall be constructed within six (6) months of Council granting the building consent. The vehicle crossing shall be installed to the standards specified in Council's "Code of Practice and Development" and shall be constructed by an approved vehicle crossing contractor unless specific approval is granted by Council's Roading Manager.

b. Foundation design and stormwater disposal (including on site detention tanks), for Lots 1 – 3, 6, 7, 24 – 47, 66 – 68 and 70 shall be undertaken in accordance with the recommendations contained in the engineer's report by Tonkin & Taylor Ltd., reference 22978/v1, and dated December 2005 and subsequent Tonkin and Taylor letters dated 21 March 2006, 15 May 2006 (2 letters). If an alternative building site is chosen than that in the above report, a further geotechnical investigation shall be submitted for approval at the time of Building consent application.

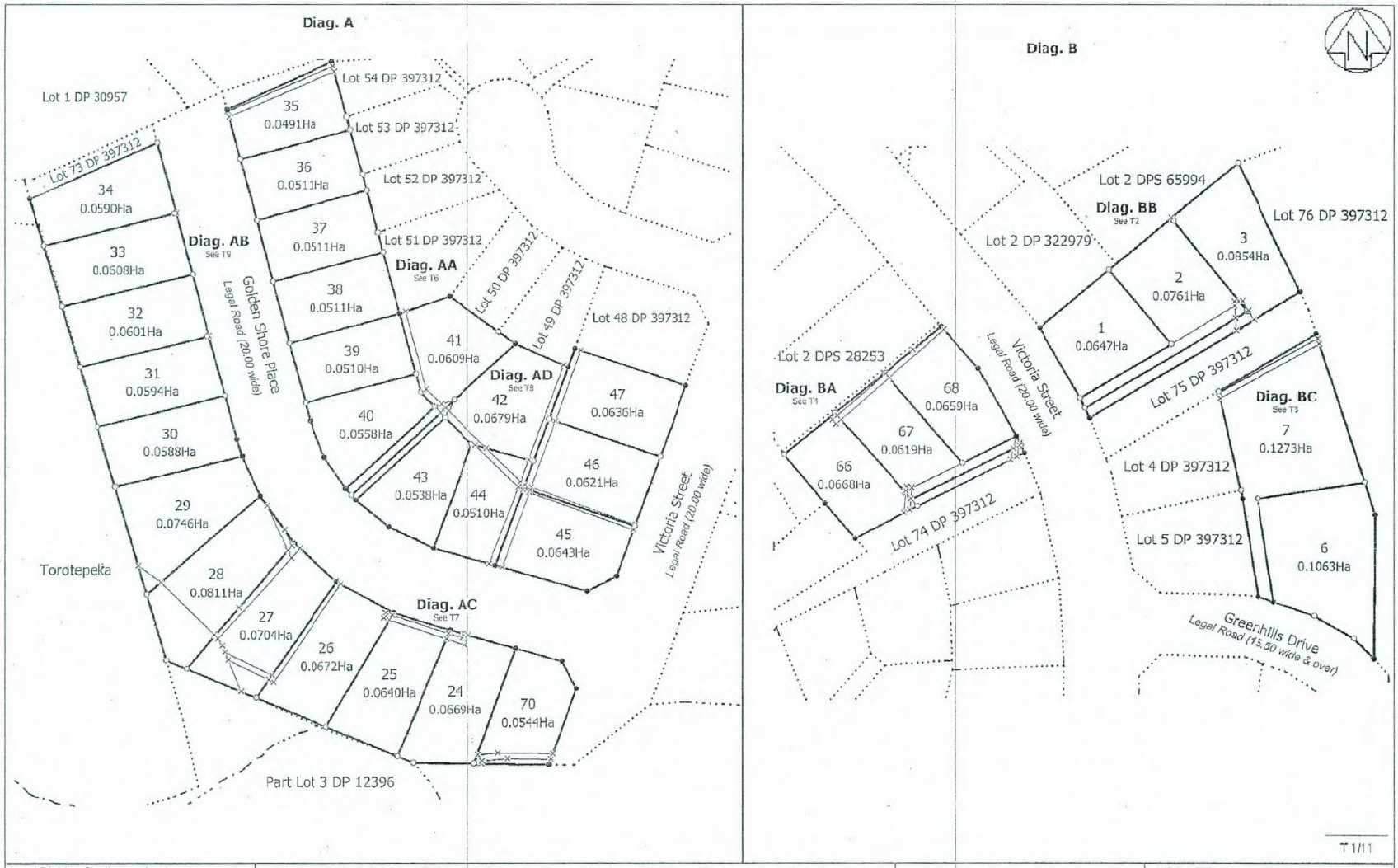
c. Minimum habitable floor level for Lots 1 – 3, 6, 7, 24 – 47, 66 – 68 and 70 shall be at the recommended floor levels contained in the engineer's report by Tonkin & Taylor Ltd., reference 22978/v1, and dated December 2005 and subsequent Tonkin and Taylor letters dated 21 March 2006, 15 May 2006 (2 letters). Floor levels for these lots shall be established by a registered surveyor and surveyor's certification shall be submitted at the time of building consent application.

d. That the Stormwater Management and Maintenance Plan provided for Lots 1 – 3, 6, 7, 24 – 47, 66 – 68 and 70 shall be complied with, on an ongoing basis. At any stage the landowner shall, at the request of Council, provide a report by a Chartered Professional Engineer experienced in stormwater design and management, that reports on and details compliance with the original plan . The same report may also advise on maintenance and improvements that may need to be undertaken to ensure that the original design and requirements of the system are being achieved.

e. Residential development of lots shown to be within the Recreation zone on the TCDC Planning Maps shall be undertaken in accordance with the relevant provisions of the Housing zone – Outside All Policy Areas.

DATED at Thames this 18th day of August 2014.

SIGNED by Authorised Officer
THAMES-COROMANDEL DISTRICT COUNCIL
SUB/2006/8, SUB/2007/152



Land District: South Auckland Digitally Generated Plan Generated on: 27/08/2014 11:07am Page 7 of 17	Lots 1-3,6,7,24-47,66-68 & 70 being a Subdivision of Lots 2,3,6,7 & 24 DP 397312	Surveyor: Nicholas Gordon Davies Firm: Cheel Consultants	Title Plan DP 471265 Deposited on: 18/08/2014

SECTION C: LAND USE INFORMATION

PROPOSED DISTRICT PLAN - APPEALS VERSION

The Council publicly notified its decisions on submissions to the Proposed District Plan on 29 April 2016 and the appeal process closed on 13 June 2016. The impact of the appeals received on the Proposed District Plan is shown in the Proposed District Plan - Appeals Version, available online at **eplan.tcdc.govt.nz/pages/plan/book.aspx?exhibit=tcdc_appeals2016_external**

The appeals version identifies the parts of the Proposed District Plan under appeal; the remainder of the Proposed District Plan can be treated as operative. The equivalent provisions in the Operative District Plan no longer have any effect. For provisions under appeal, both the Operative and Proposed Plan rules will continue to have legal effect until the appeal is resolved.

PROPOSED DISTRICT PLAN - APPEALS VERSION

ZONING: RESIDENTIAL

** The relevant rules can be viewed refer Part VIII Section**: 54**

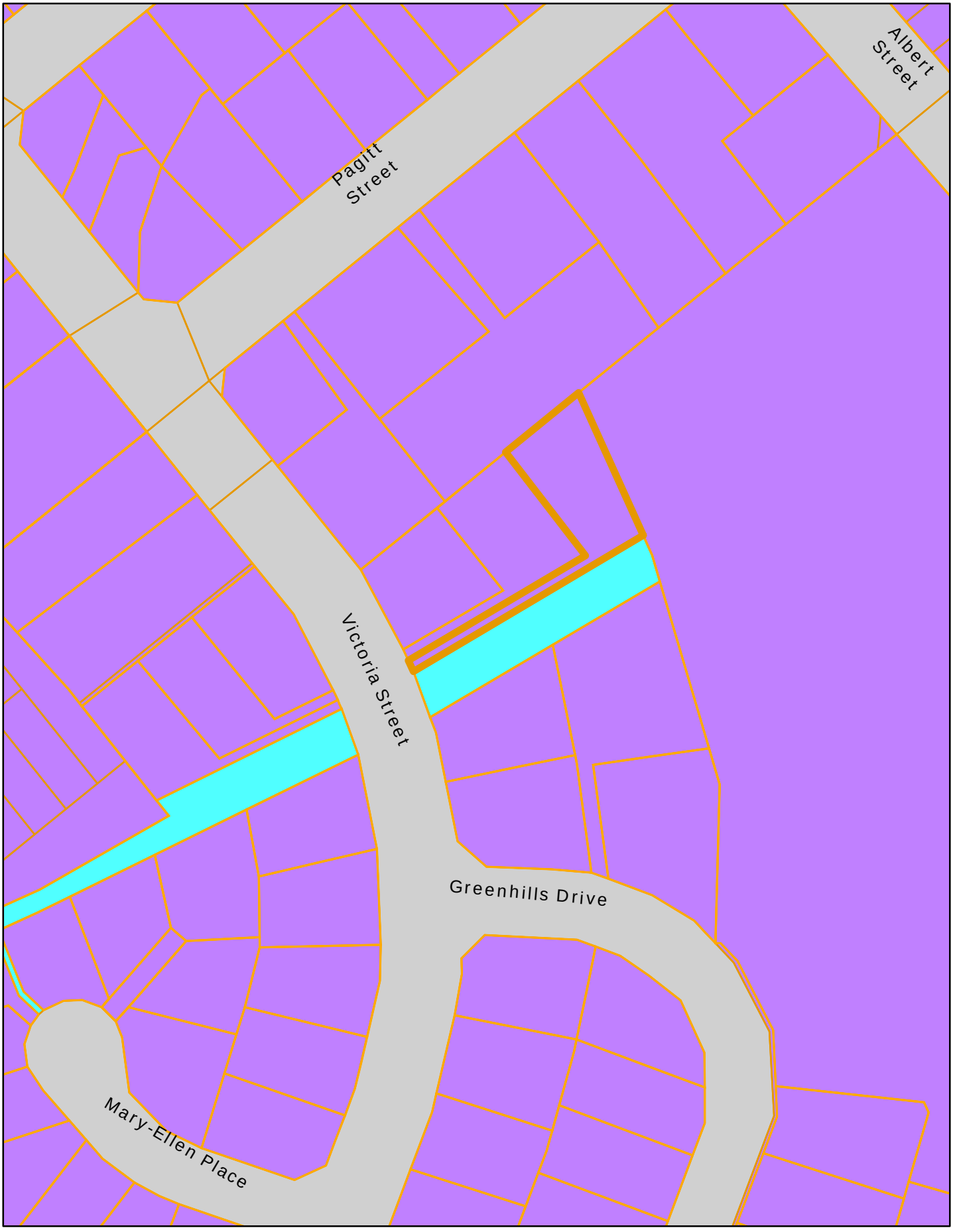
OVERLAY(S), SPECIAL PURPOSE PROVISIONS:
DP Flood Hazard - High Flood Hazard Area
DP Flood Hazard - Medium Flood Hazard Area
DP Flood Hazard - Low Flood Hazard Area

The relevant rules for any overlays and/or special purpose provisions that apply to part or all of the property can be viewed (refer Part V - Special Purpose Provisions & Part II & VI - Overlay Rules). Where these rules conflict with zone rules, the overlay rules or special purpose provision rules take precedence, to the extent of any conflict.
(Refer attached Plan Structure Key)

** The rules, objectives and policies that support them can all be viewed online.

Notified Change Affecting Zone, Standards, Criteria or Activities: NO**

** Unless under Appeal, refer explanation above



40 VICTORIA STREET COROMANDEL

Date:	16/11/2023
Authored:	maureen
Projection:	NZTM

Legend

ZONING:RESIDENTIAL
Legend Attached

N W E S

1:1,250

0 10 20 30 40 (m)

THAMES COROMANDEL DISTRICT COUNCIL

PROPOSED DISTRICT PLAN - Decisions Version
PLANNING MAP LEGEND

Overlay Maps

Special Purpose Provisions

- Site Development Plan
- Site Specific Activity
- Structure Plan

Overlays

- Airfield Height
- Airfield Noise
- Archaeological Site
- Coastal Environment
- Current Coastal Erosion Line
- Designation
- Future Coastal Process Line
- National Grid
- High Natural Character
- Historic Heritage Area
- Historic Heritage Curtilage
- Historic Heritage Item
- Outstanding Natural Character
- Outstanding Natural Features and Landscapes
- Residual Risk Area
- Significant Tree
- Site of Significance to Maori

Zone Maps

Zones

- Airfield
- Coastal Living
- Commercial
- Conservation
- Extra Density Residential
- Gateway
- Industrial
- Light Industrial
- Low Density Residential
- Marine Service
- Open Space
- Pedestrian Core
- Recreation Active
- Recreation Passive
- Road
- Rural
- Rural Lifestyle
- Residential
- Unformed Road
- Village
- Waterfront

Other Provisions

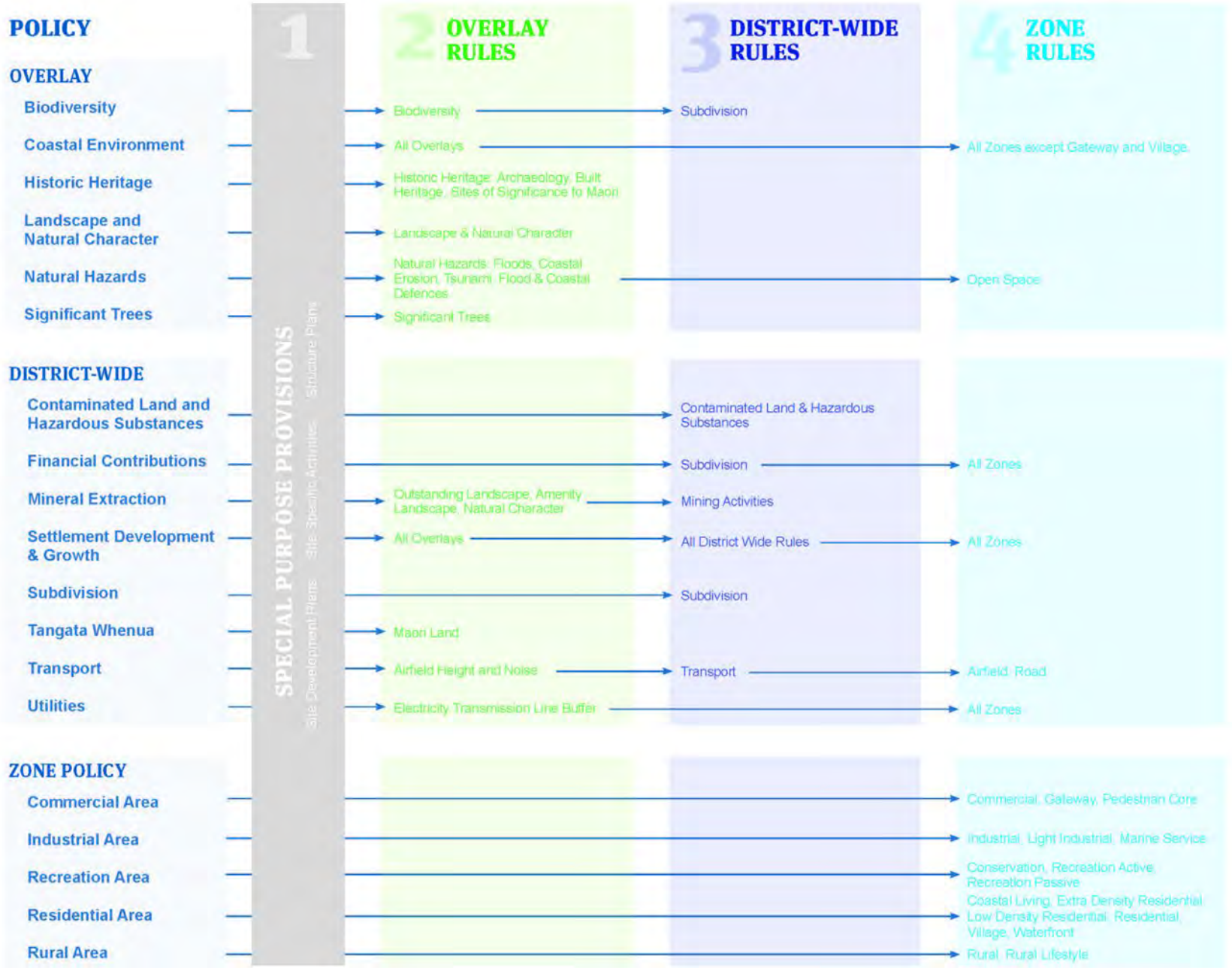
- Beach Amenity
- Beachfront Yard
- Coastal Environment
- Cooks Beach Wall Amenity Line
- Quarry

All Maps

- Parcel Boundary
- Sea or Harbour or Estuary

THAMES COROMANDEL DISTRICT COUNCIL

Legend Updated: March 2023



PLAN STRUCTURE KEY

SPECIAL PURPOSE PROVISIONS

↓

OVERLAY RULES

↓ ↓

DISTRICT-WIDE RULES | ZONE RULES

RULE HIERARCHY

The key above illustrates the rule hierarchy. The RULES above take precedence over the RULES below to the extent of any conflict.

For any conflict between rules at the same level, the more stringent rule or standard applies to the extent of the conflict.

SECTION D: LAND FEATURES

SPECIAL FEATURES

This includes information on any special feature or characteristic of the land that ***is known to Thames Coromandel District Council*** including, but not limited to potential erosion, avulsion, falling debris, subsidence, alluvion, or inundation, or likely presence of hazardous contaminants, is recorded below. This information relates only to details held on Council files and may not reflect the onsite situation.

Special Feature or Characteristic of the land known to Council
This property is subject to river flooding and minimum floor levels may be applied to any new buildings. Refer to attached map and classification document explaining the general level of risk and for more information refer to the overlay provisions within the Proposed District Plan Appeals Version.

Waikato Regional Council may also hold further information on natural hazards that may affect this property.
Please visit the Waikato Regional Hazards Portal at waikatoregion.govt.nz/regional-hazards-portal.
If you have any questions on the content of the portal or require further information, please contact the Regional Resilience Team at Waikato Regional Council using the online request form or via phone on 0800 800 401.

SPECIAL REPORTS

In some circumstances special technical reports have been prepared to support applications relating to land.

Reports Exist: *Listed below & Copies Attached*
2005 Tonkin & Taylor Ltd – Geotechnical & Flood Risk Assessment.
2008 Tonkin & Taylor Ltd – Correction to Geotechnical & Flood Risk Assessment Report.
2006 Tonkin & Taylor Ltd – Infilling of Gulley Report.
2006 Tonkin & Taylor Ltd – Flood Modelling for Subdivision.
2006 Tonkin & Taylor Ltd – Additional Stormwater Modelling Report.

INVESTIGATIONS

Any issues investigated under either the Resource Management Act 1991 or the Building Acts 1991 & 2004.

NO

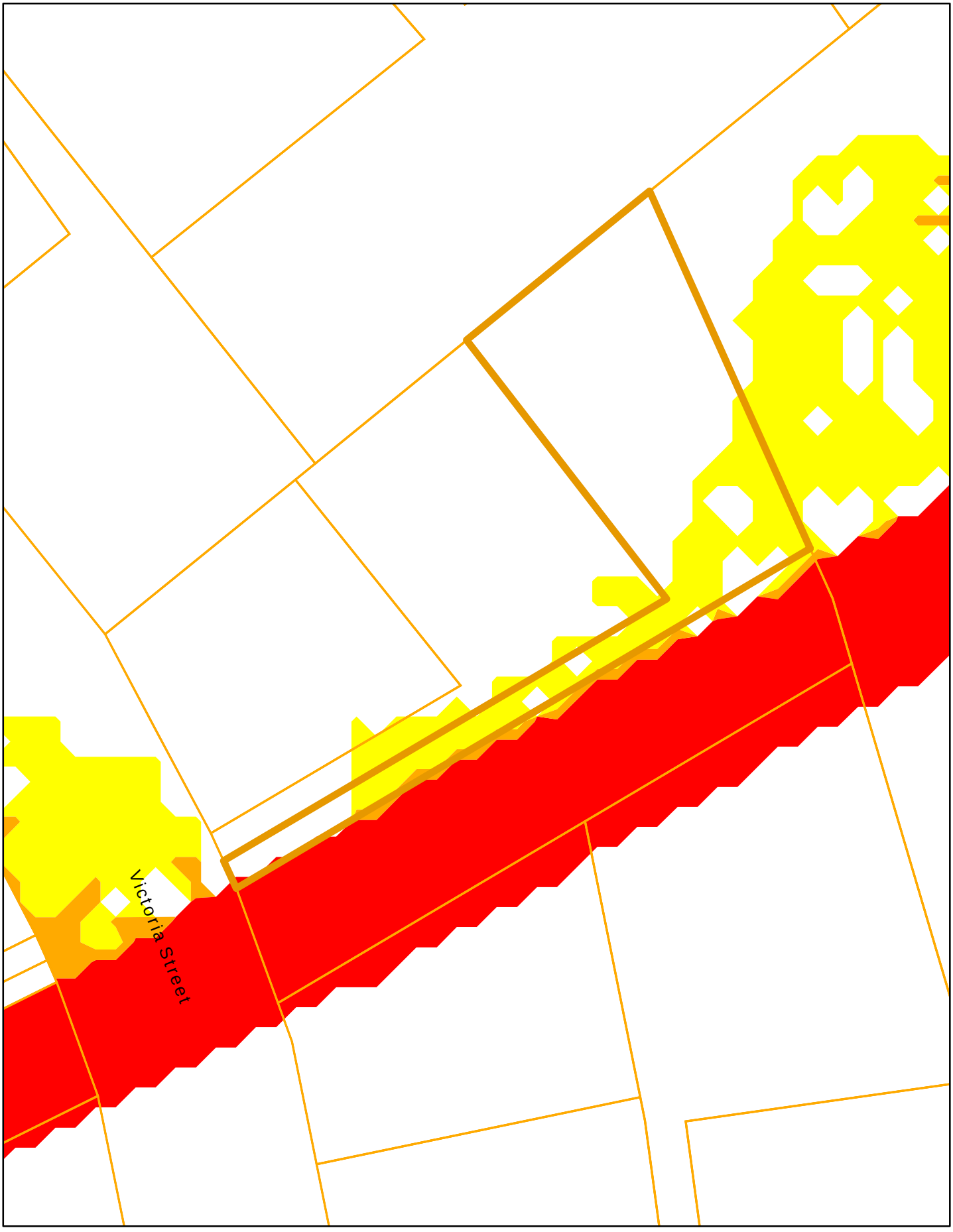
HISTORIC PLACES

The Council holds Heritage New Zealand's (Pouhere Taonga) - Register (Rarangi Korero) where the property may be affected by the presence of a registered historical site, building, or Wahi Tapu Area. Information can be found on the following web site. http://www.heritage.org.nz/the-list

Register Item:	NO

ARCHAEOLOGICAL SITES

Attached is information compiled and supplied by the NZ Archaeological Association as a historical record of identified archaeological sites for the general area of this property. While the Thames-Coromandel District Council believes reasonable care has been taken in compiling this information it makes no warranty or representation express or implied with regard to accuracy, completeness or utility of the data. For affected properties refer to attached interpretation sheet or contact The File Keeper, Dept. of Conservation, NZ Archaeological Assoc Coromandel Area, Private Bag 3072, Hamilton. Ph. 07 8581027 or email nritchie@doc.govt.nz



40 VICTORIA STREET COROMANDEL

Flooding Map

Date:	16/11/2023
Authored:	maureen
Projection:	NZTM

Legend

- Low Flood Hazard Area
- Medium Flood Hazard Area
- High Flood Hazard Area
- Defended Area 0.5 m above flood level
- Floodway
- Overland Flow Area A 0.5 m above ground level
- Overland Flow Area B 1.0 m above ground level
- Overland Flow Area C 1.5 m above ground level
- Ponding Area RL 3.0 m Tararu datum

N W E S

1:500

0 4.5 9 13.5 18 (m)

THAMES COROMANDEL DISTRICT COUNCIL

5.4 River flood hazard classification

A river flood hazard classification describes the significance of river flooding with regard to the likely impact on people and property. The classification that forms part of this assessment has been developed using the following considerations:

- Floodwaters have the potential to cause a person to become unstable and unable to manoeuvre. International research suggests that there is a danger of being knocked over when the product of the flood depth and flood speed exceeds 0.5, with a significantly greater risk to life when the same product exceeds 1.0.

- Floodwaters have the potential to impede a person's ability to rescue themselves or others. When the flood depth exceeds 1.0 m (i.e. waist depth), a person's ability to navigate through flood waters (both on foot and using a vehicle) is restricted, therefore impeding the rescue of themselves and others.

- Floodwaters have the potential to damage buildings, both superficially and structurally. International research suggests that structural damage is likely when the flood speed exceeds 2 m/s. It is also likely that structurally weak points such as doors and windows will be damaged when the flood speed exceeds 1 m/s.

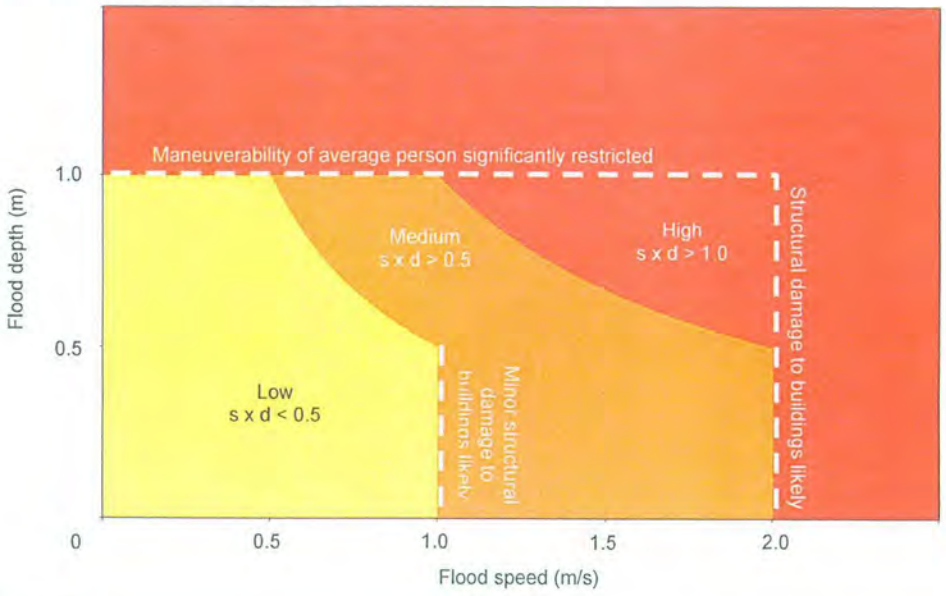
These considerations have been translated into a river flood hazard classification by first defining four distinct levels of river flood hazard based on the likely impact on people and property. These levels are outlined in Table 1.

Table 1: Description of river flood hazard categories

Category	Impact on people	Damage to property
Low	The combined depth and speed of floodwaters are unlikely to impede the manoeuvrability or stability of the average person.	Damage to property is likely to be non-structural and mainly due to inundation and deposition of sediment.
Medium	The combined depth and speed of floodwaters are likely to start to impede the manoeuvrability or stability of the average person.	Damage to property is unlikely to be structural provided that weak points such as windows and doors are retained above flood level.
High	The combined depth and speed of floodwaters are likely to significantly impede the manoeuvrability or stability of the average person.	Damage to property is likely to be widespread and structural, including instances where buildings have been raised above the 'flood level'.
Defended	This flood hazard category identifies land that is within an identified river flood hazard area but has been subsequently included in a flood protection scheme that is managed and maintained by Environment Waikato.	

The three levels of river flood hazard (low, medium and high) have then been quantified through the creation of a matrix that assigns a river flood hazard level based on the predicted depth and speed of flooding (refer to Figure 10).

Figure 10: River flood hazard classification matrix



REPORT

GREENHILLS LTD

**Proposed Subdivision,
Coromandel Town
Geotechnical and Flood Risk
Assessment**

Report prepared for:

GREENHILLS LTD

Report prepared by:

TONKIN & TAYLOR LTD

Distribution:

GREENHILLS LTD	3 copies
TONKIN & TAYLOR LTD (FILE)	1 copy

December 2005

Job no: 22978 / v1

Table of contents

Executive summary

Tonkin & Taylor Ltd has carried out a geotechnical and flood risk assessment for a proposed subdivision in Coromandel. The development comprises approximately 68 building lots and associated infrastructure.

The geotechnical assessment concludes that the site is well suited for the proposed development. Ground conditions are generally suitable for building platforms and no slope stability issues were noted.

The flood risk assessment also concluded that the site is suited for the proposed development. Floor levels should be set a minimum of 0.5 m above the predicted 100 year flood level in accordance with Thames-Coromandel District Council requirements. Stormwater discharge to the Karaka Stream will not exceed pre-development discharge rates for up to the 20 year event, and the development is not expected to increase upstream or downstream flood levels.

1 Introduction

Greenhills Ltd propose to create a new subdivision on a green field site in Coromandel town. The site is located off the end of Victoria and Te Tiki streets and is bordered to the south by Karaka Stream (see Figure 1.1). The property has the legal description Lot 1 DPS 28345 and is zoned for residential development. Greenhills Ltd propose a subdivision with approximately 68 residential lots, together with associated roads and infrastructure.

Tonkin & Taylor Ltd (T&T) have been engaged by Dunwooodie and Green Surveyors Ltd (D&G) to prepare a report comprising a geotechnical and flood risk assessment of the site. We understand that this report will be used in Consent applications for the subdivision.

This report details the geotechnical investigations undertaken and provides recommendations as to the suitability of the geotechnical conditions for development. The report also outlines flood risk to the subdivision from the Karaka Stream and the un-named watercourse to the north west of the site. Effects of the development on upstream and downstream flood levels are also considered.

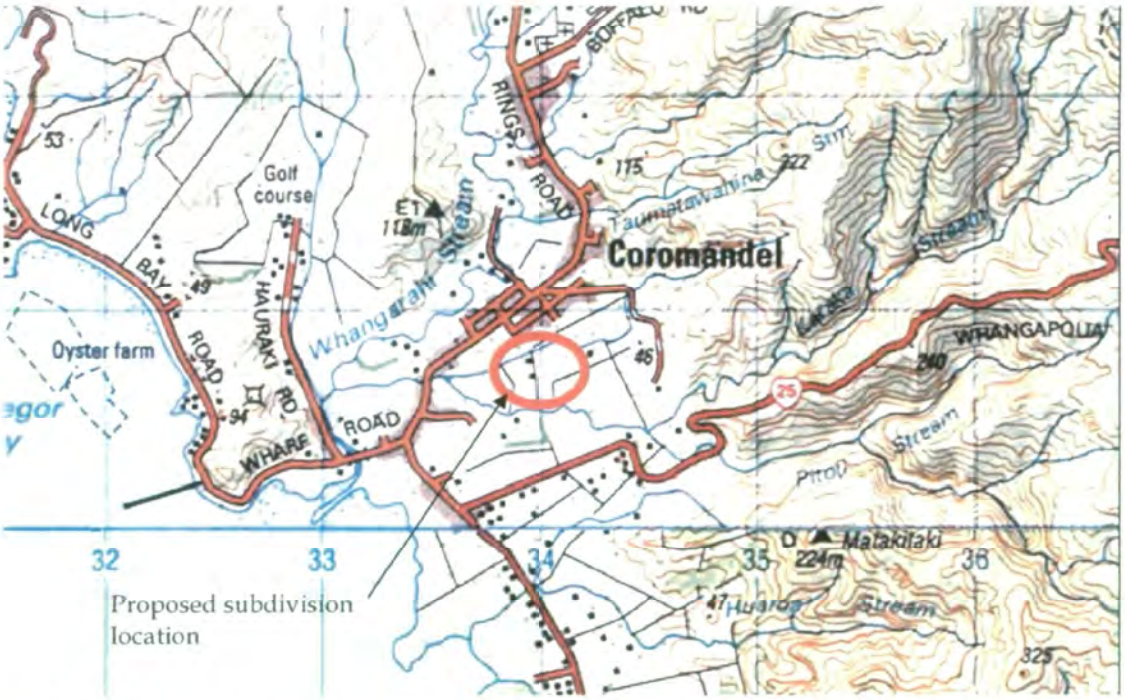


Figure 1.1. Site location plan

2 Site description and proposed development

The site is located off the end of Victoria and Te Tiki streets, and is bordered to the south by Karaka Stream. The property is currently used for grazing cattle so is mostly covered with pasture. Hedges and the occasional larger tree border the paddocks and there are several farm sheds in various locations. A plan of the site is shown in Figure 3.1.

The site generally slopes gently down towards Karaka Stream on the southern boundary at gradients typically less than 1(V):30(H). There is no evidence of instability, as expected due to the relatively gentle gradient. A small un-named tributary to the Karaka Stream flows across the north of the site. For the purposes of this report this watercourse is referred to as the "Coro Stream". In addition, a small drain discharges to the Karaka Stream approximately midway along the southern boundary.

It is proposed to develop a 68 lot subdivision on the site, as shown on D&G Drawing 5139 Sheet 1. We understand that it is intended to carry out minimal earthworks (to generally maintain existing ground levels) although minor cuts and fills, typically less than 1 m depth, will be required.

Stormwater runoff from the site will be collected and run through a treatment and retention pond before discharge to Karaka Stream. Sewage will be reticulated to the Council system.

3 Geotechnical assessment

3.1 Geological setting

The Institute of Gelogical and Nuclear Sciences NZ Geologic Map 3 – Auckland, 1:250,000, indicates that the site comprises Taupo pumice alluvial deposits and andesite and dacite volcanics of the Kuaotunu subgroup. The investigation confirmed the presence of the volcanics with ash and weathered andesite soils encountered. The site is approximately 700 m from the main Coromandel Fault, which essentially creates the boundary between the hill country and the lowlands of the town.

3.2 Investigations

3.2.1 Methodology

The following methodology was employed during the field investigation:

- A detailed site inspection and walk-over was undertaken by a senior geotechnical engineer
- Eight hand augerholes (AH1 to AH8) were drilled and the soils encountered logged in detail, including shear vane tests
- Soakage tests were performed in AH2 to AH5
- Analysis of results obtained was carried out along with reporting (this report) to accompany Resource Consent application.

The locations of the augerholes are shown on the site plan, Figure 3.1, while the augerhole logs and soakage test results are presented in Appendices A and B respectively.

3.2.2 Subsurface conditions

The augerholes indicated relatively uniform ground conditions beneath the site. These comprised generous topsoil thicknesses (typically 0.3 m) overlying stiff to very stiff light brown silt to typically 0.8 m to 0.9 m beneath ground level (bgl). This material is inferred to be volcanic ash and shear strengths varied from 116 kPA (0.45 m in AH3) to greater than 210 kPa (0.4 m in AH5). The sensitivity (ratio of peak to remoulded strength) of this ash is relatively low (typically between 2.8 and 3.5). However, a relatively high sensitivity value of 6.6 was recorded in AH1 at 0.8 m. Traces of organics, including fine roots, were present in AH4 to a depth of 0.9 m.

Beneath the ash, a clayey silt was typically observed. This layer was typically yellowish grey to light brown in colour, moist and became stiffer and more plastic with depth. Some gravel particles, including fine gravels, were observed in several of the augerholes. This material is inferred to be highly weathered andesite rock, although it may be of alluvial origin in areas near to Karaka Stream. Shear strengths varied from 96 kPA (1.0 m in AH1) to 132 kPA (1.1 m in AH4), with sensitivities between 1.8 and 3.4.

The presence of rock limited the depth of augerholes to 1.75 m in AH3, 1.4 m in AH4, 0.8 m in AH5, 0.4 m in AH6 and 0.2 m in AH7. Generally, the closer to Karaka Stream the shallower the augerhole. An approximately 1.5 m vertical face visible in the right bank of the Coro Stream showed a layer of cobbles at approximately 1 m depth. It is inferred from this that the Karaka Stream once meandered across the lower portion of the valley, depositing cobbles which were subsequently overlain with topsoil, ash, andesite and/or alluvial sediments.

Groundwater was not observed in any of the auger holes until a critical depth was reached (frequently coinciding with the cobble layer). Subsequently the hole would quickly fill to a depth of between 0.8 m and 0.9 m bgl.

3.2.3 Soakage

Soakage tests were undertaken in AH2 to AH5. For each test a second augerhole was drilled adjacent to the first hole, but only extending into the ash layer. This allows some conclusions to be drawn between the relative permeability of the ash and highly weathered andesite layers.

Soakage rates proved to be variable across the site. At holes AH2 and AH4 high soakage rates were observed, with up to 0.5 m per hour in the deep holes and 0.3 m per hour in the shallow holes. However, in AH3 and AH5 lower soakage rates of 0.05 m per hour were observed in the deep and shallow holes respectively.

These variable results indicate that the use of soakage pits to dispose of stormwater may be difficult and is not recommended.

3.2.4 Stability

With the exception of the eastern boundary, the property is generally gently sloping (less than 1(V):30(H)) and accordingly, no stability concerns are apparent. Numerical factors of safety against slope failure exceed 10. Along the eastern boundary the ground begins to rise into the foothills of the Coromandel ranges. Slopes in this region are typically in the order of 1(V):10(H). No evidence of instability was observed on site and numerical factors of safety against slope failure exceed 3.5.

3.2.5 Seismicity / liquefaction potential

From the most recent assessment of seismic risk in New Zealand (published in the Joint Australia / New Zealand Structural Design Actions - Part 4 Earthquake Actions DR 1170.4/PPC3 Post Public Comment Draft 3, 12 March 2002), the site can be inferred to have a Peak Ground Acceleration (PGA) of 0.14g for a 475 year return period earthquake. This has approximately 10% probability of occurring within a typical 50 year building design life. No specific allowance for near-fault effects is considered necessary as the site is approximately 700 m from the Coromandel Fault.

The potential for liquefaction of the site during seismic shaking is considered to be negligible as the underlying soils are both cohesive and of high strength and rock is at shallow depth.

3.3 Engineering considerations

3.3.1 Foundations

This report has been based on eight augerholes. Inferences about the nature and continuity of subsoils away from the pits are made but cannot be guaranteed.

The typically high soil strengths indicate that, generally, the natural ground is suitable to support shallow building foundations constructed in accordance with NZS 3604:1999 "Timber Frame Buildings". A minimum founding depth of 0.5 m beneath adjacent finished ground level is recommended to ensure that foundations are beneath the zone subject to seasonal water content fluctuations.

Any building foundations within 5 m of slopes exceeding 15° (3.7(H):1(V)) should have an allowance made for a 1 m deep zone of creeping soil (γ = 18 kN/m^3, ϕ' = 35°) and a minimum founding depth of 1.5 m into completely to highly weathered andesite to the satisfaction of the Engineer.

3.3.2 Earthworks

The volcanic ash is the likely source of fill material for the development and the compaction test results shows it to be suitable, providing strict quality control is carried out. This material can be highly sensitive and shows signs of being collapsible if it becomes too dry. Accordingly, it will be vital to control both water content and air voids carefully. We recommend water contents between 90 and 98% and air voids less than 8%, along with a minimum shear strength of 100 kPa. These parameters should be confirmed by laboratory testing.

This is a relatively unusual engineering material and we strongly recommend the use of an earthworks contractor experienced in these materials. We also suggest that site trials be carried out prior to earthworks commencing to determine optimal handling and placement techniques and confirm that the specification requirements are readily achievable.

3.3.3 Roading

We understand that the access roads are generally to be in cut or at grade, although two bridges will be constructed. The natural ash soils may be assumed to have a CBR of 3 for use as road subgrade, although it will be possible to significantly improve this by cement or lime stabilisation and this could lead to economies of pavement design.

In areas of cut, the significantly stiffer weathered andesite soils below 0.8 m bgl can be assumed to have a CBR of 8.

4 Flood risk and stormwater assessment

4.1 Karaka Stream

Karaka Stream flows along the southern boundary of the subject site. The stream has a catchment area of approximately 531 ha. Much of this area consists of the steep, indigenous forest-covered hills to the east of Coromandel. The stream has a meandering alignment past the site and has been subject to recent engineering work. This has included armouring the channel and banks with rock and planting willow stakes along both banks.

Coromandel Town is located at the confluence of the Whangarahi and Karaka streams and has been subjected to a number of historical flood events. The most recent events in June 2002 (the so-called weather bomb) and April 2003, which caused flooding in Coromandel Town and along the Thames Coast, prompted a regional review of flooding and catchment management issues.

As part of this review, a report entitled "Thames Coast River Flood Hazards Engineering Investigation August 2003" was commissioned for Environment Waikato (EW). The report included a hydrologic and hydraulic review of the Karaka Stream. A Mike 21 hydraulic model of the Karaka Stream was developed (extending upstream of the proposed development site). Key findings are summarised in the table below:

Table 4.1 Summary of Karaka Stream hydrology

Event return period (years)	2	10	20	50	100
AEP (%)	50	10	5	2	1
Rainfall intensity (mm/hr) [1]	29	41	48	60	73
Peak stream flow (m^3/s) [2]	37	52	61	77	94

1. Rainfall intensity for a time of concentration of 45 minutes

2. Peak stream flow calculated above confluence with Whangarahi Stream

Flood levels in Karaka Stream are affected by the Kapanga Road bridge (located approximately 400 m downstream of the subject site) which has a reported capacity of around 40 m^3/s, less than the 10 year flood flow.

Subsequent work by EW has revised the flood flows and levels. A copy of the 100 year flood levels from the latest Mike 21 model was obtained from EW and used to set design flood levels at the site. These flood levels are shown on Figure 3.1. Note that the flood extents predicted by this model are assumed to supersede the flood hazard outlines shown in the Thames Coast report. The revised 100 year design flow for Karaka Stream is 82 m^3/s at the site and 93 m^3/s above the confluence with Whangarahi Stream.

4.2 Coro Stream

Coro Stream flows to the north of the site and joins Karaka Stream just upstream of the Kapanga Road bridge. The channel has been historically straightened and modified to serve as a drainage channel to the surrounding land. Channel dimensions and grade were obtained using survey data provided by D&G. The channel is typically in the order of 2 m to 3 m wide by 1 m to 1.5 m deep and roughly trapezoidal in shape. Channel grade

varies from approximately 1 in 25 to 1 in 160. Bank side vegetation is mostly grasses, whilst there is some water weed in the channel itself.

The stream has a catchment area of approximately 55 ha and a 100 year discharge of 10.4m³/s as used in the latest EW Mike 21 hydraulic model. 100 year flood levels from EW's latest Mike-21 model vary across the site, and are shown on Figure 3.1.

Flood levels in the stream were also estimated at four cross-sections using FlowMaster, a software package which solves Manning's equation assuming normal flow conditions (i.e. no backwater effect). Only the main channel was analysed because the flood plain is frequently slightly lower than the channel banks. When flood levels exceed the top of stream bank level FlowMaster assumes "glass walls" at the section extents. This is a conservative approach as storage and flow area within the flood plain is ignored and flood levels are increased.

Using this method 100 year flood levels are typically shown to be up to 200 mm above the top of the stream bank. As mentioned above, these levels would be expected to reduce if the flood plain was modelled.

Additional analyses have been run to determine the effect of enlarging the Coro Stream channel by cutting a 5 m wide floodway on the left bank and steepening the central reach. Results show 100 year flood levels at the four sections between top of bank and 200 mm below top of bank. Note that these levels do not account for backwater effects from the downstream channel.

4.3 Minimum floor levels

Building floor levels need to be set a minimum of 0.5 m above the predicted flood level in accordance with TCDC requirements. Flood levels from both Karaka Stream and Coro Stream must be considered.

We recommend that no houses are constructed within the 100 year flood area for Karaka Stream (see Figure 3.1). The exception to this would be the small gully at the midpoint on the southern boundary, which is shown to experience a backwater effect from Karaka Stream. Velocities in this area will be minimal, and the gulley may be filled and built upon with no adverse effect on upstream or downstream flood levels. Floor levels should be set at a minimum of RL 12.35 m to RL 9.90 m, decreasing from upstream to downstream across the southern boundary.

Modelled 100 year flood levels for Coro Stream range from RL 12.85 m to RL 8.80 m across the site (see Figure 3.1). However, FlowMaster analyses have shown that flood flows may be contained within the main channel by steepening and enlarging the channel. It is, therefore, proposed that floor levels be set at a minimum of 0.5 m above the top of bank. Note that these levels may be reduced further if the channel improvement works were extended downstream to the confluence with Karaka Stream.

4.4 Bridge crossings

The proposed subdivision plan shows two bridge crossings will be required over Coro Stream, located at the extensions to Victoria and Te Tiki streets. These should be designed to convey the 100 year flow of 10.4 m³/s without causing upstream flood levels to be significantly increased.

4.5 Runoff attenuation

4.5.1 Increase in post-development runoff

The proposed subdivision development will involve an increase in the impervious area of the site, with pasture being replaced with roads, roofs and hard stand areas. This will increase the runoff from the site and could potentially increase peak flood flows in Karaka Stream. The increase of post-development runoff has been calculated using the rational method.

The total subdivision site has an area of approximately 6.4 ha. This land is presently covered in pasture and has a runoff coefficient of 0.3 (suitable for medium soakage soil types in pasture and grass cover).

68 new residential lots are proposed for the subdivision, together with approximately 700 m of new road. Assuming 60% of each lot area is impervious and the roads are 15 m wide, total pervious and impervious areas for the subdivision of 2.2 ha and 4.2 ha respectively are estimated. Runoff coefficients of 0.30 for gardens and lawns and 0.90 for impervious areas have been adopted.

Rainfall data has been obtained using NIWA's High Intensity Rainfall Design System (HIRDS v 2) for a 10 minute time of concentration. Design rainfall depths and runoff flow rates are summarised in Table 4.2 below.

Table 4.2. Pre- and post-development runoff

Return period (years)	Rainfall intensity (mm/hr) [1]	Total site pre-development runoff (m^3/s)	Total site post-development runoff (m^3/s)
2	58.8	0.31	0.72
5	77.1	0.38	0.87
10	84.0	0.45	1.03
20	99.0	0.53	1.21
50	125.4	0.67	1.54
100	153.0	0.81	1.87

1. Based on HIRDS v 2 data for a 10 minute time of concentration

From the above table it is seen that post-development runoff is 2.3 times higher than pre-development runoff. To put this in perspective, the increase from 100 year pre-development to post-development flow represents an increase in the Karaka Stream 100 year flow (93 m^3/s) of approximately 1 % (assuming the peak discharge from the subdivision corresponds to peak flood flow in the stream).

4.5.2 Attenuation requirements

TCDC was contacted to determine the requirements for flow attenuation at the site. Although apparently not formally documented, we understand TCDC require that post-development runoff does not exceed pre-development runoff for all events. We also understand that at preliminary discussions between D&G and TCDC the possibility of a stormwater detention pond at the south of the site adjacent to Karaka Stream was considered and approved in principle.

As discussed previously, the Thames Coast flooding report states that the Kapanga Road bridge has an unrestricted capacity of less than the 10 year flood flow of the Karaka Stream. Therefore, in events in excess of the 10 year return period, upstream flooding will occur as a result of the backwater effect from the bridge.

Consequently, it is suggested that a 20 year runoff attenuation requirement is a sensible standard for the proposed subdivision. In these lower return period events, runoff from the site will not exceed pre-development rates, so the frequency of flooding at the Kapanga Road bridge will not be increased. In events greater than the 20 year design standard, only partial attenuation of runoff from the site will be provided. However, the percentage increase to flow in a flooded Karaka Stream is minor and the effects on flood levels are considered negligible. It should also be noted that the difference in times of concentration between the development site and the Karaka Stream (10 minutes and 45 minutes respectively) means peak flows are unlikely to correspond.

4.5.3 Stormwater detention

Preliminary design of stormwater detention options has been made using the hydrologic modelling software HEC-HMS. Rainfall hyetographs generated using the Chicago method were imported to HEC-HMS. SCS curve numbers in the basin models were then adjusted to generate design hydrographs with peaks matching those calculated using the Rational method.

Space restrictions and topographic features make a single large stormwater detention pond difficult to achieve. Subsequently, individual detention tanks for each residential lot are the preferred solution. Assuming 630 m^2 lot sizes with 60% impervious cover, a 10 m^2 by 1 m deep detention tank will provide attenuation for a 20 year event. The tank has an 0.05 m diameter low level orifice at the base and a high level overflow at 0.9 m depth, both draining to the subdivision stormwater reticulation system. A summary of the attenuation achieved is given in Table 4.3.

Table 4.3. Attenuation of post-development runoff from individual lots

Return period (years)	Tank level (m)	Inflow (l/s)	Outflow (l/s)	Pre-development flow (l/s)
10	0.70	9.7	4.3	4.4
20	0.88	11.6	4.9	5.2
50	0.96	14.8	10.7	6.6
100	1.00	17.7	15.5	8.0

In addition to the detention tanks, one or two 1.5 m deep stormwater ponds will be located adjacent to the Karaka Stream to provide attenuation to runoff from the subdivision roads. It is proposed that the pond(s) will have a low level outlet so as to be dry and provide a recreational facility when not in use. The pond(s), which will be mostly in cut to avoid imposing on the Karaka Stream flood path, may be inundated by the stream in events in excess of a 20 year return period.

The outfalls from the attenuation pond to Karaka Stream will be designed to minimise erosion in accordance with TCDC requirements. This may include a reinforced concrete headwall and rock armour.

4.6 Effects of development

The effects of the development on upstream and downstream flood levels are expected to be minimal.

- No dwellings will be built within the modelled 100 year floodplain Karaka Stream. The exception to this is the small gulley at the midpoint of the southern boundary which may be filled in and built upon. Flood waters in the gulley are a result of backwater effects from the river, and the gulley does not contribute to flood conveyance. Therefore, no increase in upstream flood levels is expected.
- Channel improvement works to Coro Stream should ensure the 100 year flow will be confined to the main channel through the site. Therefore, properties within the existing modelled floodplain may be developed with no adverse effect on upstream flood levels.
- Storage will be provided so that post-development runoff is attenuated to pre-development rates for up to a 20 year event. This is considered an appropriate design standard for the site, with runoff in excess of the 20 year event forming a small percentage (less than 1%) of flows in the Karaka Stream and having negligible effect on flood levels that are governed by backwater effects from the Kapanga Road bridge. Therefore, the development is not expected to cause any adverse downstream effects.

5 Conclusions

5.1 Geotechnical

Based on a visual assessment and eight augerholes, the site is considered to be suitable for the proposed development.

- The ground conditions are inferred to consist generally of ash deposits overlying highly weathered andesite. Alluvial gravel/cobble deposits were also encountered closer to Karaka Stream.
- Shear strengths in the augerholes indicate stiff to very stiff soils, suitable for building foundations which may be constructed in accordance with NZS 3604:1999 with a minimum founding depth of 1.5 m beneath cleared ground level.
- The groundwater level is typically in the order of 0.8 m to 0.9 m below ground level.
- Soakage rates are variable across the site, and soakage should no be relied upon as a means of disposing of surface water.
- No problems with slope stability were noticed.

5.2 Flood risk and stormwater

Based on a visual assessment, results from EW's latest Mike 21 model and additional hydraulic analyses, the site is considered to be suitable for the proposed development.

- Minimum floor levels adjacent to Karaka Stream will be set from RL 12.30 m to RL 9.90 m across the site, giving 0.5 m freeboard to the modelled flood levels. No houses will be permitted within the active flow portion of the modelled 100 year flood area.
- Channel improvement works to Coro Stream should ensure the 100 year flow will be contained within the main channel. Therefore, minimum floor levels will be set at 0.5 m above the top of the stream bank. Note that these levels may be reduced if the channel improvement works are extended downstream to the confluence with Karaka Stream.
- Attenuation will be provided in individual tanks and stormwater pond(s), restricting post-development discharge to the Karaka Stream to pre-development levels for up to the 20 year event.
- The effects of the development on upstream and downstream flood levels are considered negligible.

6 Applicability

This report has been prepared for the benefit of Greenhills Ltd with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

During excavation and construction, the site should be examined by an engineer competent to judge whether the exposed subsoils are compatible with the inferred conditions on which this report has been based. We would be pleased to provide this service to you and believe that you would benefit from the continuity. However, it is important that we be contacted if there is any variation in the subsoil conditions from those described in this report.

TONKIN & TAYLOR LTD

Environmental and Engineering Consultants

Report prepared by:

.....

Paul Hayes

Engineer

Authorised for Tonkin & Taylor by:

.....

Grant Loney

Project Coordinator

pjh

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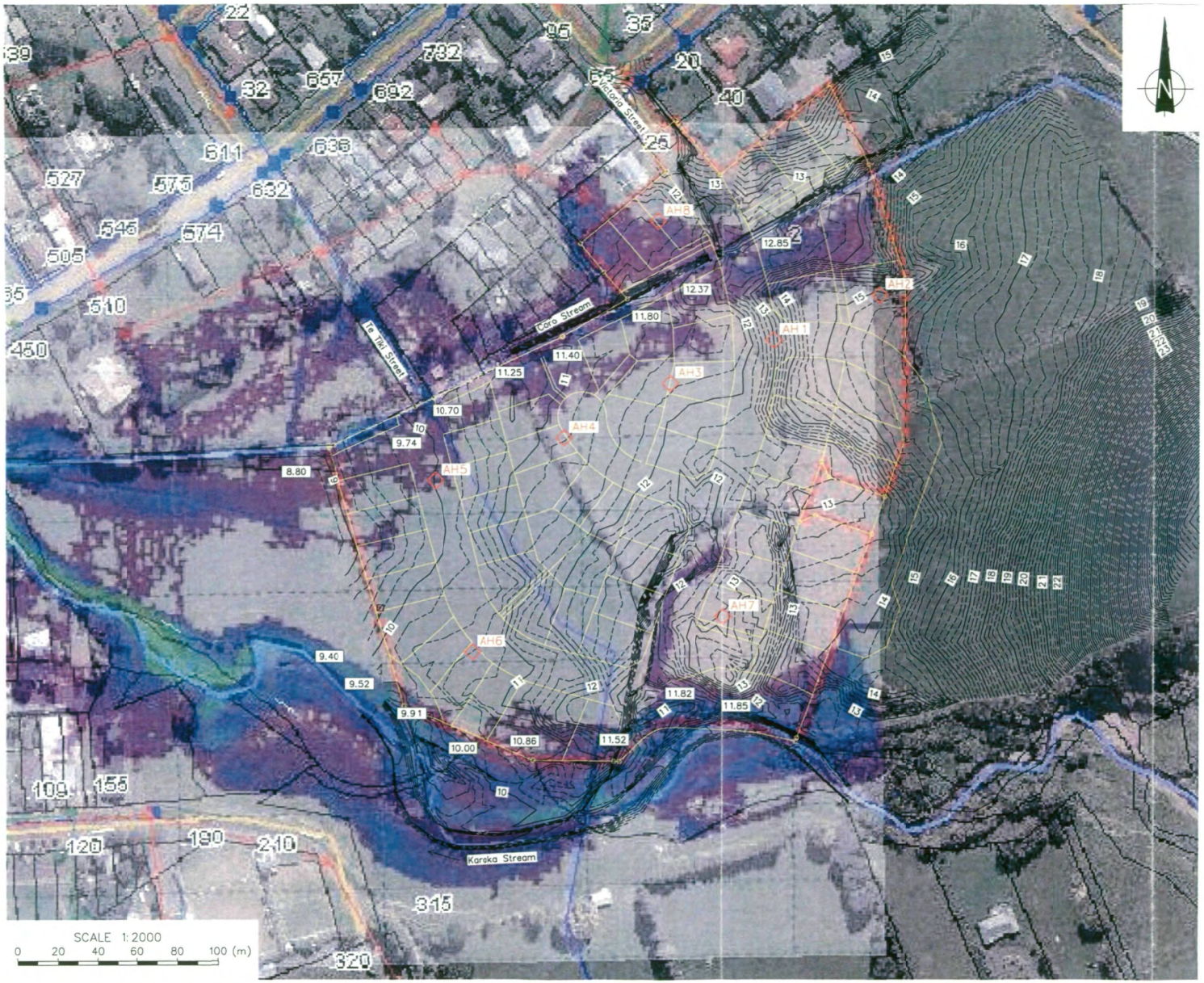

LEGEND

- Environment Waikato Mike 2.1 100 year flood area
- 10.00 — Environment Waikato Mike 2.1 100 year flood level
- 0.2 m contour
- —10— 1.0 m contour
- Subdivision layout
- AH1 — Hand augerhole location

REVISION	DESCRIPTION	BY	DATE
0	First Issue		

DESIGNED : PJH Nov.05
DRAWN : PJH NOV.05
DESIGN CHECKED :
DRAFTING CHECKED :
CADFILE : L:\22978\22978-01.dwg
APPROVED :

NOT FOR CONSTRUCTION

This drawing is not to be used for construction purposes unless signed as approved

NOTES :
1. All dimensions are in metres unless noted otherwise.
2. The information displayed in the GIS has been taken from Thames Coromandel District Council's databases and maps. It is made available in good faith but its accuracy or completeness is not guaranteed. If the information is relied on in support of a resource consent it should be verified independently.
3. Topographical information and subdivision layout plan provided by Dunwoodie & Green Surveys Ltd (September 2005)
4. Flooding area from Environment Waikato's latest Mike-21 model of Karaka Stream.

REFERENCE :

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CLIENT, PROJECT
GREENHILLS LTD
2 VICTORIA STREET, COROMANDEL

TITLE
FIGURE 3.1 SITE PLAN
Geotechnical Investigations and Flood Levels

SCALES (AT A3 SIZE) 1: 2000
DWG. No. 22978-01
REV. 0

L:\22978\Combined site plan Figure.dwg, layout, 15/12/2005 12:41:40 p., dnv

Appendix A: Augerhole Logs

TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No: AH1
Hole Location: Refer to Site Plan
SHEET 1 OF 1

PROJECT: Coroflats	LOCATION: Coromandel		JOB No: 22978
CO-ORDINATES mN mE	DRILL TYPE: 50mm diameter Auger	HOLE STARTED:	16/9/05
	DRILL METHOD: Hand Auger	HOLE FINISHED:	16/9/05
R.L. m		DRILLED BY:	
DATUM	DRILL FLUID:	LOGGED BY: GAL	CHECKED: GAL

GEOLOGICAL									ENGINEERING DESCRIPTION							
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION	FLUID LOSS	WATER	CORE RECOVERY	METHOD	CASING	TESTS	SAMPLES	R.L. (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MOISTURE / WEATHERING CONDITION	STRENGTH/DENSITY CLASSIFICATION	SHEAR STRENGTH (kPa) 10 25 50 100	COMPRESSIVE STRENGTH (MPa) 1 2 5 10 20 50 100 250	DEFECT SPACING (mm) 50 250 1000 2000	SOIL DESCRIPTION: Soil type, minor components, plasticity or particle size, colour. ROCK DESCRIPTION: Substance: Rock type, particle size, colour, minor components. Defects: Type, inclination, thickness, roughness, filling.
TOPSOIL		DRY ON COMPLETION									OH						Topsoil.
ASH						• 90/30 kPa					ML	M-D	St				SILT, stiff, moist - dry, non plastic, golden brown.
CW - HW ANDESITE						• 130/33 kPa • UTP • UTP			1		ML	M					SILT, clayey, stiff, moist, mod plastic, yellowish grey. - Becoming more gravelly and sandy.
									2								END OF BOREHOLE @ 1.5m
									3								
									4								
									5								

TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No: AH2
Hole Location: Refer to Site Plan
SHEET 1 OF 1

PROJECT: Coroflats		LOCATION: Coromandel	JOB No: 22978
CO-ORDINATES mN mE		DRILL TYPE: 50mm diameter Auger	HOLE STARTED: 14/10/05
		DRILL METHOD: Hand Auger	HOLE FINISHED: 14/10/05
R.L. m			DRILLED BY:
DATUM		DRILL FLUID:	LOGGED BY: GAL CHECKED: GAL

GEOLOGICAL									ENGINEERING DESCRIPTION							
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION	FLUID LOSS	WATER	CORE RECOVERY	METHOD	CASING	TESTS	SAMPLES	R.L. (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MOISTURE CONDITION / WEATHERING	STRENGTH/DENSITY CLASSIFICATION	SHEAR STRENGTH (kPa) 10 25 50 100 200	COMPRESSIVE STRENGTH (MPa) 1 5 10 25 50 100	DEFECT SPACING (mm) 60 200 600 2000	SOIL DESCRIPTION: Soil type, minor components, plasticity or particle size, colour. ROCK DESCRIPTION: Substance: Rock type, particle size, colour, minor components. Defects: Type, inclination, thickness, roughness, filling.
TOPSOIL									0		OH						Topsoil.
ASH						• 171/52 kPa					ML	M	St				SILT, stiff, moist, non-plastic, light brown.
CW - HW ANDESITE		▼				• 198/30 kPa • 96/30 kPa			1		ML	M-W					SILT, clayey with fine gravel, moist to wet, stiff, mod plastic, yellowish grey.
						• ~~UTP~~											**END OF BOREHOLE @ 1.4m**
									2								
									3								
									4								
									5								

TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No: AH3
Hole Location: Refer to Site Plan
SHEET 1 OF 1

PROJECT: Coroflats	LOCATION: Coromandel	JOB No: 22978	
CO-ORDINATES mN mE	DRILL TYPE: 50mm diameter Auger	HOLE STARTED: 14/10/05	
	DRILL METHOD: Hand Auger	HOLE FINISHED: 14/10/05	
R.L. m		DRILLED BY:	
DATUM	DRILL FLUID:	LOGGED BY: PJH	CHECKED: GAL

GEOLOGICAL									ENGINEERING DESCRIPTION									
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION	FLUID LOSS	WATER	CORE RECOVERY	METHOD	CASING	TESTS	SAMPLES	R.L. (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MOISTURE CONDITION / WEATHERING	STRENGTH/DENSITY CLASSIFICATION	SHEAR STRENGTH (kPa)	COMPRESSIVE STRENGTH (MPa)	DEFECT SPACING (mm)	SOIL DESCRIPTION: Soil type, minor components, plasticity or particle size, colour. ROCK DESCRIPTION: Substance: Rock type, particle size, colour, minor components. Defects: Type, inclination, thickness, roughness, filling.
TOPSOIL											OH						Topsoil.
ASH						• 116/39 kPa • 129/42 kPa					ML	M	St				SILT, some sand, moist, stiff, mod plastic, light brown.
CW - HW ANDESITE						• 111/33 kPa • 111/45 kPa • 120/35 kPa			1		ML						SILT, clayey, some fine gravels, moist, stiff, mod plastic, light brown / yellow grey. 1
											ML						SILT, clayey, sand particles, moist, stiff, mod plastic, light brown.
ALLIVIAL GRAVEL / COBBLE						• UTP											- Rock **END OF BOREHOLE @ 1.75m**
									2								2
									3								3
									4								4

TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No: AH4
Hole Location: Refer to Site Plan
SHEET 1 OF 1

PROJECT: Coroflats		LOCATION: Coromandel	JOB No: 22978
CO-ORDINATES mN / mE		DRILL TYPE: 50mm diameter Auger	HOLE STARTED: 14/10/05
		DRILL METHOD: Hand Auger	HOLE FINISHED: 14/10/05
R.L. m			DRILLED BY:
DATUM		DRILL FLUID:	LOGGED BY: PJH CHECKED: GAL

GEOLOGICAL									ENGINEERING DESCRIPTION							
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION	FLUID LOSS	WATER	CORE RECOVERY	METHOD	CASING	TESTS	SAMPLES	R.L. (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MOISTURE CONDITION / WEATHERING	STRENGTH/DENSITY CLASSIFICATION	SHEAR STRENGTH (kPa) 10 25 50 100 200	COMPRESSIVE STRENGTH (MPa) 1 2 5 10 20 50 100 250	DEFECT SPACING (mm) 60 200 600 2000	SOIL DESCRIPTION: Soil type, minor components, plasticity or particle size, colour. ROCK DESCRIPTION: Substance: Rock type, particle size, colour, minor components. Defects: Type, inclination, thickness, roughness, filling.
TOPSOIL										OH						Topsoil.
ASH						• 132/42 kPa • 80/52 kPa				ML	M	St				SILT, some sand particles, stiff, moist, non-plastic, traces of organics, some small roots, black
CW - HW ANDESITE		▼				• 132/42 kPa • UTP		1		ML						SILT, clayey some gravels, stiff, moist, mod plastic, light brown. 1
ALLUVIAL GRAVEL / COBBLE								2 3 4 5								- Rock. **END OF BOREHOLE @ 1.4m** 2 3 4

TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No: AH5
Hole Location: Refer to Site Plan
SHEET 1 OF 1

PROJECT: Coroflats	LOCATION: Coromandel		JOB No: 22978
CO-ORDINATES mN mE	DRILL TYPE: 50mm diameter Auger	HOLE STARTED:	14/10/05
	DRILL METHOD: Hand Auger	HOLE FINISHED:	14/10/05
R.L. m		DRILLED BY:	
DATUM	DRILL FLUID:	LOGGED BY: PJH	CHECKED: GAL

GEOLOGICAL									ENGINEERING DESCRIPTION							
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION	FLUID LOSS	WATER	CORE RECOVERY	METHOD	CASING	TESTS	SAMPLES	R.L. (m) / DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MOISTURE CONDITION / WEATHERING	STRENGTH/DENSITY CLASSIFICATION	SHEAR STRENGTH (kPa) 10 25 50 100 200	COMPRESSIVE STRENGTH (MPa) 1 5 10 20 50 100 250	DEFECT SPACING (mm) 50 100 200 600 2000	SOIL DESCRIPTION: Soil type, minor components, plasticity or particle size, colour. ROCK DESCRIPTION: Substance: Rock type, particle size, colour, minor components. Defects: Type, inclination, thickness, roughness, filling.
TOPSOIL		DRY ON COMPLETION								OH						Topsoil.
ASH						• 210/60 kPa • 210/75 kPa				ML	D-M	VSt				SILT, some sands/gravel particles, very stiff, dry - moist, non plastic, light brown.
ALLUVIAL GRAVEL / COBBLE								1 2 3 4 5								- Rock. **END OF BOREHOLE @ 0.8m**

TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No: AH6
Hole Location: Refer to Site Plan
SHEET 1 OF 1

PROJECT: Coroflats		LOCATION: Coromandel	JOB No: 22978
CO-ORDINATES mN mE		DRILL TYPE: 50mm diameter Auger	HOLE STARTED: 14/10/05
		DRILL METHOD: Hand Auger	HOLE FINISHED: 14/10/05
R.L. m			DRILLED BY:
DATUM		DRILL FLUID:	LOGGED BY: PJH CHECKED: GAL

GEOLOGICAL									ENGINEERING DESCRIPTION							
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION	FLUID LOSS	WATER	CORE RECOVERY	METHOD	CASING	TESTS	SAMPLES	R.L. (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MOISTURE / WEATHERING CONDITION	STRENGTH/DENSITY CLASSIFICATION	SHEAR STRENGTH (kPa) 10 25 50 100 200	COMPRESSIVE STRENGTH (MPa) 1 2 5 10 25 50 100 250	DEFECT SPACING (mm) 50 250 1000 2000	SOIL DESCRIPTION: Soil type, minor components, plasticity or particle size, colour. ROCK DESCRIPTION: Substance: Rock type, particle size, colour, minor components. Defects: Type, inclination, thickness, roughness, filling.
TOPSOIL		DRY ON COMPLETION							0		OH						Topsoil.
											MH	D-M	St				SILT, gravelly, dry-moist, stiff, non plastic, light brown.
ALLUVIAL GRAVEL / COBBLE									0.4								- Rock, refusal @ 0.4m **END OF BOREHOLE @ 0.4m**
									1								
									2								
									3								
									4								
									5								

TONKIN & TAYLOR LTD

BOREHOLE LOG

BOREHOLE No: AH7
Hole Location: Refer to Site Plan
SHEET 1 OF 1

PROJECT: Coroflats	LOCATION: Coromandel	JOB No:	22978
CO-ORDINATES mN mE	DRILL TYPE: 50mm diameter Auger	HOLE STARTED:	14/10/05
	DRILL METHOD: Hand Auger	HOLE FINISHED:	14/10/05
R.L. m		DRILLED BY:	
DATUM	DRILL FLUID:	LOGGED BY: PJH	CHECKED: GAL

GEOLOGICAL									ENGINEERING DESCRIPTION							
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION.	FLUID LOSS	WATER	CORE RECOVERY	METHOD	CASING	TESTS	SAMPLES	R.L. (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MOISTURE CONDITION / WEATHERING	STRENGTH/DENSITY CLASSIFICATION	SHEAR STRENGTH (kPa) 10 20 50 100 200	COMPRESSIVE STRENGTH (MPa) 1 5 10 20 50 100 200	DEFECT SPACING (mm) 60 200 600 2000	SOIL DESCRIPTION: Soil type, minor components, plasticity or particle size, colour. ROCK DESCRIPTION: Substance: Rock type, particle size, colour, minor components. Defects: Type, inclination, thickness, roughness, filling.
TOPSOIL											OH						Topsoil
ALLUVIAL GRAVEL / COBBLE		DRY ON COMPLETION							1								- Rock, refusal @ 0.2m **END OF BOREHOLE @ 0.2m**
									2								
									3								
									4								
									5								

TONKIN & TAYLOR LTD

BOREHOLE LOG

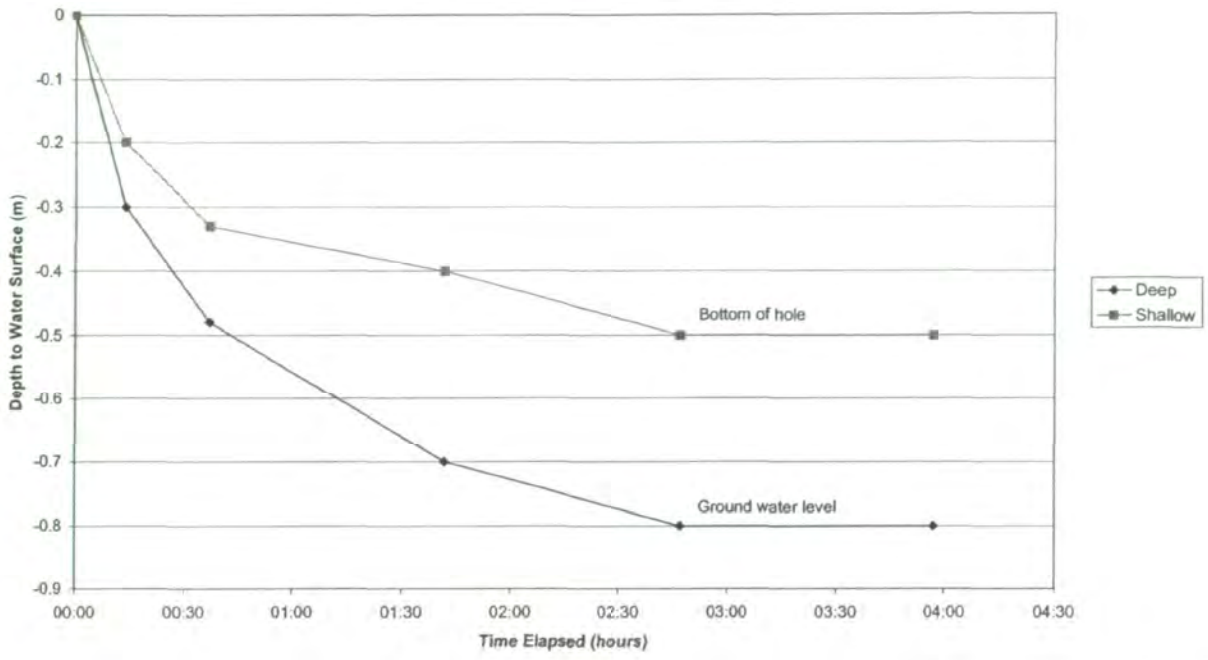
BOREHOLE No: AH8
Hole Location: Refer to Site Plan
SHEET 1 OF 1

PROJECT: Coroflats	LOCATION: Coromandel	JOB No:	22978
CO-ORDINATES mN / mE	DRILL TYPE: 50mm diameter Auger	HOLE STARTED:	14/10/05
	DRILL METHOD: Hand Auger	HOLE FINISHED:	14/10/05
R.L. m		DRILLED BY:	
DATUM	DRILL FLUID:	LOGGED BY: PJH	CHECKED: GAL

GEOLOGICAL									ENGINEERING DESCRIPTION							
GEOLOGICAL UNIT, GENERIC NAME, ORIGIN, MINERAL COMPOSITION	FLUID LOSS	WATER	CORE RECOVERY	METHOD	CASING	TESTS	SAMPLES	R.L. (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MOISTURE CONDITION / WEATHERING	STRENGTH/DENSITY CLASSIFICATION	SHEAR STRENGTH (kPa)	COMPRESSIVE STRENGTH (MPa)	DEFECT SPACING (mm)	SOIL DESCRIPTION / ROCK DESCRIPTION
TOPSOIL											PH						Topsoil.
ASH		▼				• 168/60 kPa					ML	M	St				SILT, clayey, moist, stiff, mod plastic, reddish grey.
						• 132/48 kPa					ML						SILT, clayey, stiff, moist, mod plastic, light brown.
											ML						SILT, clayey, stiff, moist, mod plastic, light brown.
						• 120/66 kPa			1		ML						CLAY, silty, saturated, plastic, stiff, light grey.
																	END OF BOREHOLE @ 1.3m
									2								
									3								
									4								
									5								

Appendix B: Soakage Test Results

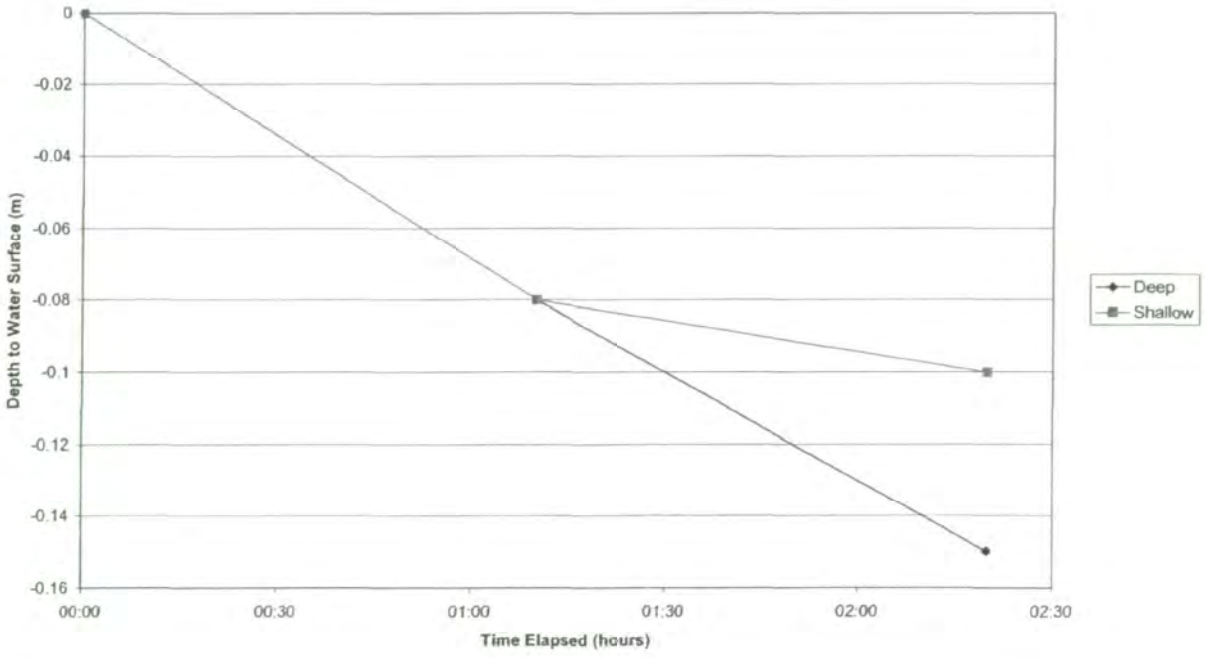
Soakage Test Results - AH2



Job No. 22978
Job Name. Coro Flats

P:\22978\WorkingMaterial\EXCEL\pjh081105.soakage test results.xls
15/12/2005

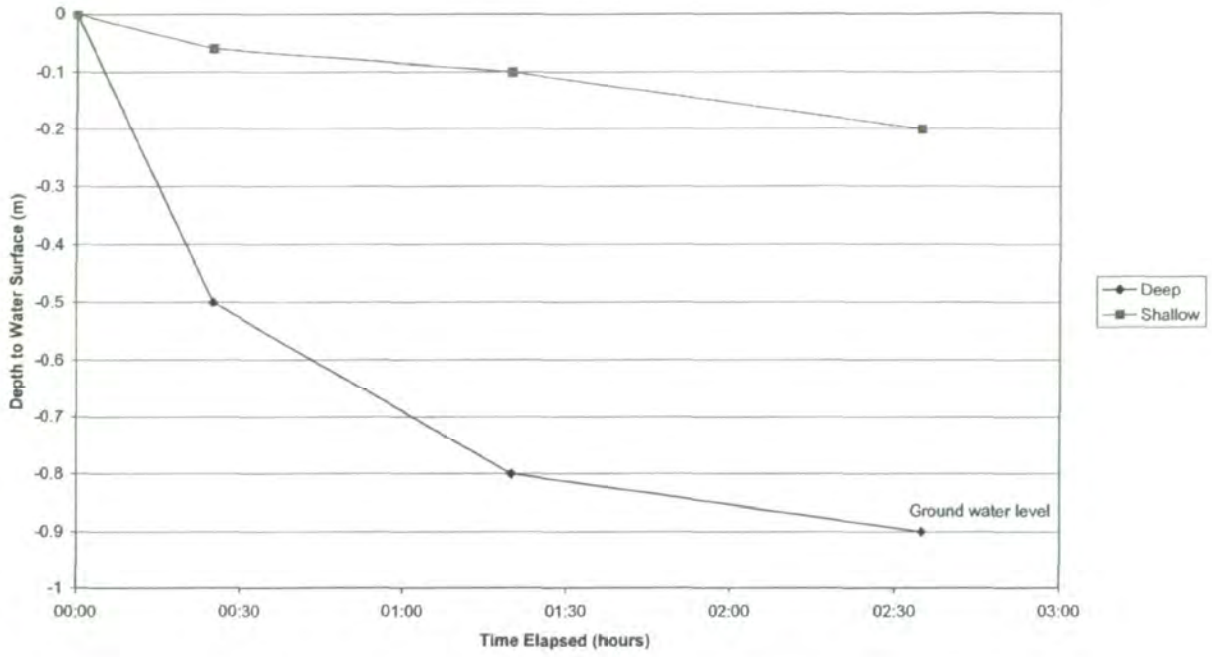
Soakage Test Results - AH3



Job No. 22978
Job Name. Coro Flats

P:\22978\WorkingMaterial\EXCEL\pjh081105.soakage test results.xls
15/12/2005

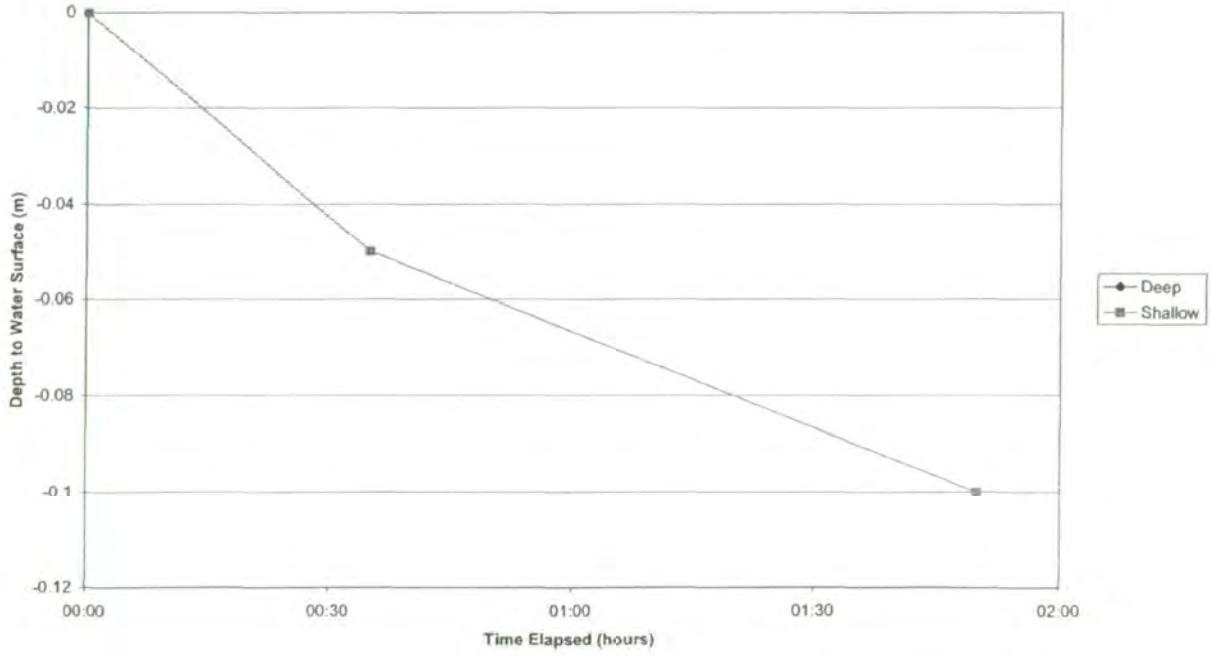
Soakage Test Results - AH4



Job No. 22978
Job Name. Coro Flats

P:\22978\WorkingMaterial\EXCEL\pjh081105.soakage test results.xls
15/12/2005

Soakage Test Results - AH5



Job No. 22978
Job Name. Coro Flats

P:\22978\WorkingMaterial\EXCEL\pjh081105.soakage test results.xls
15/12/2005

Tonkin & Taylor

22 FEB 2008

T&T Ref : 22978
18 February 2008

Greenhills Ltd
c/- Dunwoodie & Green Ltd
541 Pollen Street
Thames

Attention: Phil Green

Dear Phil

Correction to Geotechnical and Flood Risk Report for Coromandel Subdivision

As discussed, the purpose of this letter is to formalise a correction to Section 5.1 of our report for Greenhills Ltd entitled "Proposed Subdivision, Coromandel Town, Geotechnical and Flood Risk Assessment", December 2005, Ref. 22978/v1. The second bullet point in this section should read (changes in bold type):

- **Shear strengths in the augerholes indicate stiff to very stiff soils, suitable for building foundations which may be constructed in accordance with NZS 3604:1999 with a minimum founding depth of 0.5 m beneath cleared ground level. Any building foundations within 5 m of slopes exceeding 15° should have an allowance made for a 1 m deep zone of creeping soil and a minimum founding depth of 1.5 m into completely to highly weathered andesite to the satisfaction of the Engineer.**

This correction makes the conclusions in Section 5.1 consistent with the recommendations given in Section 3.3.1 in the body of the report.

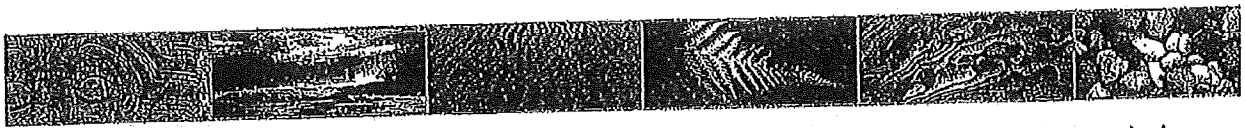
I trust that this clarifies the situation regarding the required depth of foundations.

Yours sincerely,

Grant Loney
Project Coordinator

Letter prepared by Paul Hayes

18-Feb-08
p:\22978\22978.001\communications\pjh180207.correction to foundation conclusions.let.doc



Tonkin & Taylor Ltd - Environmental and Engineering Consultants, 105 Carlton Gore Road, Newmarket, Auckland, New Zealand
PO Box 5271, Wellesley St, Auckland 1141, Ph: 64-9-355 6000, Fax: 64-9-307 0265, Email: auck@tonkin.co.nz, Website: www.tonkin.co.nz

Tonkin & Taylor

31 MAR 2006

T&T job no: 22978
21 March 2006

Dunwoodie & Green Surveyors Ltd
PO Box 194
541 Pollen Street
Thames

Attention: Philip Green

Dear Philip

Subdivision for Greenhills Ltd, Coromandel
Re: Environment Waikato comments

This letter is in response to your letter dated 15 March 2006 and addresses some of the review comments made by Environment Waikato (7 March 2006) on the resource consent application for the above project.

Infilling of gulley

There is a small gulley on the right bank of the Karaka Stream, approximately in the location of the proposed main access road. Model results show that during the 1 in 100 year flood event the gulley is flooded. As part of the subdivision development it is proposed to infill this gulley to create level ground.

Environment Waikato (EW) is concerned about the effect this infilling within the floodplain will have on flood levels on other properties. While this effect has not been explicitly modelled, any effect is considered to be negligible (refer to the first bullet point in Section 4.6).

The gulley is relatively small and approximately perpendicular to the main channel. This means there is no active flow within the gulley and water levels are governed by the backwater effect from the stream. Due to the small size of the gulley the storage that would be lost from the floodplain as a result of infilling is considered to be insignificant. Using the 1 in 100 year flood depths from the Mike-21 hydraulic model, a 1 in 100 year storage volume of only 350 m^3 is calculated.

Accordingly, it is considered that the gulley may be infilled with no significant effect on flood levels on other properties.

Floor levels

EW has commented that the proposed floor levels described in Section 4.3 are, in fact, the 1 in 100 year flood levels and do not include 0.5 m freeboard. This is not the case.

The Karaka Stream flood levels presented in Figure 3.1 (which EW has stated are acceptable) range from RL 11.85 m to RL 9.40 m. The floor levels presented in Section 4.3 range from RL 12.35 m to RL 9.90 m and include 0.5 m freeboard above the 1 in 100 year flood.

The floor levels for Coro Stream are to be set at 0.5 m above the top of bank level.

Buildings within the floodplain

The Thames Coromandel District Council processing planner has noted that a number of the lots (Lots 7, 65, 57, 55, 54, 33, 23 and 25) are within the 100 year floodplain shown on Figure 3.1 and requested that mitigation measures be provided. These comments are addressed below.

- Parts of Lots 23 and 25 are within the 1 in 100 year floodplain of the Karaka Stream. No houses will be constructed within the portion of the property within the floodplain, and the house floor level will be set a minimum of 0.5 m above the 1 in 100 year flood level (refer to the first bullet point in Section 4.6).
- The remaining lots are all within the existing 1 in 100 year floodplain to the Coro Stream. Channel improvement works should ensure the 1 in 100 year is confined to the main channel through the site, meaning there will be no floodplain flow. In addition, the floor levels will be set at 0.5 m above the top of bank level (refer to the third paragraph in Section 4.3).

We have spoken with Nick Martin of EW and he is happy with the above explanations of gulley infill and floor levels. However, in relation to the channel improvement works on the Coro Stream, he indicated that EW would want their existing Mike-21 model updated to reflect the proposed changes before they would grant consent. He is sending us a copy of the model and we are happy to do this work if you would like us to.

I trust that the above comments adequately address all the relevant issues. Please contact Paul Hayes on (09) 355 0757 should you have any further queries.

Yours faithfully

Grant Loney
Project Coordinator

27-Mar-06
p:\22978\workingmaterial\word\pjh210306.ew comments.let.doc

Tonkin & Taylor

T&T job no: 22978
15 May 2006

Greenhills Ltd
c/- Dunwoodie and Green Surveyors Ltd
PO Box 194
541 Pollen Street
Thames

RECEIVED
22 MAY 2006

Attention: Marilyn Dodds

Dear Marilyn

Additional Mike-21 Modelling for Greenhills Ltd Subdivision, Coromandel

1 Introduction

As requested in your email dated 21 April 2006, Tonkin & Taylor Ltd (T&T) has undertaken additional Mike-21 modelling for the Greenhills Ltd subdivision in Coromandel Town. Full details of the geotechnical and flood risk investigations for the proposed subdivision are given in the T&T report dated December 2005.

Following a review of this report, Environment Waikato (EW) had a number of reservations about the flood risk to the property. These included the effect of filling a small gulley to the south of the property and house floor levels adjacent to the so-called Coro Stream. EW had an existing Mike-21 model of the various watercourses in the Coromandel catchment, including the Karaka Stream and Coro Stream. This model was used to derive minimum floor levels in the December 2005 report.

EW requested that this model also be used to assess the effects of the development on flood levels, and supplied a copy of the model to T&T for this purpose. This report summarises the results of this additional modelling.

2 Mike-21 model setup

2.1 General

The existing EW Mike-21 model uses LiDAR data on a 2 m grid to represent the Coromandel catchment. While a 2 m grid is adequate for modelling a large watercourse such as Karaka Stream, it cannot adequately represent a small watercourse like Coro Stream. To help resolve this, EW provided T&T with a cut-down version of the full model so Coro Stream could be modelled on a 1 m grid.

2.2 Filling of southern gulley

The existing EW 2m grid model was used to model the effect of in-filling the small gulley draining to Karaka Stream at the south of the site. The existing model was modified by raising the elevation of land within the gulley to 12.0 m.

2.3 Coro Stream

Coro Stream was modelled using the cut-down version on a 1 m grid. Even with this small grid size, the existing model did not accurately represent the Coro Stream channel. In some places the interpolated LiDAR data did not show a channel at all, and in most places the modelled channel was much shallower than the actual channel.

A 200 m length of Coro Stream had been surveyed by Dunwoodie & Green Surveyors Ltd (D&G) in September 2005. Comparing surveyed levels with modelled levels showed that the Mike-21 channel was between 0.3 m and 1.6 m shallower than the physical channel. Following discussions with EW, it was agreed to account for this difference by lowering the entire channel by 0.6 m (a conservative average of the difference between the survey data and the model data) to approximately represent the existing situation.

Some channel improvement works are proposed as part of the subdivision. These were represented by dropping the channel invert by 0.4 m and lowering a 5 m wide strip on the left bank by 0.5 m to create a floodway. A 20 m wide strip raised 1 m above existing ground was modelled adjacent to the floodway and on a portion of the right bank to represent the proposed building platforms. This raised platform was set back 5 m from the edge of the channel/floodway.

3 Model results

3.1 Filling of southern gulley

Filling the small southern gulley which drains to Karaka Stream is shown to have no significant effect on flood levels within Karaka Stream. Comparing existing flood levels to post-development levels shows an increase of less than 1 cm upstream of the gulley. This was expected given the small size of the gulley and the limited storage volume available within it. Existing and post-development 100 year flood levels are shown on Figures 1 and 2.

3.2 Coro Stream

As discussed previously, the purpose of the Coro Stream model was to assess the effects of channel improvements and raised building platforms on flood levels, and to assess minimum floor levels. Because of the uncertainties in the model (channel dimensions, elevation, etc) the results from the model need to be treated cautiously.

Existing and post-development 100 year flood levels are shown on Figures 3 and 4. It is seen that there is no significant increase in flood and that the extent of flooding is not increased.

4 Application of results

4.1 Infilling of southern gulley

The small gulley draining into Karaka Stream may be filled with no significant effect on upstream flood levels.

4.2 Coro Stream

As discussed previously, a number of assumptions have been made with the Coro Stream model and the results should be treated accordingly. However, the results do show that the development may proceed without increasing flood levels in the 1 in 100 year flood event.

The following channel improvement works are recommended for this project:

- increasing the capacity of the main channel by enlarging and steepening the main channel past the subdivision site (and further upstream and downstream if consent is granted)
- creating a 5 m wide floodway on the left bank
- floor levels to be set a minimum of 0.5 m above the modelled 100 year flood level (approximately 1 m above existing ground level) and building platforms to be set back from the channel as far as practicable

Because of the uncertainty in the Mike-21 modelling, a calculation check has been made using the FlowMaster software. The channel improvements modelled (enlarged and steepened channel and 5 m floodway) resulted in lower flood levels than predicted using Mike-21, and gives confidence that the Mike-21 results are an upper bound of 100 year flood levels.

It is noted that one or two bridges will be required over the Coro Stream to connect the proposed access roads. These should be designed to convey the 1 in 100 year flood without causing a significant increase in upstream flood levels.

5 Applicability

This report has been prepared for the benefit of Greenhills Ltd with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

TONKIN & TAYLOR LTD

Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor by:
Paul Hayes	Grant Loney
Geotechnical Engineer	Project Coordinator

15-May-06
p:\22978\workingmaterial\mike21\pjh020506.mike-21 modelling (draft).lebrpt.doc

Appendix A: Figures

Figure 1 – Existing 1 in 100 year flood levels on Karaka Stream

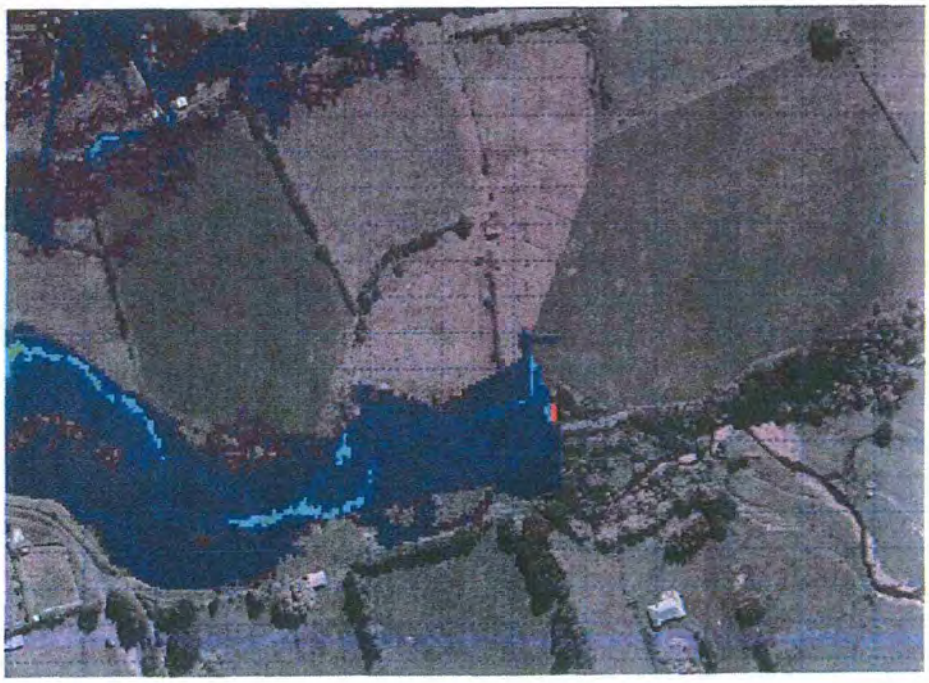
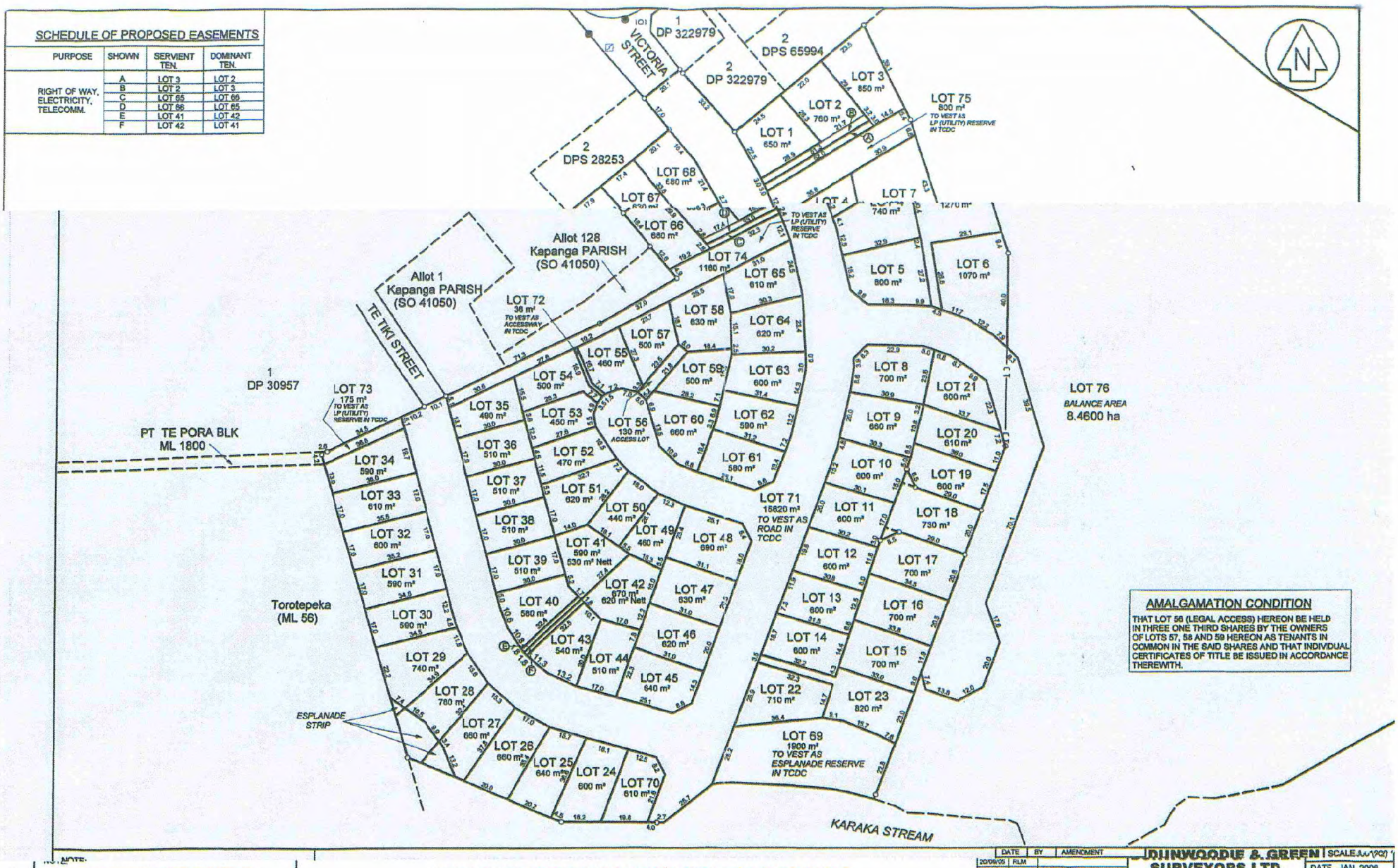


Figure 2 – Proposed 1 in 100 year flood levels on Karaka Stream with infilled gulley

Figure 3 – Existing 1 in 100 year flood levels on Coro Stream

Figure 4 – Proposed 1 in 100 year flood levels on Coro Stream with enlarged channel, 3m floodway and 1m high building platforms



NOTE:
- AREAS AND DIMENSIONS ARE SUBJECT TO SURVEY
- TCDC DENOTES THAMES COROMANDEL DISTRICT COUNCIL

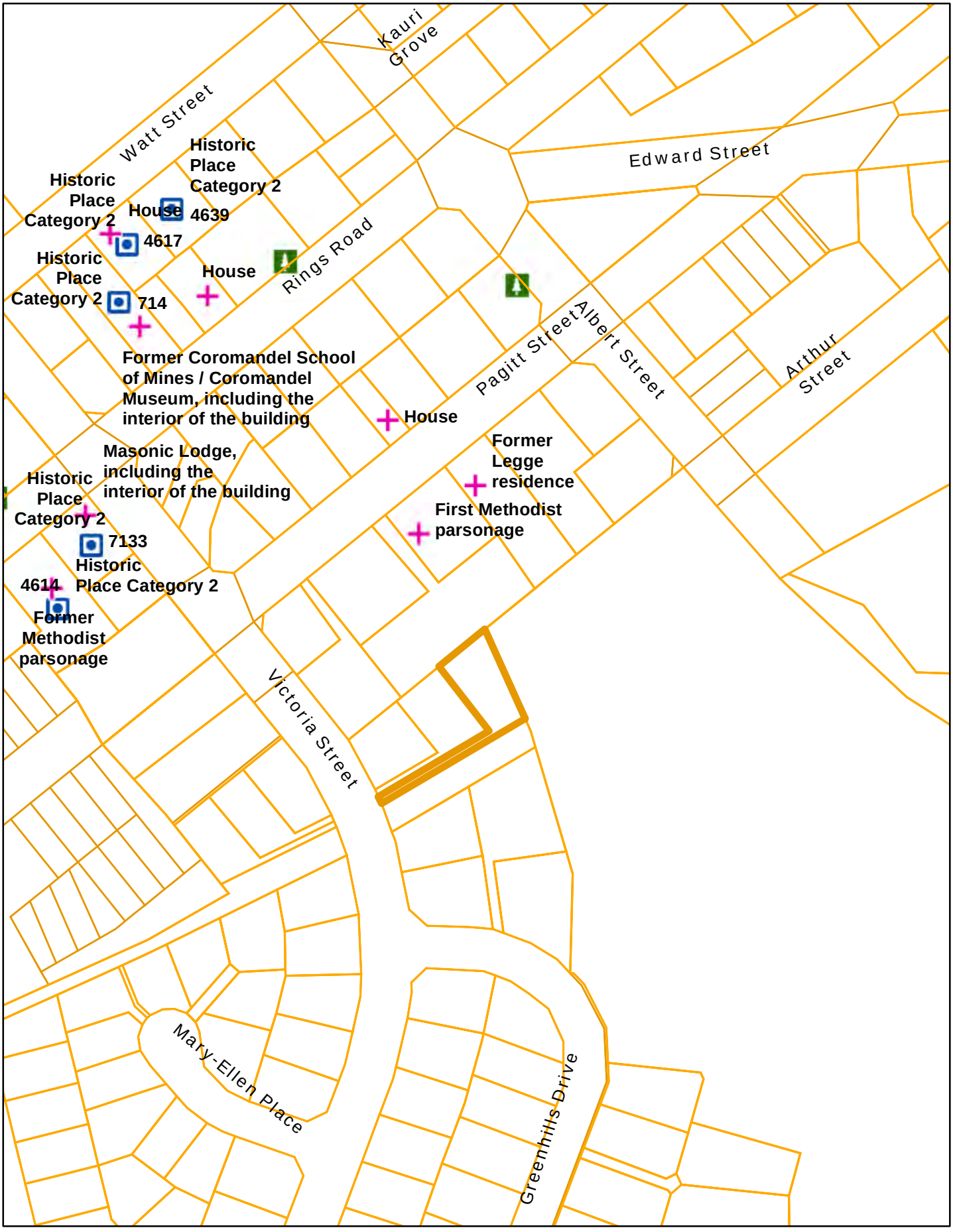
PROPOSED SUBDIVISION OF LOTS 1 & 2 DPS 28345

GREENHILLS LTD - 2 VICTORIA STREET, COROMANDEL

DATE	BY	AMENDMENT
20/09/05	RLM	
05/10/05	GV	BDY AMEND.
19/01/06	GV	BDY AMEND.
1/04/09	PJO	RESERVES AMENDED

DUNWOODIE & GREEN SURVEYORS LTD
LAND DEVELOPMENT SPECIALISTS
541 FOLLEN ST THAMES
Ph (07) 868 7587 Fax (07) 868 8252

SCALE AS (PDF)
DATE JAN 2006
SHEET 1
FILE 5139
CCAD5 FILE 5139/SP



40 VICTORIA STREET COROMANDEL

Date:	16/11/2023
Authored:	maureen
Projection:	NZTM

Heritage and Historical

Legend

- Historic Heritage Item
- Heritage Sites (HNZ)
- Archaeological Sites
- Significant Tree
- Street Trees

1:2,000

0 10 20 30 40 (m)

THAMES COROMANDEL DISTRICT COUNCIL

SECTION E: AS-LAID DRAINAGE PLANS

Where applicable, plans of public and private storm water and wastewater drains as shown on Council's records are attached.

Please note that the location of all services shown on the plans are indicative only.
Location of services should always be confirmed on site.

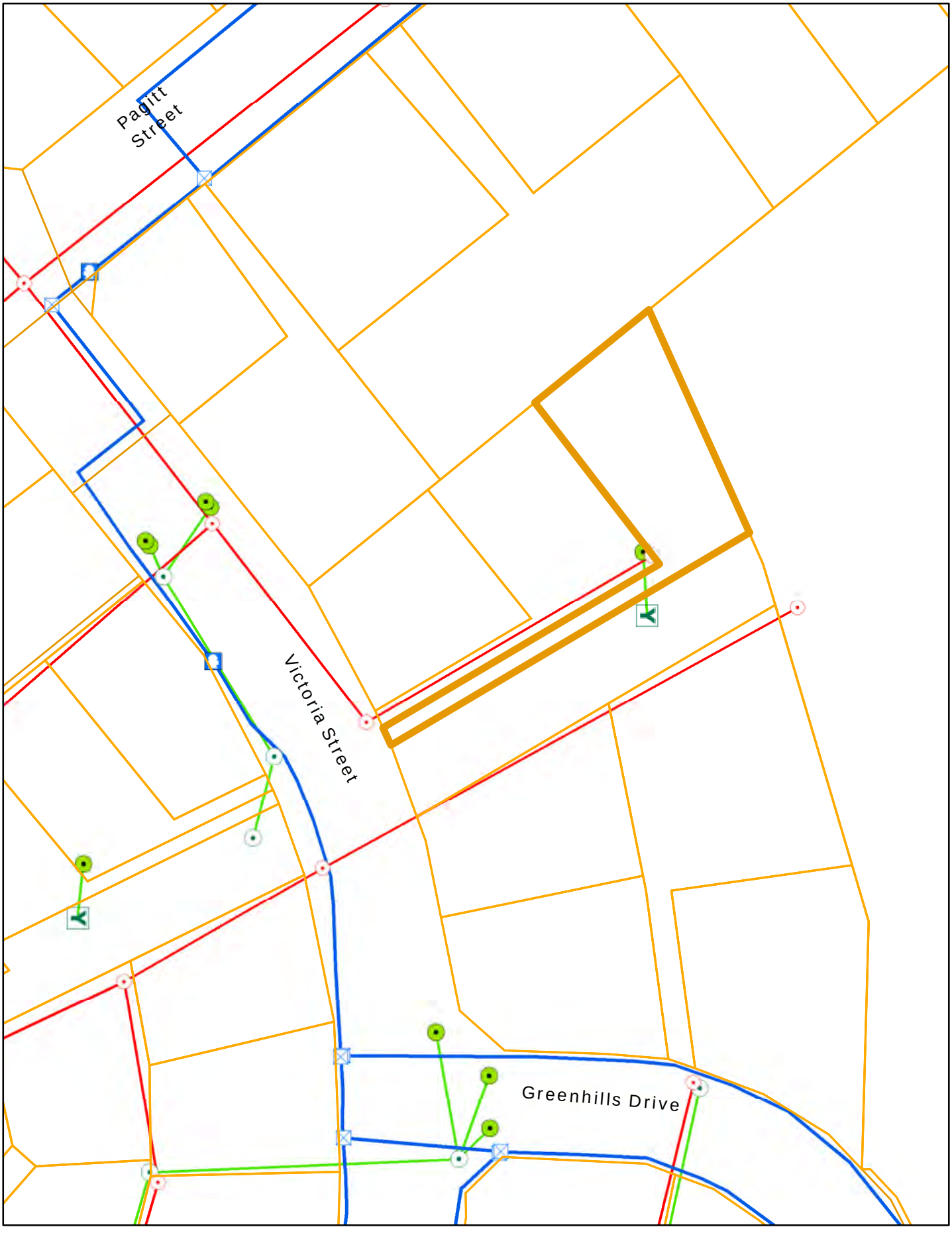
If you require further information, please contact the Thames Office.

WARNING: Private drainage plans have been provided to Council by contractors undertaking the work for the owner. Exact locations of pipes have not been verified by Council and the plans may contain errors or omissions.

Building Over or Near A Public Pipe

If building near or over a public pipe or drain this may reduce TCDC's ability to maintain it. There are some rules around being able to build close to or over public pipes.

Please refer to the site below for further details.
https://www.tcdc.govt.nz/our-services/resource-consents/building-over-or-near-a-public-pipe/



40 VICTORIA STREET COROMANDEL

Date:	16/11/2023
Authored:	maureen
Projection:	NZTM

UTILITIES
LEGEND ATTACHED

Legend

1:800

(m)
0 7 14 21 28

THAMES COROMANDEL DISTRICT COUNCIL

Thames Coromandel District Council - Three Waters
Utilities Map Legend

TCDC Assets:

- Asset Plants

TCDC Water Supply Points:

- Fire Hydrant
- Water Meter
- Node
- Valve
- Other

TCDC Waste Water Points:

- Blankcap
- Inspection Chamber
- Junction
- Magflow Meter
- Manhole
- Node
- Pump Station
- Rodding Eye
- Valve
- Other

TCDC Storm Water Points:

- Blankcap
- Inlet
- Outlet
- Manhole
- Node
- Catch Pit
- Pump Station
- Rodding Eye
- Soak Pit
- Valve
- Wingwall
- Other

TCDC Water Supply Lines:

- Water Main
- Water Connection
- South Eastern WARD
- Thames WARD
- None

TCDC Waste Water Lines:

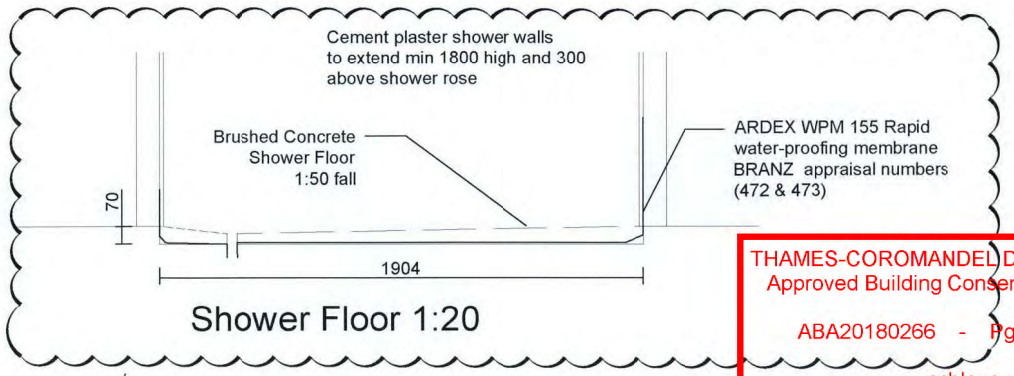
- Wastewater Connection
- Wastewater Main
- None
- South Eastern WARD
- Thames WARD

TCDC Storm Water Lines:

- Stormwater Connection
- Stormwater Main

THAMES COROMANDEL DISTRICT COUNCIL

***Legend Updated**: July 2023*



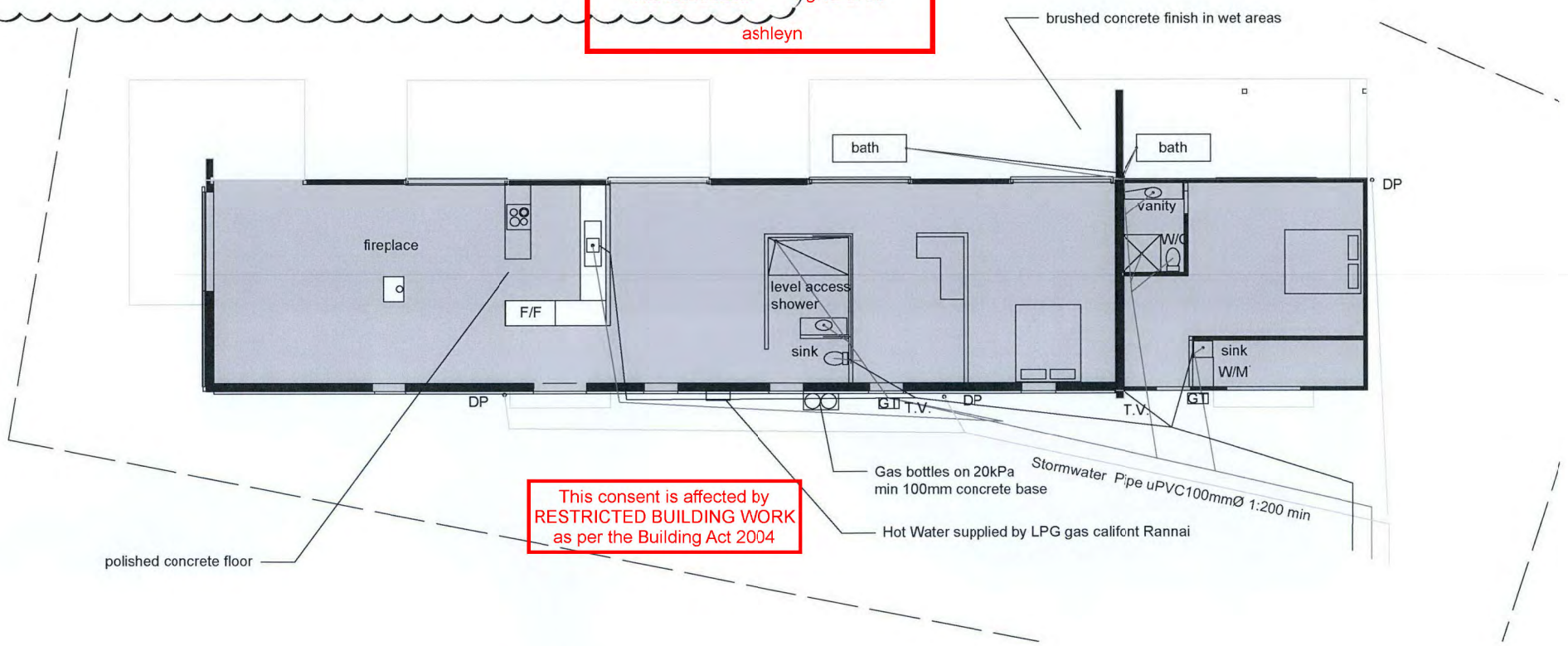
Shower Floor 1:20

Plumbing to NZ Building Code G13/AS1

Inlet pipe sizes to G12/AS1, Table 4 (mains pressure)
20mm to Tempering Valve, Showers, Baths, Laundry
15mm throughout
10mm for Basins

Outlet pipe sizes to G13/AS1, Table 2:
40mm for Kitchen Sink, Showers,Baths, Laundry
32mm for Basins
80mm for Water closet pan

Wastewater Discharge Stack uPVC Pipe
100mmØ with 1:50 gradient



PLUMBING PLAN 1:100

Project Name and Address
Lewis House
40 Victoria St
Coromandel
Coromandel

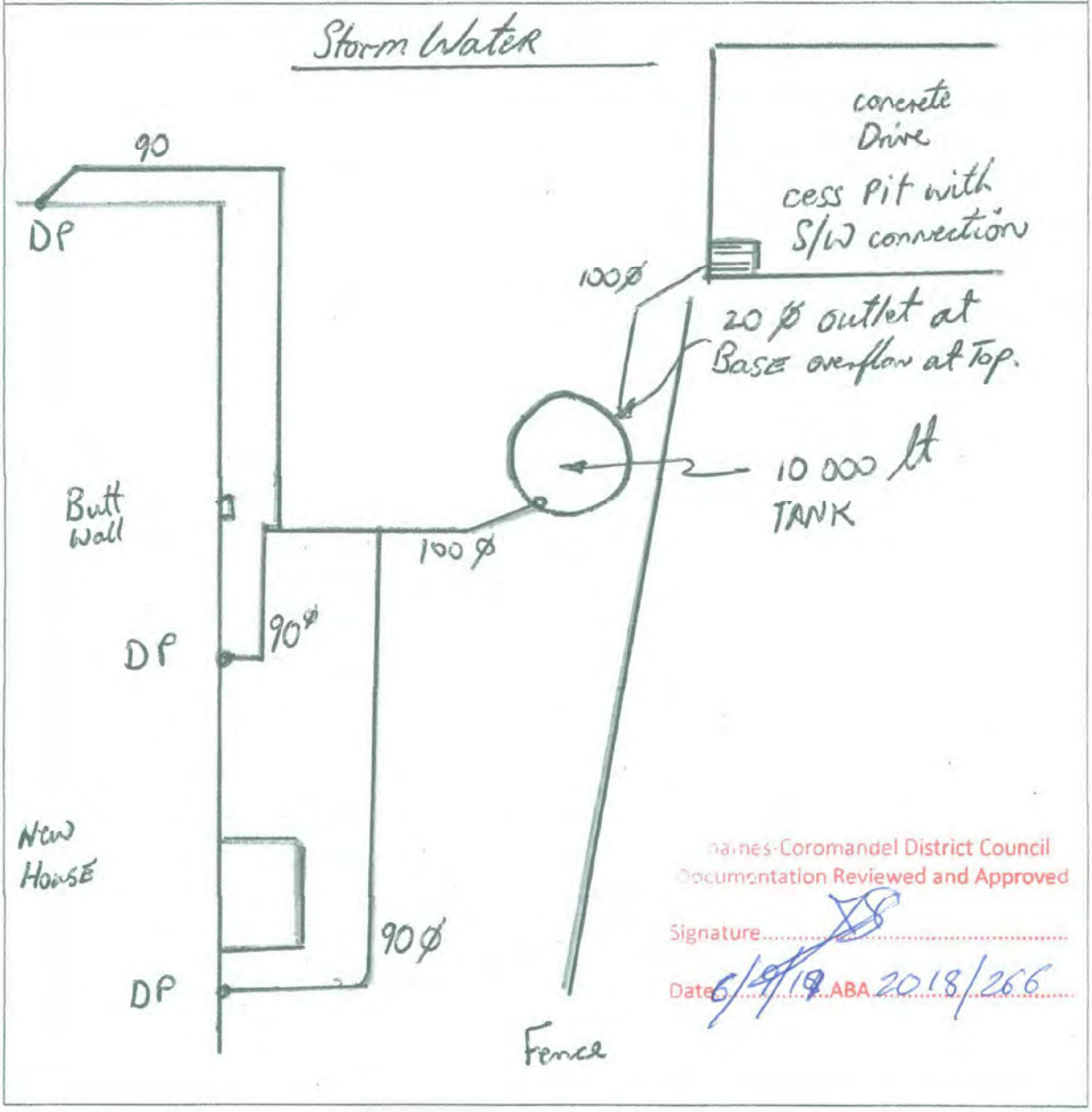
Design Supervisor	Draughtsperson	Architect	Project	Sheet
Paul Hayman Kaeo 0274 505471	Ben Parsons Coromandel 022 130 4455	Gary Underwood, DipArch. Whangarei 02 02424422	Lewis	9
			27.03.2018	
			As Noted	

As Laid Drainage

Building Consent Number: Date: 31 / 7 / 19 No. of pages: 2
Building Address: 40 Victoria St Coromandel. of 2
Drain Layer Name: S. Sowerby [Please print clearly] Signature:
Registration Number: 11711 Business Name: coastal P/L.

To Council: *[Tick]*

☐Hamilton ☐Hauraki ☐Matamata-Piako ☐Otorohanga ☑Thames-Coromandel ☐Waipa ☐Waikato ☐Waitomo



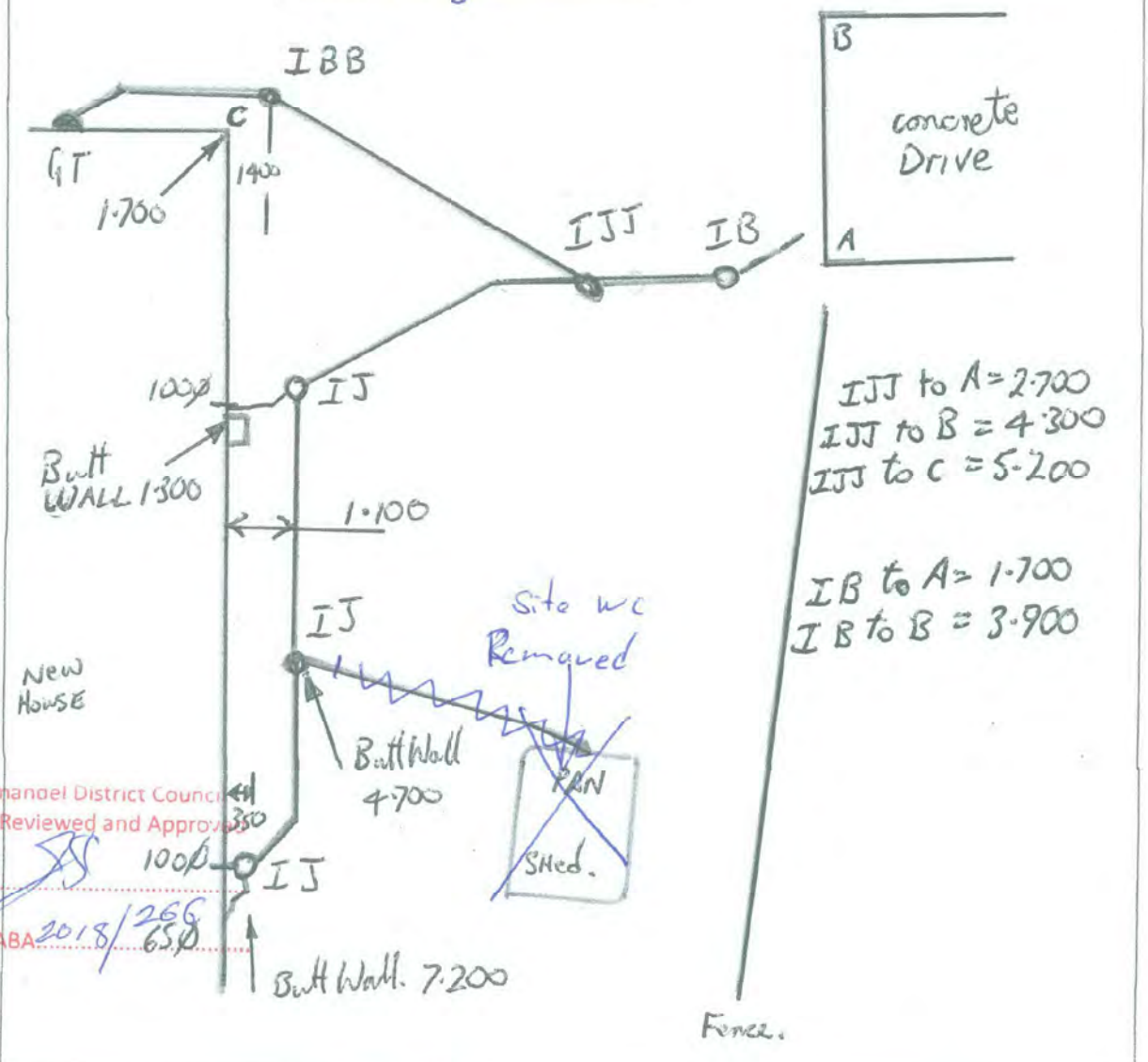
Thames-Coromandel District Council
Documentation Reviewed and Approved
Signature
Date 6/9/19 ABA 2018/266

As Laid Drainage

Building Consent Number:
Date: 31 / 7 / 19 No. of pages: 1 of 2
Building Address: 40 Victoria St COROMANDEL
Drain Layer Name: S. Sowerby. [Please print clearly] Signature:
Registration Number: 11711 Business Name: Coastal Plumbing & Drainage.
To Council: [Tick]

☐Hamilton ☐Hauraki ☐Matamata-Piako ☐Otorohanga ☑Thames-Coromandel ☐Waipa ☐Waikato ☐Waitomo

Drainage



ADDITIONAL INFORMATION

In addition to the previous information provided pursuant to section 44A (3) of the Local Government Official Information and Meetings Act 1987, the following information is provided at the discretion of Council.

THAMES-COROMANDEL DISTRICT COUNCIL SERVICES

This property is being *rated* for the following services. This information is for rating purposes only and does not establish actual service availability. If you would like verification of these connections, a site visit can be arranged at additional cost. Please contact Council for further information.

SERVICE	CONNECTED	AVAILABLE	NOT AVAILABLE
Water	✓		
Wastewater	✓		

WATER SERVICES
For water service information please follow the web site below.
https://www.tcdc.govt.nz/Our-Services/Water-Services/

Council is currently upgrading Water Treatment Plants throughout the district.
Read more about our Drinking Water Standards Upgrade project on the website below.
https://www.tcdc.govt.nz/dws

TARGETED RATES AND LUMP SUM SCHEMES INCLUDED IN RATES 2023/24

DESCRIPTION	YEAR	AMOUNT FOR 2023/24	PAYMENT DETAILS
NO SCHEMES PAYABLE			

CURRENT RATING VALUATION EFFECTIVE SEPTEMBER 2020

Rating Valuation No:	04851-16872
Land Value:	305,000
Improvement Value:	445,000
Capital Value:	750,000

COPIES OF THE LATEST SITE AND FLOOR PLAN (WHEN AVAILABLE) ARE ATTACHED.

The Council recommends that where any doubt exists, applicants should compare the buildings on the property with plans held in Council's files.

If this property is a cross lease it may be subject to a flats plan. Refer to the record of title for the latest flats plan registered.

40 VICTORIA STREET COROMANDEL

Date:	16/11/2023
Authored:	maureen
Projection:	NZTM

Legend

NO LEGEND

N W E S

1:500

0 4.5 9 13.5 18 (m)

THAMES COROMANDEL DISTRICT COUNCIL

Lot 3 DP471265
40 Victoria St
Coromandel

Proposed New Residence

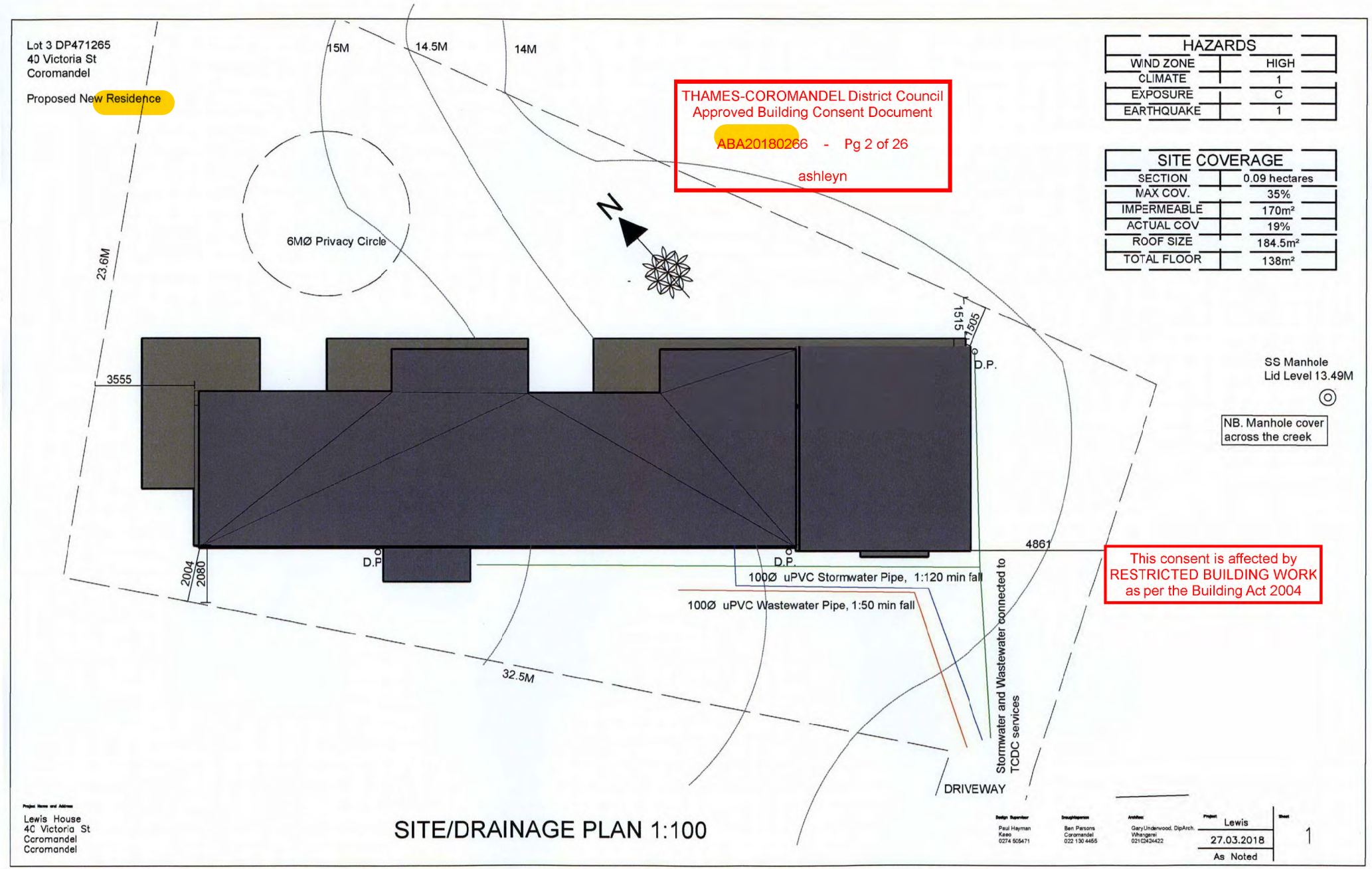
THAMES-COROMANDEL District Council
Approved Building Consent Document

ABA20180266 - Pg 2 of 26

ashleyn

HAZARDS	
WIND ZONE	HIGH
CLIMATE	1
EXPOSURE	C
EARTHQUAKE	1

SITE COVERAGE	
SECTION	0.09 hectares
MAX COV.	35%
IMPERMEABLE	170m²
ACTUAL COV	19%
ROOF SIZE	184.5m²
TOTAL FLOOR	138m²



This consent is affected by RESTRICTED BUILDING WORK as per the Building Act 2004

Project Name and Address
Lewis House
40 Victoria St
Coromandel
Coromandel

SITE/DRAINAGE PLAN 1:100

Design Supervisor: Paul Hayman, Kaeo, 0274 505471
Draughtsperson: Ben Parsons, Coromandel, 022 130 4455
Architect: Gary Underwood, DipArch., Whangarei, 021 0424422

Project: Lewis
27.03.2018
As Noted

Sheet: 1

Interior floors to be polished concrete

Exterior (wet) floors to be brushed concrete

N.B. INTERNAL WALLS
Internal Walls to be 2000mm high except around Storage Room
Internal load bearing walls

Smoke Alarm

THAMES-COROMANDEL District Council
Approved Building Consent Document

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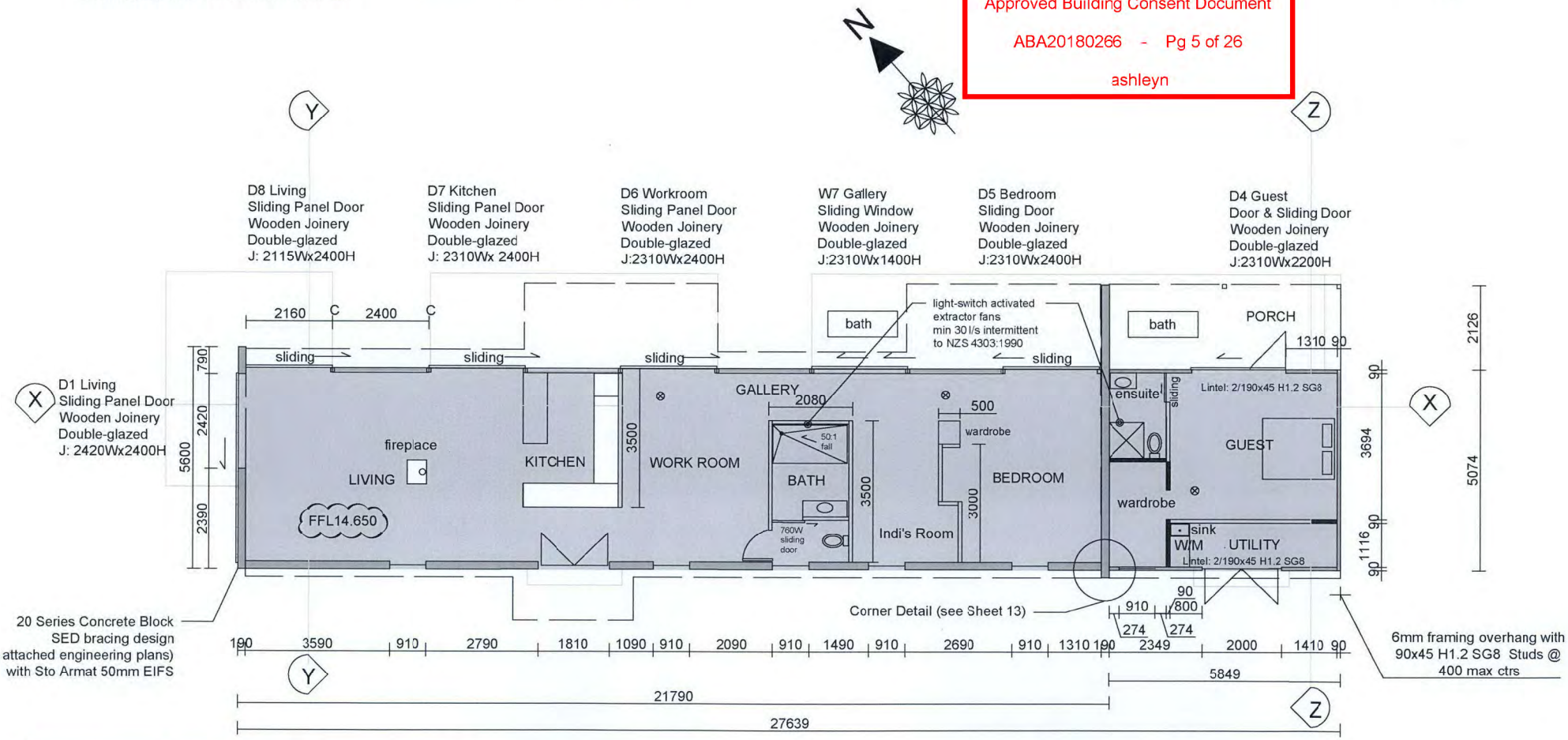


This consent is affected by
RESTRICTED BUILDING WORK
as per the Building Act 2004

W1 Living
Awning Window
Aluminium Joinery
Double Glazed
J: 910Wx2000H

D2 Living
Mexican Doors
Wooden Joinery
Solid Wooden
1720Wx2100H

W2 Living
Awning Window
Aluminium Joinery
Double-glazed
J: 910Wx400H

W3 Bathroom
Casement Window
Aluminium Joinery
Double-glazed
Safety Glass
J: 910Wx400H

W4 Indi's Room
Awning Window
Aluminium Joinery
Double-glazed
J: 910Wx400H

W5 Bedroom
Awning Window
Aluminium Joinery
Double-glazed
J: 910Wx400H

W6 Guest
Awning Window
Aluminium Joinery
Double-glazed
J: 910Wx400H

D3 Storage
Double Door
Wooden Joinery
J: 2000Wx2000H

Project Name and Address
Lewis House
40 Victoria St
Coromandel
Coromandel

FLOOR PLAN 1:100

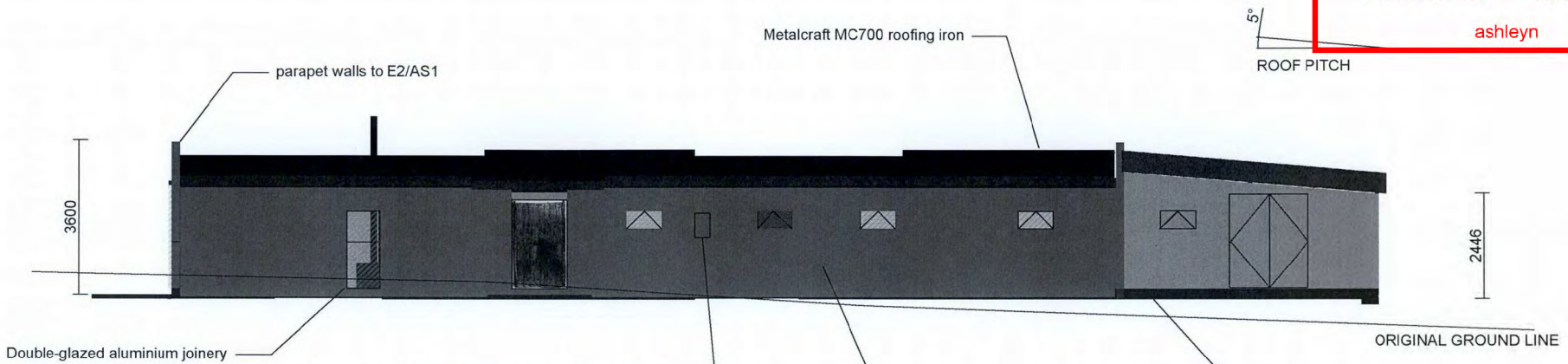
Design Supervisor
Paul Hayman
Kaeo
0274 505471

Draughtsperson
Ben Parsons
Coromandel
022 130 4455

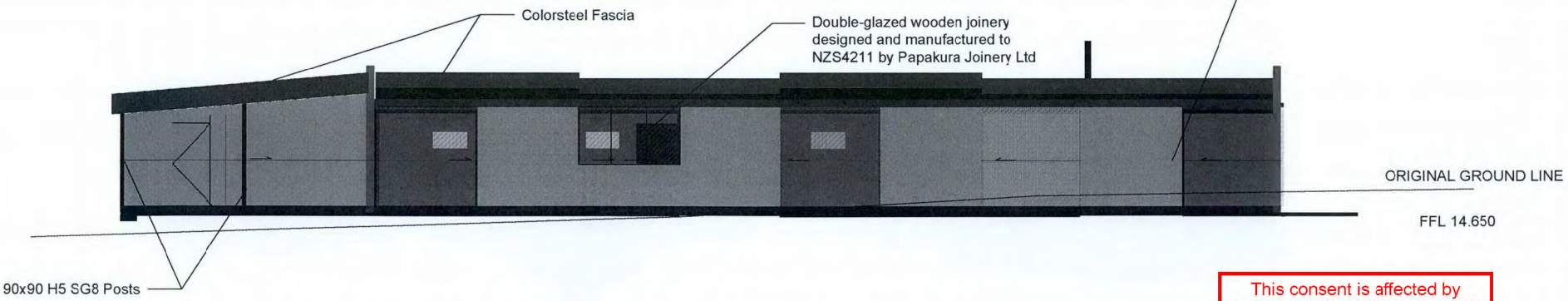
Architect
Gary Underwood, DipArch.
Whangarei
0210424422

Project: Lewis
27.03.2018
As Noted

Sheet: 4



Southwest Elevation 1:100

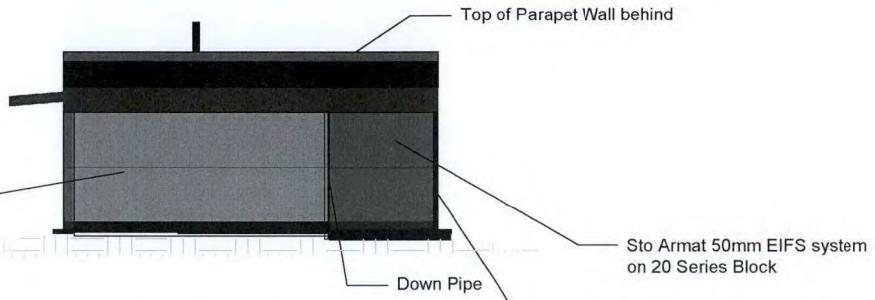


Northeast Elevation 1:100

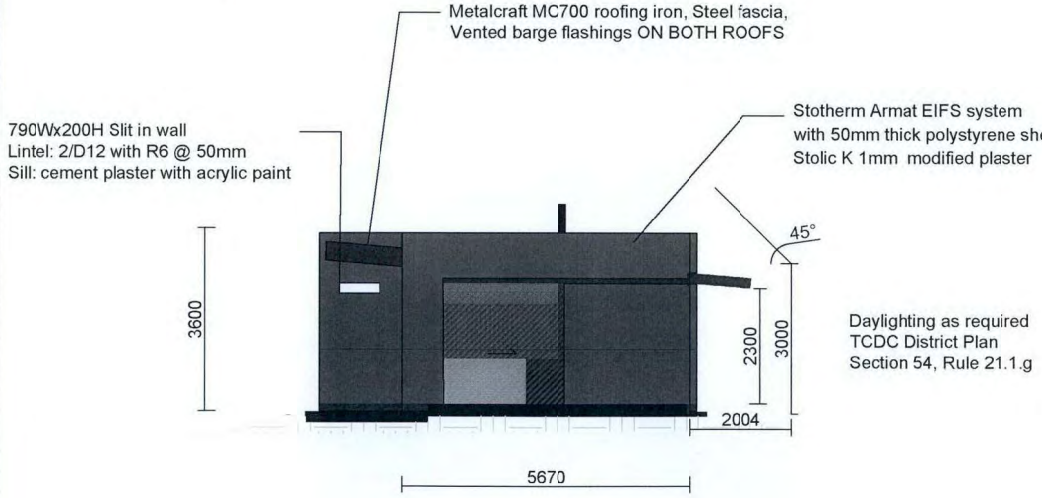
Project Name and Address
Lewis House
40 Victoria St
Coromandel
Coromandel

Design Supervisor	Draughtsperson	Architect	Project	Sheet
Paul Hayman Kaeo 0274 505471	Ben Parsons Coromandel 022 130 4455	Gan Underwood, DipArch. Whangarei 02162424422	Lewis 27.03.2018 As Noted	2

ROOF PITCH



Southeast Elevation 1:100



Northwest Elevation 1:100

THAMES-COROMANDEL District Council
Approved Building Consent Document

ABA20180266 - Pg 4 of 26

ashleyn

This consent is affected by
RESTRICTED BUILDING WORK
as per the Building Act 2004

Project Name and Address
Lewis House
40 Victoria St
Coromandel
Coromandel

Design Supervisor	Draughtsperson	Architect	Project	Sheet
Paul Hayman Kaeo 0274 505471	Ben Parsons Coromandel 022 130 4455	Gay Underwood. DipArch. Whangarei 021024 24422	Lewis 27.03.2018 As Noted	3

GENERAL PLANNING AND PROPERTY INFORMATION

The information below is offered to inform potential property owners of the general provisions of the Council's District Plan and of the existence of other information and rules which affects property within the Thames-Coromandel District.

DISTRICT PLAN

Full copies of the Council's District Plan are available at any Council Office or on our website. The following have been chosen to bring to your attention because they have in the past, been overlooked by property purchasers.

Bush Cover: Bush cover covenants affect some properties. Please consult the District Plan and your Record of Title. Please note that not all bush cover protection measures are noted on the Title.

Indigenous Vegetation, Dune Indigenous Vegetation and Wetland Indigenous Vegetation: The District Plan provides some protection for Indigenous Vegetation. Please check the plan.

OTHER AGENCIES

The following agencies also take actions, which may impact on the property.

Powerco Ltd: Provides and maintains reticulated electricity services throughout the district. Up-to-date and accurate service plans are held by Powerco Ltd. Powerco Ltd has special rules where high tension (11,000 kv and 22,000 kv) lines close on, or cross, privately owned land. Please enquire direct or contact your provider.

Chorus: Provides and maintains reticulated telecommunications services throughout the District. Up-to-date and accurate service plans are held by them. Please enquire direct or contact your provider.

Biosecurity (Noxious weeds or pests): Waikato Regional Council is responsible for this activity. Please enquire direct.

Land Information NZ: Further information may be recorded on the record of title for the property.

NZ Transport Agency: Manages and maintains the state highway network.

Coastal Inundation: **The Waikato Regional Council** holds and administers a 'Coastal Inundation Tool' for the Waikato region. The stated purpose of the Coastal Inundation Tool is to attempt to identify those areas in the Waikato region that may be subject to coastal inundation, and to identify those areas where a better understanding of the extent of the effects of inundation is desirable.

The tool is developed, held and administered by the Waikato Regional Council. The Thames-Coromandel District Council does not hold any information on the design, processes, methodology or functionality of the Coastal Inundation Tool. The Thames-Coromandel District Council makes no representation as to the completeness, accuracy or otherwise of any information or data provided by the Coastal Inundation Tool, or its use.

The tool should be read alongside its Disclaimer. Both are available for viewing at the following website: https://waikatoregion.govt.nz/services/regional-services/regional-hazards-and-emergency-management/coastal-hazards/coastal-flooding/coastal-inundation-tool

TSUNAMI

New Zealand’s entire coast is at risk of tsunami including the Coromandel Peninsula. A large tsunami can violently flood coastlines, causing property damage and injuries. Most of our larger east coast settlements have evacuation plans and a copy is attached if available. More detailed modeling reports have been completed for some areas and are available from the Waikato Regional Council website, namely "Numerical Modelling of Tsunami Effects at Two Sites on the Coromandel Peninsula, Whitianga and Tairua Pauanui"

Natural warning signals may be the only warnings for local and regional source tsunami. Examples of natural warnings may include, a strong earthquake, weak or rolling earthquake of long duration, out of ordinary sea behaviour or the sea making loud or unusual noises.

When experiencing any of the above go immediately to high ground or if the surrounding area is flat go as far inland as possible, evacuating all coastal areas or, where present all evacuation zones.

COROMANDEL
community guide to emergencies

GET READY

STORMS AND FLOODS/SLIPS

Storms and severe weather can happen at any time of the year, even in the middle of summer. This includes strong winds, heavy rain, and thunderstorms.

Storms often bring localised flooding and they can block access to or from your home or bach.

WHAT TO DO

- Charge all devices while you still have power.
- Secure anything that could cause damage in strong winds (such as outoor furniture).
- Stay inside and bring your pets inside. If you have to leave, take them with you.
- Take measures to reduce potential flood damage and make sure your insurance policy covers you for flood damage.
- Don't drive through flood waters – your car is not a submarine.
- Don't walk through floodwaters they could be contaminated with raw sewerage or contain dangerous debris.
- Check the tide times. Flooding often happens at high tide and recedes at low tide.
- Listen to the radio and follow the instructions of emergency services.
- Check metservice.com for real-time updates.
- Check TCDC's Facebook page to see what other people around the Coromandel are reporting.
- Have a household emergency plan.

EARTHQUAKE AND TSUNAMI

An earthquake could cause a tsunami. Know the natural warning signs:

- » **Experience an earthquake that makes it hard to stand up or lasts longer than a minute**
- » **Notice sudden tidal changes at the beach or harbour**
- » **Hear loud or unusual sounds from the ocean**

WHAT TO DO

- Drop. Cover. Hold - during the earthquake
- If you live in a coastal area, evacuate immediately as far up or inland as you can. Do not wait for an official warning.
- Wait for the official 'all clear'
- Have an emergency plan and go bag ready
- Listen to the local radio and follow instructions of Emergency Services
- Download the Red Cross Hazards App
- A distant source tsunami allows ample time to notify and prepare

FIRE

Fire can start from natural causes like floods and earthquakes (causing electical shorts), volcanic activity, lightning strikes and high wind. Low rainfall and drought can also cause an increase in the number of fires started.

WHAT TO DO

- Have an escape plan.
- Decide WHEN you need to escape.
- Make sure your home has smoke alarms.
- Apply for a permit if you want to light open fires in a restricted season.
- Minimise wildfire risk by maintaining "3m" of cleared space, no trees, around your home.
- Drop to the floor and get out of the building or away from the fire.
- Call 111.

Communities on the Coromandel Peninsula have a history of being cut off for **3 DAYS** or more.

You may need to take care of yourself before help arrives visit **www.getready.govt.nz** to help you get ready.

AM I PREPARED?

Do I have an emergency plan for the hazards in my area?
getready.govt.nz

Do I have 3 days of emergency supplies? **(including medicine)**

Do I have an evacuation plan?
- Is my Go Bag packed?
- Do I require assistance – Identify a friend or neighbourthat can help you.

Visit **www.getready.govt.nz** to help you get ready

BE INFORMED.

RECEIVE MOBILE ALERTS
National Emergency Management Agency: **getready.govt.nz/prepared/stay-informed/emergency-mobile-alert/**

RECEIVE E-MAIL ALERTS
Visit **tcdc.govt.nz/subscribe** to sign up

UPDATES VIA FACEBOOK
/thamescoromandeldistrictcouncil//hellohahei

DOWNLOAD HAZARD APP
Red Cross Hazard App
GeoNet Geological Hazard App

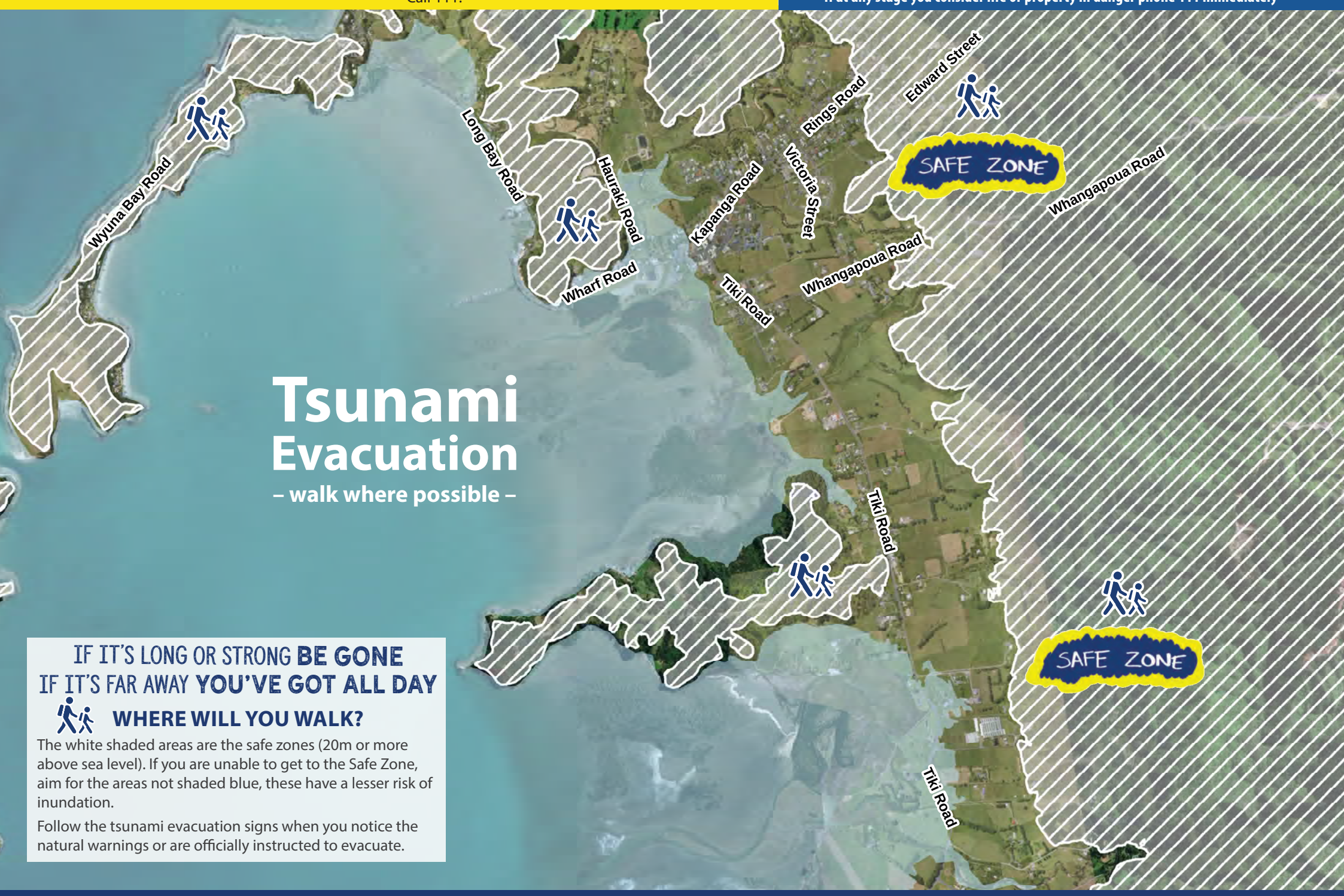
RADIO STATIONS

More FM	89.1FM
The Breeze	90.8FM
Radio NZ	756AM/101.4FM
Newstalk ZB	1080AM/ 89.4 FM/97FM
C95 FM	94.0FM

CHECK YOUR LOCAL COMMUNITY NOTICEBOARD
Coromandel Info Centre
Coromandel School
Frazer reserve
Coromandel Airfield

To report issues that are non life or property threatening contact Thames-Coromandel District Council at 07 868 0200.

If at any stage you consider life or property in danger phone 111 immediately



Tsunami Evacuation
– walk where possible –

IF IT'S LONG OR STRONG **BE GONE**
IF IT'S FAR AWAY **YOU'VE GOT ALL DAY**

WHERE WILL YOU WALK?

The white shaded areas are the safe zones (20m or more above sea level). If you are unable to get to the Safe Zone, aim for the areas not shaded blue, these have a lesser risk of inundation.

Follow the tsunami evacuation signs when you notice the natural warnings or are officially instructed to evacuate.

Visit www.getready.govt.nz

For more detailed information see www.waikatoregion.govt.nz/tsunamistrategy

THAMES-COROMANDEL DC EMERGENCY MANAGEMENT