# Property File - 18 Ebbtide Way, Maungatapu, Tauranga

Lot 8 DP 349963 | Tauranga City Council property file P/8985/18

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`https://secureftp.tauranga.govt.nz/public/file/-9bmseq0xu-g-6cz48uvla/Property%20File%20-%2018%20Ebbtide%20Way.zip`

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# 2240
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SUB 6066



**S&L CONSULTANTS LTD** - SURVEYORS - ENGINEERS - PLANNERS

S&L

SHRIMPTON & LIPINSKI

SHRIMPTON & LIPINSKI

# *CHAUNTRY COVE*
# *23 TE WATI STREET*
# *MAUNGATAPU*

## *REPORT ON DEVELOPMENT EARTHWORKS AND RECOMMENDATIONS FOR BUILDING*

Our ref: 17365
March 2005

**S&L CONSULTANTS LTD** - SURVEYORS - ENGINEERS - PLANNERS
111 Cameron Road PO Box 231 Tauranga New Zealand Phone 07 577 6069 Fax 07 577 6065 Email slconsultant@sltga.co.nz

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# 1.0 Introduction

The earthworks, internal roading and installation of services for the Chauntry Cove residential development at 23 Te Wati Street are complete.

The twelve residential lots are shown on deposited plan DP 349963.

This report describes the earthworks undertaken for ground improvement on some of the lots and provides recommendations for the locations of future building sites on the improved ground and away from steep slopes present around the perimeter of the development area.

Within the report reference is made to the following drawings included in Appendix I.

- DP 349963 which shows the lot dimensions, building restrictions and boundary positions.
- Drawing 17365-AB1 which shows the areas of improved ground and recommended building areas, building restriction lines test positions and some topographical features.

# 2.0 Pre Construction Activities

## *2.1 Previous Site Development*

The previous owner of 23 Te Wati Street prior to subdivision formed the current route of the accessway from Te Wati Street to the lower levels in January 1999. Other earthworks undertaken were to place unsupervised filling to raise levels close to the estuary margin to the south west. Filling was obtained from areas in the current areas of lots 2 and 12.

A small house was transported on to a site on current lot 5 in July 1999 and an adjacent garage was constructed in February 2002. At both sites ground improvement work was undertaken whereby soft in situ surface soils were removed and were replaced with imported gravel and sand to a depth of 0.5 m under the observation of S & L Consultants Ltd. A small timber retaining wall, that was at the rear of these buildings, still remains and is shown in position on 17365-AB1.

## *2.2 Previous Investigations*

Prior to seeking subdivision approval in April 2004 a site geotechnical assessment was undertaken. The assessment involved a walkover inspection, a check of past aerial photography to identify recent changes in the landform, a review of office files and the drilling and logging of fifteen investigation boreholes. The locations of these boreholes are shown on 17365-AB1 in Appendix I. The summary logs of these boreholes are contained in Appendix 4.

The information obtained from the visual inspections, a topographical survey of the property and the boreholes was collated and discussed in the "Application for Resource Consent – Sperling Property" reference 17365 and dated 23 April 2004. The assessment concluded that

- on proposed lots 3, 4 and 6 to 10 inclusive the subsoils comprised a raft of non structural filling that overlaid soft estuarine sediments that extended to significant depths. The non structural filling was a mixture of ash silts and topsoil while the estuarine sediments, more than 9 m deep, comprise homigenous sandy silts although at some locations organic soils up to 1 m deep underlaid the filling. It was recommended that the surface fills and underlying organic soils be removed and be replaced with filling under supervision. At the same time the general building levels were to be raised to RL 2.8 m (Moturiki) to comply with the minimum building platform levels stated on the District Plan of Council. As the earthworks activities and the additional overburden pressures at the elevated fill levels could initiate consolidation of the underlying estuarine soils it was recommended that the specified building areas on lots 3, 4 and 6 to 10 be preloaded or surcharged and the rates of induced settlement on the sites be monitored by the survey of settlement markers.
  The margins between areas of improved ground and the non structural filling placed previously was to be defined by a building restriction line shown on the deposited plan.

- On lot 1 shallow non supervised filling was present and at the designated building site this filling would be removed. As competent subsoils exist to support the replacement filling, no preloading was considered necessary.

- On lot 2 the relatively steep slopes had been previously modified to a series of cut batters and berms. Care would be required in developing lot 2 to create and maintain a stable building site.

- On lot 11 a building site was identified on natural ground below cut and fill batters to the north and east and away from steeper natural slopes to the west.

- On lot 12 the building site was identified on a platform levelled from previous earthworks in 1999. Building restriction lines were recommended to be shown on the deposited plan to locate buildings back from the steep slopes to the east and south.

Slope instability analyses were undertaken to determine the positions of the building restriction lines on lot 12 and to confirm that building positions on lots 1, 2 and 3 were not at risk from any instability on the slopes above.

## 3.0 Subdivision Filling Standards

The performance specification required of the contractor for the controlled filling placed was based on the guidelines contained in NZS 4431:1989 "Code of Practice for Earthfill for Residential Development".

The structural filling placed was imported to the site from the following sources:

- Papamoa sand from Bell Road for the initial 0.5 m lift.
- Ash derivative soils from excavations at the Mayfield Subdivision, Bethlehem.
- Sands from excavations at the Longview Subdivision, Papamoa.

Compaction and subsoil strength acceptance criteria were:

- Air voids percentage - Average value less than 10 (any 10 tests)
  - Maximum single value 12%

- Undrained shear strength (measured with insitu vane)
  - Average value not less than 150 kPa (any 10 tests)
  - Minimum single value 110 kPa

- Scala penetrometer blow counts of 4 or more per 100 mm .

The earthworks were undertaken by Bay Excavators Ltd and were observed by S & L Consultants Ltd engineering and survey staff, and compaction and strength control testing was undertaken by Geotechnics Ltd both on site and at their IANZ approved laboratory in Tauranga.

Eighteen tests were taken at depths prescribed by S & L Consultants Ltd as the fill levels were elevated.

The compaction test results obtained are summarised in Appendix 3 and the test positions are shown on drawing 17365-AB1.

# 4.0 Scope of Earthworks

## *4.1 Lots 3, 4, 6 to 10 Inclusive*

The soils on the property deemed unsuitable for the direct support of buildings, as identified in pre construction boreholes 2 to 9 inclusive, were excavated from lots 3, 4 and 6 to 10. The excavated soils were placed as non structural filling over the original ground at the southern (estuary) ends of these lots. The finished levels of the structural filling at higher than RL 2.8 (Moturiki) were continued to the esplanade reserve area by the placement of the non structural filling.

The building restriction lines shown on DP 349963 have been established by survey to limit future building development to occur within the areas of structural filling on lots 3, 4 and 6 to 10.

Preparation work prior to the placement of the structure filling included the construction of subsoil drains at locations shown on 17365-AS1 and the lining of the floor of the excavation with Mirafi geofabric.

### 4.2 *Lot 1*

An area within lot 1 where the pre construction boreholes 13 and 14 identified non structural filling being present was improved by its removal and replacement with imported filling. The area of ground improvement is within the building restriction lines shown on DP 349963. The average depth of replacement filling was 1.2 m.

### 4.3 *Monitoring of Consolidation by Preloading*

After completion of the filling on the prepared building sites on lots 1, 3, 4 and 6 to 10 a preload formed by 1.0 m of the unsuitable soils removed or topsoil was placed on the prepared sites. Steel bar settlement markers were driven through the preload and into the structural filling in the centres of each of these lots.

Surveys were undertaken over a period of 63 days since the markers were put in place. Settlements recorded were

| Lot No. | Total settlement 63 days (mm) | Settlement over last 30 days (mm) |
|---|---|---|
| 1 | 3 | 1 |
| 3 | 1 | 0 |
| 4 | 1 | 1 |
| 6 | 4 | 1 |
| 7 | 7 | 2 |
| 8 | 5 | 2 |
| 9 | 11 | 3 |
| 10 | 6 | 2 |

These magnitudes are well within tolerable limits for buildings. The preload was removed after having been in place for 63 days.

### 4.4 *Accessway Formation*

The accessway route from Te Wati Street to the base of the hillside adjacent to lots 5 and 11 followed the subgrade formation of 1999 by the former owner of the property.

The remaining lower sections of the accessways were formed in areas of minor cut and structural filling placed up to 0.9 m deep on the upper northern and eastern sides of lot 5.

## 5.0 Recommendations for Building Development

### 5.1 *Prepared Buildings Sites, Lots 1, 3, 4, 6 to 10*

Prepared building sites have been created on lots 1, 3, 4 and 6 to 10. These building sites are shown on appended drawings 17365-AB1 and DP 349963. The filling has been placed under engineering observation in accordance with NZS 4431 and is

considered suitable to support buildings with shallow foundations. Ultimate bearing capacities in the limit state for foundation detailing may be taken at 300 kPa. With this bearing capacity buildings may be detailed in accordance with NZS 3604.

While observations during construction and subsequent test results indicate that uniform bearing conditions are present it is possible that areas of lower strength soils may be present. Specialist engineering advice, if low strength soils are encountered, may require foundations to be deepened or widened or the low strength soils be improved by recompaction.

## 5.2 *Building Site on Lot 2*

No subdivision earthworks were undertaken on Lot 2 apart from the cutting of an unpaved accessway up from the accessway along the northern boundary to an existing terrace previously cut along the west facing slopes.

The general area for building on the former sloping ground would take in the terrace which is about 4 m wide and the original sloping ground at 1 on 3 (18 degrees) down to a berm which has been formed above the accessway to lot 3 and within the eastern boundary of the lot. In the formation of the upper terrace a batter had been cut at 38 to 40 degrees into the rising ground to the east and some filling from the cut platform had been placed over the upper section of the sloping ground down to the west.

Care will be required in the development of a building site on the modified slopes. The design of future buildings should take into account the presence of the relative steepness and heights of the cut batters and the presence of the filling at the top of the slopes leading down to the western boundary. No global stability issues are considered to exist but local retaining walls should be constructed to stabilise the cut batters above the terrace if buildings are to be located in close proximity to the batters. The walls would prevent eroded soils from being transported on to the terrace.

Construction can be undertaken over the lower slopes with any filling undertaken according to the techniques and principles of NZS 4431 in which standards for ground preparation prior to filling and compaction of the filling are described. Fills up to 1 m deep and correctly placed should not promote instability but deeper fills should only be undertaken under professional engineering advice.

It is recommended that building proposals for lot 2 are reviewed by a geotechnical engineer or geologist prequalified with Council in accordance with Section 2 of the Code of Practice for Development. This review may require additional subsoil tests and analysis.

## 5.3 *Building Site on Lot 5*

The areas of ground improved in 1999 and 2002 for the original buildings on the property are shown on 17365-AB1. The ground improvement was considered suitable by specific testing at that time to support buildings detailed in accordance with NZS 3604.

It is possible to erect buildings outside of this previously improved area but it is recommended that the subsoils be checked to determine foundation bearing conditions and whether further ground improvement work is undertaken.

Well compacted but untested filling exists in the batters leading up to the accessway to the north. Disturbance of these batters during site development should only be undertaken under professional engineering advice. Where excavation into the batters is planned such advice may include the need for retaining walls.

## 5.4 *Building Site on Lot 11*

Lot 11 comprises south facing slopes of 1 in 7 (8 degrees) which steepen up to the accessway to the north and up to the excavated platform for the building site on lot 12 to the west.

Presubdivision borehole 10 was put down on the 8 degree slopes where building would take place. Stiff ash derivative insitu soils were found to be present in borehole 10.

Building restriction lines are shown on DP 349963 to limit buildings to the flatter slopes and clear of the steeper slopes to the north and west.

If a flatter building site is required on the 1 in 7 slopes earthworks will be required in cut and fill. Cut faces into the sloping ground to the north or west should be restrained with specifically designed retaining walls regardless of their height. The design would take into account surcharge pressures due to the sloping ground behind the walls. While walls less than 1.5 m high are generally exempt from requiring a building consent the wall construction is required to comply with all other conditions of the New Zealand Building Code.

## 5.5 *Building Site on Lot 12*

The building area as defined by lines shown on DP 349963 is an area levelled previously by the former owners of the subdivision area and the owners of adjacent 17 Te Wati Street (lot 2 DPS 15227).

The building restriction lines will set buildings back from the steep bush clad slopes to the south and the grassed slopes to the east leading into adjacent lot 11. Buildings located in the designated area for building will be in a position where the stability performance criteria of Section B1 of the New Zealand Building Code would be met.

In the development of the lot it is recommended that no additional filling be placed over the slopes present to the east or south, even if retained behind walls.

A cut batter 3.5 m high and at 26 degrees (1 on 2) has been formed at the northern end of the building area. It is possible to extend the flat section of the building area by excavation into the batter but the excavated faces are to be restrained by specifically designed retaining walls irrespective of the height of the newly cut face. The design would take into account the surcharge pressures from the slope above

and the need to maintain support to the property above at 21 Te Wati Street (lot 1 DPS 20066).

### *5.6 Stormwater Disposal*

All lots are serviced by stormwater reticulation. No stormwater runoff should be disposed of by ground soakage.

Care should be taken for stormwater runoff control in the development of individual lots, especially those where slopes are present (lots 2, 11 and 12) to ensure that surface water is managed so that discharges do not occur over slope faces. Particular care should be taken during the building phase where uncontrolled discharges from downpipe droppers could occur before connection is made to the stormwater reticulation.

## 6.0 Opinion of Suitability

A Statement of Professional Opinion as to the suitability of the lots created in the subdivision for building development is contained in Appendix 2. A summary of geotechnical conditions (Council form G2A) is also appended.

## 7.0 Applicability

Recommendations contained in this document are based on data from site observations, soil exposures and boreholes. Inferences about the nature and continuity of subsoils away from these locations are made but cannot be guaranteed.

In all circumstances, if variations in the subsoils occur which differ from that described or assumed to exist, the site should be inspected by an engineer suitably qualified to make an informed judgement and provide advice on appropriate improvement measures.

This report has been prepared specifically for the Chauntry Cove Subdivision and no responsibility is accepted by S & L Consultants Ltd for the use of any part of this report for other development sites in other contexts without their written authority.

**S & L Consultants Ltd**

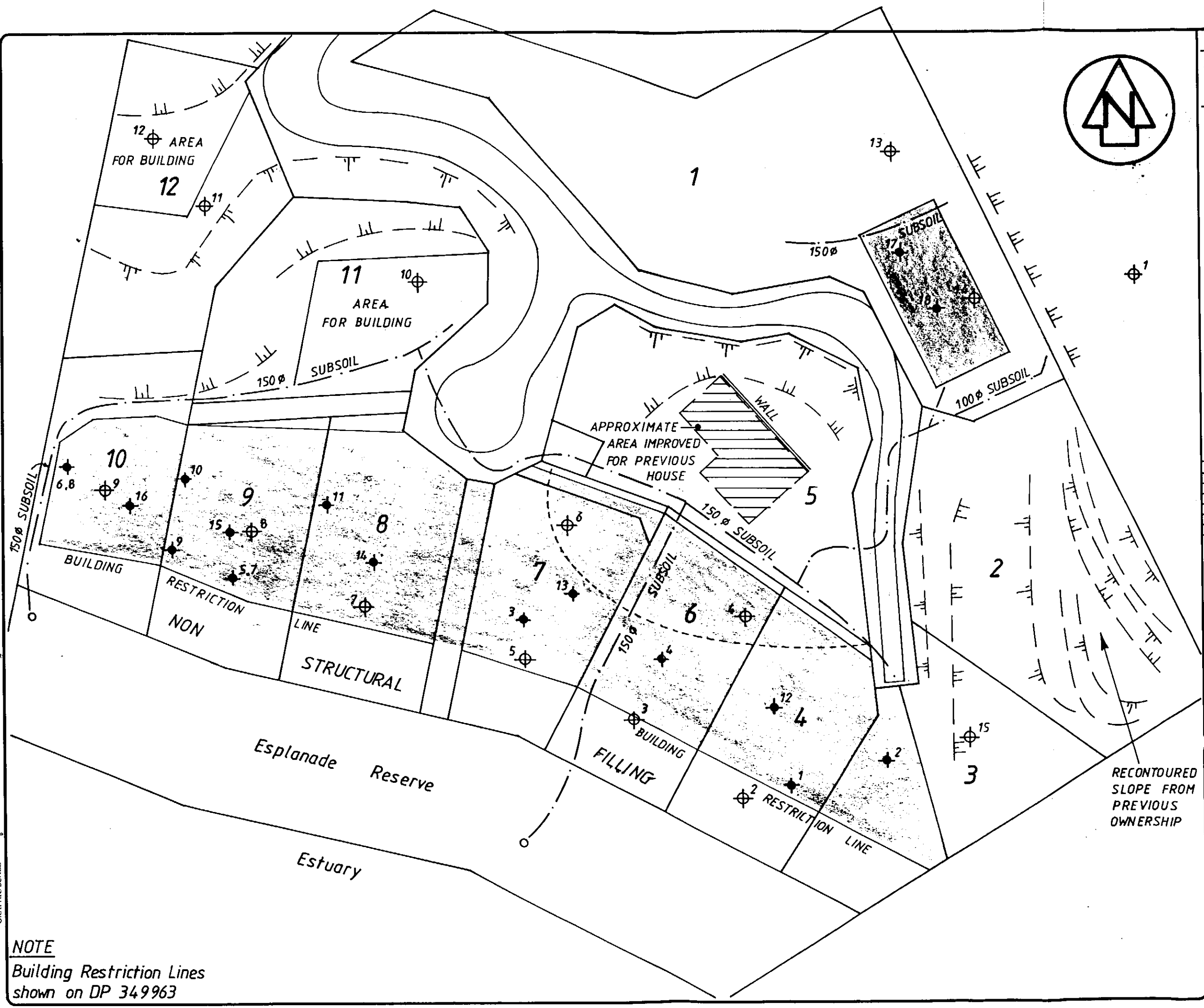
**Prepared by M W Hughes CPEng**
**Geotechnical Engineer** **18 March 2005**

# APPENDIX 1

**Reference Drawings**

**17365-01 Reference Plan**

**DP 349963**




KEY

- 12 — TEST POSITION IN FILL
- 1 — PRECONSTRUCTION BOREHOLE
- TOP OF SLOPE
- BOTTOM OF SLOPE
- AREA OF STRUCTURAL FILLING
- SUBSOIL DRAIN

NOTE
Building Restriction Lines shown on DP 349963

| CKD BY | REV No | DESCRIPTION | DATE |
|---|---|---|---|
| | 1 | 224 APPLN | 3'05 |

| | NAME | DATE | SIGNED |
|---|---|---|---|
| Surveyed | | | |
| Designed | MH | 3'05 | |
| Drawn | SH | 3'05 | |
| Checked | | | |
| Approved | | | |

REFERENCES


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SURVEYORS - ENGINEERS PLANNERS
111 Cameron Road, Tauranga
New Zealand
P.O. Box 231 Ph.(07)577-6069
Fax(07)577-6065
Email: sl.tga@xtra.co.nz


TITLE
CHAUNTRY COVE
23 TE WATI STREET

Reference Plan for Geotechnical Report

Copyright on this drawing is reserved

ORIGINAL SCALE: 1:500 (A3)
DATE: 3'05
DRAWING No: 17365-AB1
REVISION:
METRIC DESIGN

## Amalgamation Conditions

That Lot 20 hereon (Legal access) be held as to twelve undivided one twelfth shares by the owners of Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 hereon as tenants in common in the said shares and that individual Certificates of Title be issued in accordance therewith

That Lot 21 hereon (Legal access) be held as two undivided one half shares by the owners of Lots 6 and 7 hereon as tenants in common in the said shares and that individual Certificates of Title be issued in accordance therewith

That Lot 22 hereon (Legal access) be held as to twelve undivided one twelfth shares by the owners of Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 hereon as tenants in common in the said shares and that individual Certificates of Title be issued in accordance therewith

That Lot 23 hereon (Legal access) be held as to three undivided one third shares by the owners of Lots 9, 10 and 11 hereon as tenants in common in the said shares, and that individual Certificates of Title be issued in accordance therewith

(See Request 359207)

I hereby certify that this plan was approved by the Tauranga City Council pursuant to Section 223 of the Resource Management Act 1991
on the day of 20 subject to the granting or reserving of the easements setout in the memoranda hereon and subject to the amalgamation conditions setout hereon

Authorised Officer
Sub 6066

### Memorandum of Easements

| Purpose | Shown | Serv. Ten. | Dom. Ten. |
|---|---|---|---|
| ROW | A | Lot 20 hereon | Lots 1-12 |
| | B | Lot 21 hereon | Lots 6 & 7 |
| | C | Lot 22 hereon | Lots 1-12 |
| | D | Lot 23 hereon | Lots 9, 10 & 11 |

### Memorandum of Easements in Gross

| Purpose | Shown | Serv. Ten. | Grantee |
|---|---|---|---|
| ROW, Right to Convey Water, Right to Drain Water & Sewage | A | Lot 20 hereon | Tauranga City Council |
| | C | Lot 22 hereon | |
| Right to Drain Water & Sewage | E | Lot 4 hereon | |
| | F | Lot 6 hereon | |
| | G | Lot 8 hereon | |
| | H | Lot 9 hereon | |

### Schedule of Proposed Easements in Gross

| | | | |
|---|---|---|---|
| Right to Convey Telecommunications & Computer Media | A | Lot 20 hereon | Telecom NZ Ltd |
| | B | Lot 21 hereon | |
| | D | Lot 23 hereon | |
| Right to Convey Power | A | Lot 20 hereon | Powerco Ltd |
| | B | Lot 21 hereon | |
| | D | Lot 22 hereon | |

Note:
- Lots 1-12 and areas I-V will be subject to a Consent Notice
- External boundaries have been adopted from DPS 12498 unless shown otherwise

Class of Survey I

Total Area 1.7065 ha

Comprised in C.T. 18B/862

I, John David Barnes

being a person entitled to practise as a licensed cadastral surveyor certify that

(a) The surveys to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Cadastral Survey Act 2002 and the Surveyor General's Rules for Cadastral Survey 2002/2;

(b) This dataset is accurate and has been created in accordance with that Act and those Rules.

Signed ..... Date ...../...../.....

Field Book ..... p ..... Traverse Book ..... p .....
Reference Plans .....
.....
Examined ..... Correct .....

Approved as to Survey by Land Information NZ on
...../...../.....

Deposited by Land Information NZ on
...../...../.....

File
Received
Instructions

DP 34996

LAND DISTRICT
SOUTH AUCKLAND

# Lots 1 - 13 & 20 - 24 Being a Subdivision of Lot 2 DPS 20066

TERRITORIAL AUTHORITY TAURANGA CITY
Surveyed by S & L CONSULTANTS LTD F 17365
Scale 1 : 600 Date March 2005

# APPENDIX 2

**Statement of Professional Opinion (Form G2)**
**Lot Summary Report (Form G2A)**

SECTION 2

To: The Director of Environmental Services

# STATEMENT OF PROFESSIONAL OPINION AS TO THE GEOTECHNICAL SUITABILITY OF LAND FOR BUILDING

DEVELOPMENT: Chauntry Cove Residential Development

OWNER: Chauntry Cove Limited

LOCATION: 23 Te Wati Street, Maungatapu

I Michael William Hughes of S & L Consultants Ltd
(Full Name)

P.O. Box 231, Tauranga
(Name and Address of Firm)

Hereby confirm that;

1) I am a professional person appropriately qualified with experience in geotechnical engineering to ascertain the suitability of the land for building development and was retained as the Soils Engineer to the above development.

2) An appropriate level of site investigation and construction supervision has been carried out under my direction and is described in my development evaluation dated 18 March 2005

3) In my professional opinion, not to be construed as a guarantee, I consider that;

(a) The areas shown in my report dated 18 March 2005 of each new allotment are suitable for the erection thereon of the building types appropriate to the zoning of the land, provided that;

building restrictions and other recommendations in my report are observed.

(b) The earth fills shown on the attached Plan No. 17365-AB1 have been placed in accordance with the Code of Practice for Development of the Tauranga City Council.

(c) The completed works give due regard to all land slope and foundation stability considerations.

(d) The filled ground as defined in the report is suitable for the erection thereon of residential buildings not requiring specific design in terms of NZS 3604:1999 and related documents:

(e) The original ground not affected by filling is suitable for the erection thereon of residential buildings not requiring specific design in terms of NZS 3604:191 and related documents provided that:

Building restrictions and other recommendations including geotechnical reviews are observed.

4. This professional opinion is furnished to the Council and the owner for their purpose alone, on the express condition that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection for any dwelling.

Signed ..... Date 18 March 2005

TAURANGA DISTRICT COUNCIL

**SUITABILITY OF LAND FOR BUILDING DEVELOPMENT**

**TAURANGA CITY COUNCIL**

**MAY 98**

**G 2 Δ**

*VERSION 1*

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LOT SUMMARY REPORT

G 2a Δ

MAY 98

# SUMMARY OF GEOTECHNICAL DATA/RECOMMENDATIONS FOR INDIVIDUAL LOTS

## Subdivision: Chauntry Cove

### Te Wati Street, Maungatapu

The comments and notations included on this summary sheet are outlined in the support documents. These shall be read in conjunction with this summary.

**T.C.C Sub** 6066

**File Ref:** 17365

| Lot# | Area($m^2$) | Subsurface Data: Subdivision Filling Y/N | Subsurface Data: Subdivision Filling Depth (m) | Subsurface Data: Natural topography unworked * Y/N | Subsurface Data: Natural topography earthworked Y/N | Subsurface Data: Natural topography earthworked Depth(m) | Foundations: Conventional shallow Foundations to NZS 3604:1999 Y/N/NA | Foundations: Specific Design Y/N/NA | Building line restriction? Y/N | Recommendations/restrictions |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2340 | Y | 1.0 | N | N | | Y | N | Y | |
| 2 | 1490 | N | | Y | N | | Y | Y | N | see note below |
| 3 | 820 | Y | 1.3 | N | N | | Y | N | Y | |
| 4 | 650 | Y | 1.3-1.8 | N | N | | Y | N | Y | |
| 5 | 1210 | N | | Y | N | | Y | N | N | |
| 6 | 720 | Y | 1.3-1.8 | N | N | | Y | N | Y | |
| 7 | 670 | Y | 1.3-1.8 | N | N | | Y | N | Y | |
| 8 | 760 | Y | 1.3 | N | N | | Y | N | Y | |
| 9 | 660 | Y | 1.3 | N | N | | Y | N | Y | |
| 10 | 700 | Y | 1.3 | N | N | | Y | N | Y | |
| 11 | 900 | N | | Y | N | | Y | N | Y | |
| 12 | 920 | N | | Y | N | | | | | |

Comments

Refer to S & L Consultants Ltd report reference 17365 for areas of cut and fill and discussion on soil tests and interpretation.

* Natural topography as pre existed subdivision

Building development on lot 2 subject to geotechnical review.

VERSION 1

# APPENDIX 3

## Filling Test Results

Geotechnics

Our Ref: 650011-135/1
Client Ref: -
30 November 2004


Bay Excavators
PO Box 453
Main Rd
TE PUKE

Attention: Trevor Johnstone

Dear Trevor

**SITE TEST REPORT**
**CHAUNTREY COVE**

## Date of Testing

Tests were carried out on
- 23 September 2004
- 7 October 2004
- 22 October 2004
- 5 November 2004
- 9 November 2004

## Test Location Procedure

Tests were located by the client.

## Test Location Plan

See pages 4 to 6 of this report for location plans.

## Samples

Samples were taken at each test location and given the following laboratory numbers:

- CHAUNTREY/230904/NDM 1 & 2
- CHAUNTREY/071004/NDM 3 & 4
- CHAUNTREY/221004/NDM 5, 6, 7 & 8
- CHAUNTREY/051104/NDM 9, 10 & 11
- CHAUNTREY/091104/NDM 12, 13, 14, 15, 16, 17 & 18

## Client's Instructions

To test the specified area with a nuclear densometer and shear vane.

**Specification**

None issued

**Test Methods**

- NZS 4407: 1991 Test 3.1 – Determination of water content
- NZS 4407: 1991 Test 4.2.1 – Density of soils by nuclear densometer (Direct transmission)
- NSGS – Test Method for determining the Vane Shear Strength of a Cohesive Soil using a Hand Held Shear Vane

**Test Results**

See page 7 and 8 of this report for results.

**Test Remarks**

The NDM results are outside our calibrated range and are therefore not covered under scope of accreditation.

Shear Vane Testing is only suitable for cohesive soils. The shear vane tests on non-cohesive soils (sand) are therefore not covered under our scope of IANZ accreditation.*

Air Voids calculation is % = (1 - measured dry density/solid density) x 100. This calculation is not covered under our scope of IANZ accreditation.

Solid density is assumed at 2.58t/m$^3$.

**Sample/Material Descriptions**

- CHAUNTREY/230904/NDM 1 & 2 - SILT, sandy, yellow/brown, moist, slightly plastic.
- *CHAUNTREY/071004/NDM 3 & 4 - SAND, silty & sandy silt, light orange/brown, mottled orange & cream.
- CHAUNTREY/221004/NDM 5, 6, 7 & 8 - SILT, sandy, light orange/brown.
- CHAUNTREY/051104/NDM 9, 10 & 11 - SILT, traces of medium to coarse sand (pumice), light to medium orange/brown, moist, firm.
- CHAUNTREY/091104/NDM 12 – SILT, medium to coarse, sandy with traces of fine pumice sub-rounded gravel, light to medium grey/brown, moist, very stiff.
- *CHAUNTREY/091104/NDM 13 – SAND, fine to medium, slightly silty, yellow grey/brown, moist, dense (traces of red/brown clay).

- CHAUNTREY/091104/NDM 14 & 15 – SILT, medium to coarse, sandy with traces of fine pumice sub-rounded gravel, moist, light to medium grey/brown with traces of dark brown silt, hard (organics?).
- CHAUNTREY/091104/NDM 16 – SILT, fine to medium, light orange/brown, moist, hard.
- CHAUNTREY/091104/NDM 17 – SILT, fine to medium, medium yellow/brown, moist, very stiff with traces of fine, sub-rounded pumice.
- CHAUNTREY/091104/NDM 18 – SILT, medium to coarse, sandy with traces of fine pumice sub-rounded gravel, light to medium grey/brown with dark brown mottling, moist, very stiff.

**General Remarks**

We provide the logs and results for your interpretation and inference.

Sample(s) not destroyed during testing will be retained for one month from the date of this report before being discarded.

Descriptions are enclosed for your information, but do not form part of this endorsed report. This work is reported under our standard terms and conditions outlined on the reverse of the letterhead page.

Please reproduce this report in full when transmitting to others or including in internal reports.

If we can be of any further assistance, feel free to call us.

Yours faithfully
GEOTECHNICS LTD

Paul Burton
LABORATORY MANAGER

Tests indicated as not accredited are outside the scope of the laboratory's accreditation

Checked by:

6-Dec-04
j:\650011\135\hjk.051104.rpt.doc

# SUMMARY OF NDM TESTING

**Assumed solid density: 2560 kg/m³**

| No. | Date of testing | Location plan No. | Field Wet Density t/m³ | Field Dry Density t/m³ | Field Water Content % | Oven Water Content (%) | Shear Vane Readings Kpa | | Oven Dry Density t/m³ | Air Voids (%) | Oven Air Voids (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NDM 1 | 23/09/2004 | 1 | 1.74 | 1.41 | 23.5 | 28.5 | 194<br>159<br>175 | | 1.35 | 12.0 | 8.6 |
| NDM 2 | | | 1.78 | 1.44 | 24.0 | 22.0 | 173<br>202<br>224+ | | 1.46 | 9.2 | 10.7 |
| NDM 3 | 07/10/2004 | 2 | 1.76 | 1.33 | 32.5 | 33.0 | *141<br>*152<br>*156 | | 1.32 | 5.2 | 4.6 |
| NDM 4 | | | 1.74 | 1.27 | 36.5 | 39.0 | *124<br>*127<br>*138 | | 1.25 | 3.7 | 2.3 |
| NDM 5 | 22/10/2004 | 3 | 1.66 | 1.18 | 41.0 | 48.0 | 172<br>175<br>175 | GL as finished | 1.12 | 5.7 | 2.1 |
| NDM 6 | | | 1.57 | 1.08 | 44.5 | 50.0 | 145<br>155<br>158 | | 1.04 | 3.6 | 6.9 |
| NDM 7 | | | 1.68 | 1.18 | 42.0 | 47.0 | 145<br>155<br>158 | 300mm below test 5 | 1.14 | 5.5 | 1.8 |
| NDM 8 | | | 1.69 | 1.19 | 41.5 | 52.5 | 154<br>154<br>159 | 300mm below test 6 | 1.11 | 6.9 | -1.4 |

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| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NDM 9 | 05/11/2004 | 4 | 1.70 | 1.21 | 40.0 | 44.5 | 224+<br>224+<br>224++ | | 1.2 | 1.5 | 1.5 |
| NDM10 | | | 1.71 | 1.25 | 36.5 | 44.5 | 221<br>224+<br>182 | | 1.18 | 1.5 | 1.5 |
| NDM 11 | | | 1.63 | 1.15 | 42.0 | 47.0 | 153<br>179<br>182 | 500mm below test 10 | 1.11 | 4.5 | 4.5 |
| NDM 12 | 09/11/2004 | 5 | 1.74 | 1.34 | 29.5 | 29.5 | 224+<br>224++<br>224++ | | 1.34 | 8.0 | 8.1 |
| NDM 13 | | | 1.75 | 1.34 | 31.0 | 32.0 | *224+<br>*201<br>*224+ | | 1.33 | 6.4 | 5.7 |
| NDM 14 | | | 1.78 | 1.33 | 33.5 | 28.5 | 193<br>224+<br>224+ | | 1.38 | 3.2 | 6.5 |
| NDM 15 | | | 1.66 | 1.18 | 41.5 | 48.0 | 224+<br>209<br>213 | | 1.12 | 5.5 | 2.2 |
| NDM 16 | | | 1.61 | 1.14 | 41.0 | 48.5 | 224+<br>224+<br>224+ | | 1.08 | 8.5 | 4.9 |
| NDM 17 | | | 1.66 | 1.21 | 37.5 | 45.0 | 224+<br>214<br>224+ | | 1.14 | 8.0 | 3.9 |
| NDM 18 | | | 1.65 | 1.15 | 43.5 | 44.0 | 224+<br>224+<br>214 | | 1.15 | 5.3 | 5.1 |

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# APPENDIX 4

## Presubdivision Investigation Borehole Logs

SHRIMPTON & LIPINSKI

Borehole No. MB 1

Sheet: 1 Of: 2

Site: 23 Te WATI STREET (LOT 2 DPS 20066)

Job No. 17365 | Date Excavated: Tu·13/4/04 | RL Ground: | Logged By: MH

| Description of Soil | Soil Symbol | Depth (m) | SPT | | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| SILT: clayey, cohesive, Dark brown yellow, very stiff, slightly moist | | 0 | | | |
| | | 1.0 | 2 3 4 | N=7 | |
| pale yellow, moist | YOUNGER ASHES | 2.0 | | | |
| | | 3.0 | 1 1 1 | N=2 | |
| slightly sandy, cream grey | | 4.0 | | | |
| pumice Sand, grey, Dense Dry | | 5.0 | 4 4 5 | N=9 | |
| CLAY, Dark brown, hard | | | | | |
| SILT: clayey, cohesive, Dark brown orange, very stiff, moist | | 6.0 | 3 5 4 | N=9 | |
| | OLDER ASHES | 7.0 | | | |
| Black orange manganese | | 8.0 | | | |
| | | 9.0 | | | |

EXCAVATION METHOD: 75mm ø MACHINE AUGER + HOLLOW SPT.

S&L SHRIMPTON & LIPINSKI

Borehole No. MB 1

Sheet: 2 Of: 2

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Job No. 17365. | Date Excavated: Th. 13/4/04 | RL Ground: | Logged By: MH.

| Description of Soil | Soil Symbol | Depth (m) | SPT | GWL | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| SILT: coarse, slightly cohesive some residual sand, Dark brown orange, stiff, very moist, sensitive. | UNDER MSHES | 0 | | | |
| Sandy, non cohesive, cream with manganese, medium Dense, moist | TAURANGA SEDS | 10 | 1 3 4 N=7 | 11.5 | |
| | | 12 | 1 3 4 N=7 | | |
| No recovery. | | 13 | | | |
| | | 14 | 3 6 6 N=12 | | |
| EOH @ 15.0m. TARGET DEPTH | | 15 | | | |

NOTES

1) STANDPIPE INSTALLED
2) GWL TAKEN DURING DRILLING
3) GWL RECORDED WITH DIPMETER.

EXCAVATION METHOD: 75 mm ϕ MACHINE ~~AUGER~~ + HOLLOW SPD.

S&L SHEMPTON & LIPINSKI

Borehole No. MB 2

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365. | Date Excavated: Tu. 13/4/04 | RL Ground: | Logged By: MM

| Description of Soil | Soil Symbol | Depth (m) | SPT | GWL | In situ undrained shear strength | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|---|
| 60% Brown orange Ash<br>40% Topsoil | M.S FILL | | | | | |
| organic black grey Silt | | 1.0 | | H | 1.15. | |
| | | | | | 30 | |
| | | 2.0 | | | | |
| SAND : Silty, cream, soft. | | | | | | |
| SILT : brown, cream, soft | | 3.0 | 1 | N<1 | 24 | |
| Brown orange Ash, very soft | | 4.0 | | | | |
| | | | 3 4 | N=0 | 102 | |
| grey, soft | | 5.0 | | | | |
| | | 6.0 | 1 1 | N<1 | | |
| EOH @ 6.5M TARGET DEPTH | | | | | | |

NOTES

i) STANDPIPE INSTALLED

ii) GWL TAKEN W. 14/4/04

iii) DIPMETER USED TO DETERMINE GWL

EXCAVATION METHOD: 75mm Ø MACHINE AUGER & HOLLOW SPT.

SHRIMPTON & LIPINSKI

Borehole No. MB3.

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365 | Date Excavated: Tu·13/4/04 | RL Ground: | Logged By: MH

| Description of Soil | Soil Symbol | Depth (m) | GWL | IN SITU UNDRAINED SHEAR STRENGTH | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| Brown orange Ash mixed with topsoil. N.S FILL | | 1.0 | | | |
| SILT - Sandy, grey, very soft | | | | 25/10 | |
| clayey | | 2.0 | ▽ | | |
| | | 3.0 | | 20/12. | |
| Medium Dense | | 4.0 | | | |
| Soft - SPT sinks under own weight. | | 5.0 | NKI | | |
| EOH @ 5.0m : TARGET DEPTH. | | | | | |

NOTES.

1) GWL TAKEN ON 13/4/04

2) DIP-METER USED TO MEASURE GWL

EXCAVATION METHOD: 75mm ϕ MACHINE AUGER + HOLLOW SPT.

SINCLAIR KNIGHT MERZ

Borehole No. MB 4

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365 | Date Excavated: Tu. 13/4/04 | RL Ground: | Logged By: MAA

| Description of Soil | Soil Symbol | Depth (m) | SPT | GWL | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| TOPSOIL | FILL | | | | |
| SAND: silty, pale grey, loose. | | 1.0 | | 1.20 | |
| | | 2.0 | | | |
| clay layer | | | | | |
| silty, loose sand. | | 3.0 | | | |
| SPT sinks under own weight | | 4.0 | N<1 | | |
| | | 5.0 | | | |
| SPT sinks under own weight | | 6.0 | N<1 | | |
| EOR @ 6.0m. TARGET DEPTH | | | | | |

NOTES

1) GWL TAKEN ON 13/4/04

2) DIP-METER USED TO MEASURE GWL.

EXCAVATION METHOD: 75MM Ø MACHINE AUGER + HOLLOW SPT

Borehole No. MB 5

Sheet: 1 Of: 1

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Job No. 17365. | Date Excavated: Tu · 13/4/04 | RL Ground: | Logged By: MA.

| Description of Soil | Soil Symbol | Depth (m) | GWL | N/ SITU UNDRAINED SHEAR STRENGTH | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| Brown orange Ash mixed with sand and topsoil | | | | | |
| organic black silt | | 1.0 | | | |
| SAND : silty, pale grey, loose. | | | ▽ | 30/10 | |
| | | 2.0 | | | |
| SILT : clayey, pale grey, very soft | | 3.0 | | 20/12 | |
| Sandy | | 4.0 | | 18/12. | |
| Clayey | | 5.0 | | | |
| | | 6.0 | | | |
| EOH @ 6.0m : TARGET DEPTH. | | | | | |

NOTES

1) GWL MEASURED ON 13/4/04

2) DIP-METER USED TO DETERMINE GWL

EXCAVATION METHOD: 75mm ϕ MACHINE AUGER.

SMEATON & LIPINSKI

Borehole No. MB 6

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365. | Date Excavated: Tu · 13/4/04 | RL Ground: | Logged By: MM.

| Description of Soil | Soil Symbol | Depth (m) | GWL. | N SPT AS RECEIVED SHEAR STRENGTH | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| Ash silt mixed with 40-50% topsoil | | | | | |
| Black organic silt. | | 1.0 | ▽ | 30/14 | |
| SILT: sandy, Dark grey, very soft | | 2.0 | | | |
| clayey, cream. | | 3.0 | | 20/10 | |
| | | 4.0 | | | |
| | | 5.0 | | 18/10 | |
| | | 6.0 | | | |
| | | 7.0 | | | |
| | | 8.0 | | | |
| | | 9.0 | | | |
| EOB @ 9.0m TARGET DEPTH. | | | | | |

EXCAVATION METHOD: 75mm ø MACHINE AUGER

S&L SHRIMPTON & LIPINSKI

Borehole No. MB 7

Site: 23 TE WATI STREET (LOT 2 DPS 20166)

Sheet: 1 Of: 1

Job No. 17365 | Date Excavated: W. 14/4/04 | RL Ground: | Logged By: MH.

| Description of Soil | Soil Symbol | Depth (m) | GWL | In situ undrained shear strength | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| TOPSOIL | FILL | | | | |
| organic black and soft | OL | 1.0 | ▽ | | |
| SAND silty, dark grey, very soft | | | | 20/8 | |
| SILT: grey, very soft | XX | 2.0 | | | |
| | X | 3.0 | | 15/5 | |
| | XX | 4.0 | | | |
| | X | 5.0 | | | |
| | XX | 6.0 | | | |
| EOB @ 6.0m. TARGET DEPTH. | | | | | |

NOTES

1) GWL MEASURED ON 14/4/04 WITH A DIP-METER.

EXCAVATION METHOD: 75mm ϕ MACHINE AUGER.

S&L SINCLAIR KNIGHT MERZ

Borehole No. MB 8

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365. | Date Excavated: W. 14/4/04 | RL Ground: | Logged By: MM.

| Description of Soil | Soil Symbol | Depth (m) | GWL. | IN SITU UNDRAINED SHEAR STRENGTH | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| Topsoil | FILL | 0.0 | ▼ 14/4/04 | | |
| 50% Brown Silt Ash<br>40% topsoil<br>10% grey silt | | 1.0 | | 80 | |
| SILT Sandy, cream, very soft. | | 2.0 | | | |
| | | 3.0 | | 30 | |
| | | 4.0 | | | |
| | | 5.0 | | 10 | |
| Clayey, cream, soft | | 6.0 | | | |
| | | 7.0 | | | |
| | | 8.0 | | | |
| 9.0m : TARGET DEPTH | | 9.0 | | | |

EXCAVATION METHOD: 75mm ϕ MACHINE AUGER.

S&L SMEATON & LIPINSKI

Borehole No. MB 9

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 7365 | Date Excavated: W·14/4/04 | RL Ground: | Logged By: MH

| Description of Soil | Soil Symbol | Depth (m) | GWL | UNDRAINED SHEAR STRENGTH (kPa) | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| Grey gravelly silt | N.S FILL | 1.0 | | | |
| SILT Organic (40-50%) brown grey | | 2.0 | 14/4/04 | 30/8 | |
| Non organic, Sandy, Cream, Soft. | | 3.0 | | 18/4 | |
| Very Soft | | 4.0 | | | |
| | | 5.0 | | 10/2 | |
| | | 6.0 | | | |
| | | 7.0 | | | |
| | | 8.0 | | | |
| EOB @ 9.0m TARGET DEPTH | | 9.0 | | | |

EXCAVATION METHOD: 75 mm ∅ MACHINE AUGER.

S&L
SMEATON & LIPINSKI

Borehole No. MB 10

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365 | Date Excavated: W. 14/4/04 | RL Ground: | Logged By: MCt.

| Description of Soil | Soil Symbol | Depth (m) | GWL | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|
| TOPSOIL | | | | |
| SILT: clayey, cohesive, Dark brown orange, very stiff, slightly moist | ASHES | 1.0 | | |
| brown orange | | | | 107/45 |
| very moist | | 2.0 | | |
| | | 3.0 | | 100/50 |
| some sand, non cohesive grain, stiff, very moist sensitive | | 4.0 | | |
| | | 5.0 | 14/4/04 ▽ 5.80 | 80/28 |
| | | 6.0 | | |
| EOH @ 6.0m : TARGET DEPTH | | | | |

EXCAVATION METHOD: 75 MM Ø MACHINE AUGER.

S&L
SINCLAIR KNIGHT MERZ

Borehole No. MB 11

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365. | Date Excavated: W·14/4/04 | RL Ground: | Logged By: MAL

| Description of Soil | Soil Symbol | Depth (m) | SPT | GWL. | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| Brown yellow Ash mixed with minor topsoil, stiff | FILL | 1.0 | | | |
| Natural Buried topsoil | | 2.0 | | | |
| SILT: clayey, cohesive, Dark Brown orange, stiff, very moist | ASH | | | | |
| Some Sand, slightly cohesive, firm, stiff, moist | | 3.0 | 2/3/3 | N=6 | |
| | | 4.0 | | | |
| Sandy, non cohesive. | | 5.0 | 1/1 | N<1 | |
| | | | | ▽ 4.6. | |
| EOB (2) 6.0m: TARGET ~~DEPTH~~ | | 6.0 | | | |

NOTES

1) STANDPIPE INSTALL'D

11) GWL TAKEN W·14/4/04. WITH DIPMETER

EXCAVATION METHOD: 75mm ϕ MACHINE AUGER + HOLLOW SPT.

SINCLAIR & LIPINSKI

Borehole No. MB 12

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365 | Date Excavated: W. 14/4/04 | RL Ground: | Logged By: MH

| Description of Soil | Soil Symbol | Depth (m) | G.W.L. | N STD UNDRAINED SHEAR STRENGTH | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| SILT clayey, cohesive, yellow, very stiff, slightly moist | | | | | |
| | | 1.0 | | 114/54 | |
| moist | ASHES. | 2.0 | | | |
| | | 3.0 | DRY. | 102/55 | |
| Sandy, non cohesive, cream stiff, moist, sensitive | | 4.0 | | 98/30 | |
| EOB @ 4.5m: TARGET DEPTH | | | | | |

NOTES

1) STANDPIPE INSTALL'D

EXCAVATION METHOD: 75mm ϕ MACHINE AUGER

S&L
SINCLAIR KNIGHT MERZ

Borehole No. MB 13

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365. | Date Excavated: W·14/4/04 | RL Ground: | Logged By: MBB

| Description of Soil | | Soil Symbol | Depth (m) | SPT | GWL | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|---|
| TOPSOIL | FILL | | 0 | | | |
| organic black silt | SWAMP | | 1.0 | | | |
| SAND : grey, loose | | | | | | |
| SILT : clayey, cohesive, yellow orange stiff, very moist | | | 2.0 | | | |
| CLAY : Dark brown orange | | | | | | |
| SILT : clayey, cohesive, cream s.t., moist, sensitive. | | | 3.0 | 1,1,2 | N=3. | |
| Seepage @ 4.0m | | | 4.0 | | ▽ | |
| EOH @ 4.5m : TARGET DEPTH. | | | | | | |

EXCAVATION METHOD: 75MM MACHINE AUGER & HOLLOW SPT

SINCLAIR & LIPINSKI

Borehole No. MB 14

Site: 23 TE WATI STREET (LOT 2 DPS 20066)

Sheet: 1 Of: 1

Job No. 17365 | Date Excavated: W. 14/4/04 | RL Ground: | Logged By: MH

| Description of Soil | Soil Symbol | Depth (m) | IN SITU MOISTURE | UNDRAINED SHEAR STRENGTH | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| Topsoil mixed with ash | N.S FILL | | | | |
| SILT: Sandy, non cohesive, cream stiff, slightly moist | | 1.0 | | 95/40 | |
| Seepage | | 2.0 | W | SEEPAGE | |
| EOH @ 3.0m TARGET DEPTH | | 3.0 | | 92/32 | |

EXCAVATION METHOD: 75mm ϕ MACHINE AUGER.

S&L
SHEMPTON & LIPINSKI

Borehole No. MB 15

Site: 23 TE WATI STREET (LOT 2 DPS 20061)

Sheet: 1 Of: 1

Job No. 17365 | Date Excavated: W 14/4/04 | RL Ground: | Logged By: MH

| Description of Soil | Soil Symbol | Depth (m) | SWL | In Situ Undrained Shear Strength | Undrained Shear Strength (kPa) 50 100 150 |
|---|---|---|---|---|---|
| TOPSOIL | | | | | |
| SILT clayey, cohesive, Dark brown orange, very stiff | | 10 | | 131/60 | |
| Slightly cohesive, cream | | 20 | | 260 | |
| | | 30 | | 110/48 | |

END @ 30M : TARGET DEPTH.

EXCAVATION METHOD: 75MM Ø MACHINE AUGER.

RECEIVED
10 JUN 2005
TAURANGA CITY

8 June 2005

Toitu te Land whenua Information New Zealand

The Manager
Tauranga District Council
Private Bag
Tauranga
New Zealand

**PLAN DEPOSIT NOTICE**

Surveyors Reference: F.17365

Deposited Plan No DP 349963 of Lots 1 - 13 & 20 - 24 subdn of Lot 2 DPS 20066 Land Registration District of South Auckland lodged by Barnes, John David was deposited on 20/05/2005.

The following new Certificates of Title have been issued:

| Legal Description | Area | Certificate of Title |
|---|---|---|
| Lot 1 Deposited Plan 349963 | 2340 square metres | 204460 |
| Lot 10 Deposited Plan 349963 | 700 square metres | 204469 |
| Lot 11 Deposited Plan 349963 | 900 square metres | 204470 |
| Lot 12 Deposited Plan 349963 | 920 square metres | 204471 |
| Lot 13 Deposited Plan 349963 | 2379 square metres | 204472 |
| Lot 2 Deposited Plan 349963 | 1400 square metres | 204461 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204460 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204461 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204462 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204463 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204464 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204465 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204466 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204467 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204468 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204469 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204470 |
| Lot 20 Deposited Plan 349963 | 2609 square metres | 204471 |
| Lot 21 Deposited Plan 349963 | 65 square metres | 204465 |
| Lot 21 Deposited Plan 349963 | 65 square metres | 204466 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204460 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204461 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204462 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204463 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204464 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204465 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204466 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204467 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204468 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204469 |

Hamilton Processing Centre
820 Victoria Street
Private Bag 3028
Hamilton
New Zealand
Tel 0800 ONLINE (665463)
Fax 64-7-834 6788
Internet
http://www.linz.govt.nz

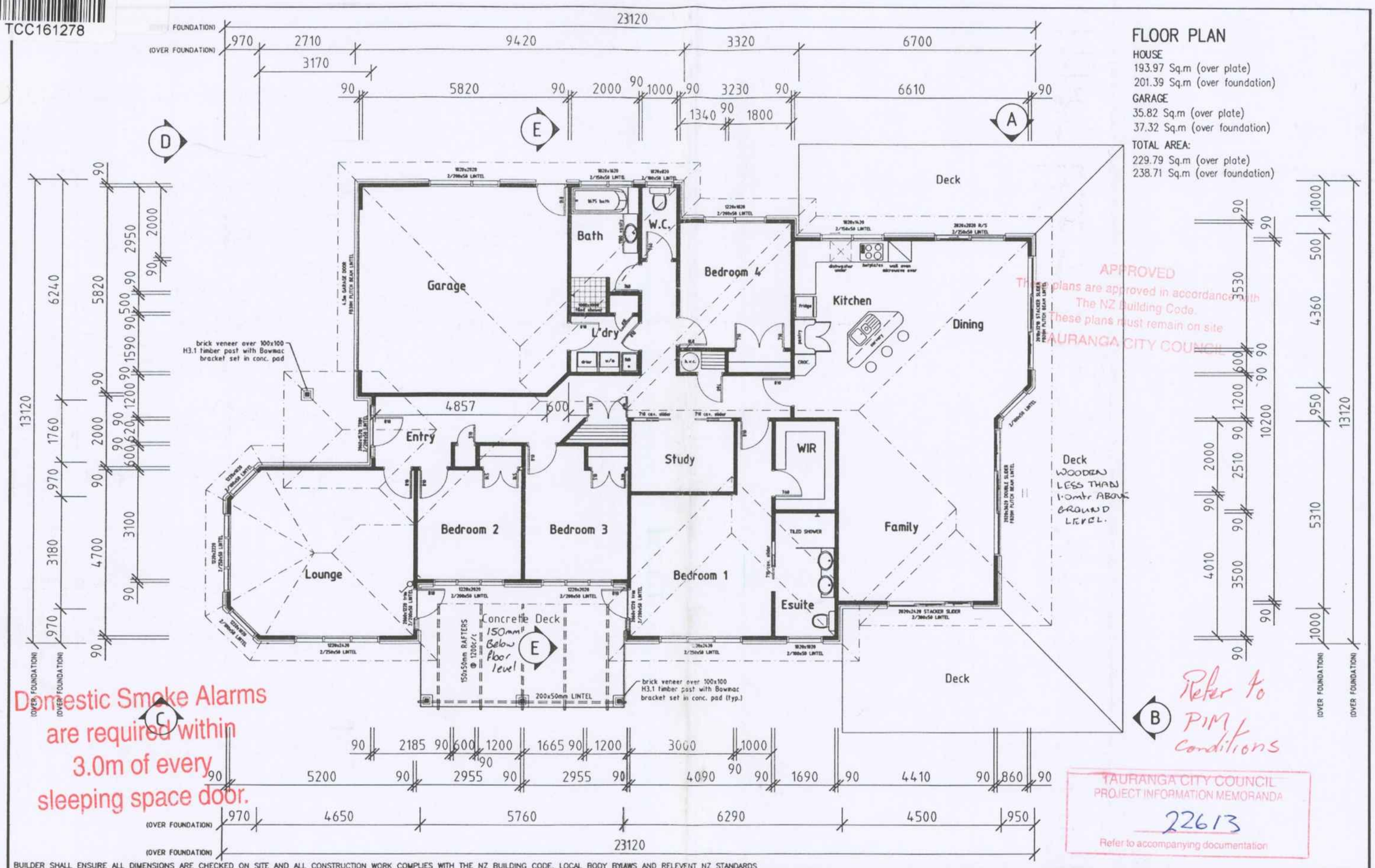
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|---|---|---|
| Lot 22 Deposited Plan 349963 | 134 square metres | 204470 |
| Lot 22 Deposited Plan 349963 | 134 square metres | 204471 |
| Lot 23 Deposited Plan 349963 | 90 square metres | 204468 |
| Lot 23 Deposited Plan 349963 | 90 square metres | 204469 |
| Lot 23 Deposited Plan 349963 | 90 square metres | 204470 |
| Lot 24 Deposited Plan 349963 | 38 square metres | 205195 |
| Lot 3 Deposited Plan 349963 | 820 square metres | 204462 |
| Lot 4 Deposited Plan 349963 | 650 square metres | 204463 |
| Lot 5 Deposited Plan 349963 | 1210 square metres | 204464 |
| Lot 6 Deposited Plan 349963 | 720 square metres | 204465 |
| Lot 7 Deposited Plan 349963 | 670 square metres | 204466 |
| Lot 8 Deposited Plan 349963 | 760 square metres | 204467 |
| Lot 9 Deposited Plan 349963 | 660 square metres | 204468 |

Processing Centre Manager

TCC161278

# FLOOR PLAN

HOUSE
193.97 Sq.m (over plate)
201.39 Sq.m (over foundation)
GARAGE
35.82 Sq.m (over plate)
37.32 Sq.m (over foundation)
TOTAL AREA:
229.79 Sq.m (over plate)
238.71 Sq.m (over foundation)




Deck
WOODEN
LESS THAN
1·0mtr ABOVE
GROUND
LEVEL.

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Domestic Smoke Alarms are required within 3.0m of every sleeping space door.

Refer to PIM conditions

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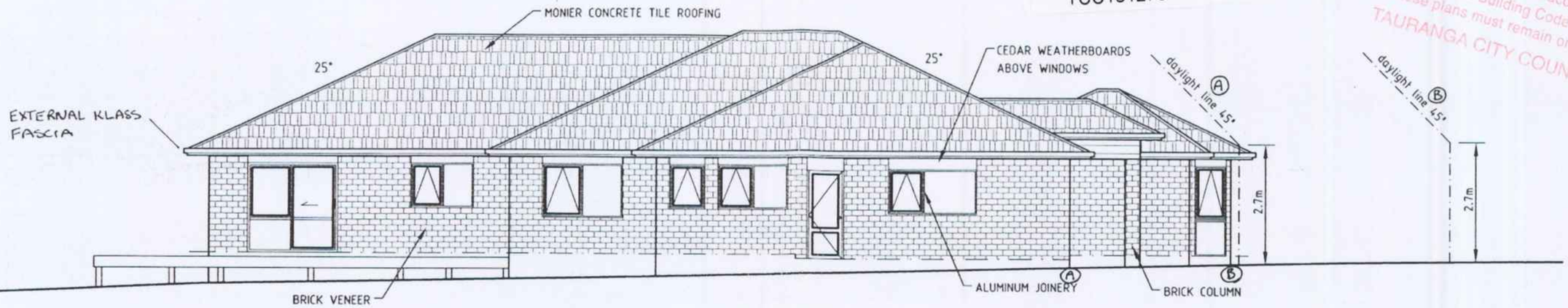

CAD. FILE : L171
LAST PLOT DATE : 16/05/06

NEW RESIDENCE FOR
LORAINE & DAVID GARDNER
LOT 8 EBB TIDE TAURANGA

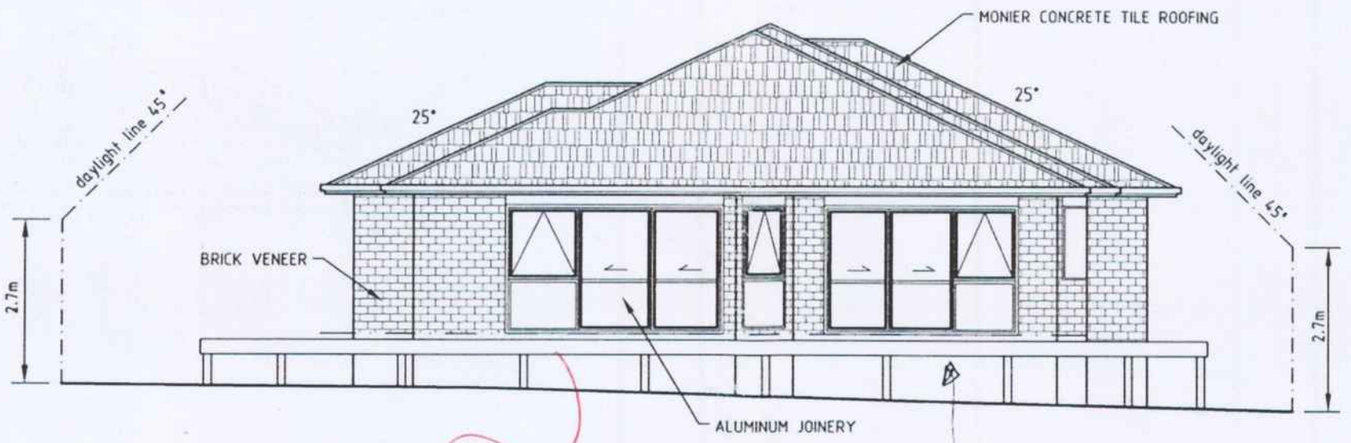
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| SHEET : | 1 |

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ELEVATION A




ELEVATION B

Deck must comply with N.Z.S 3604 (2kpa floor load)

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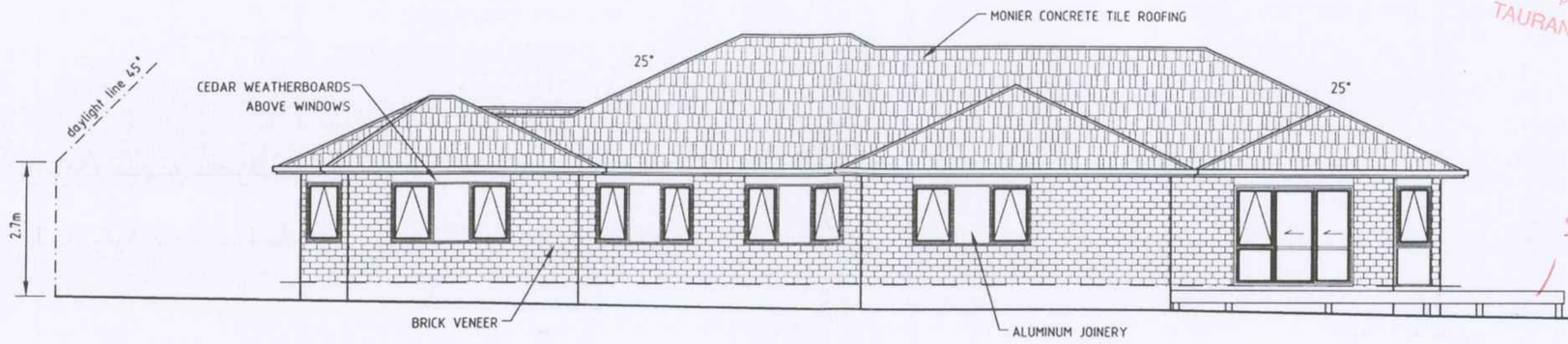
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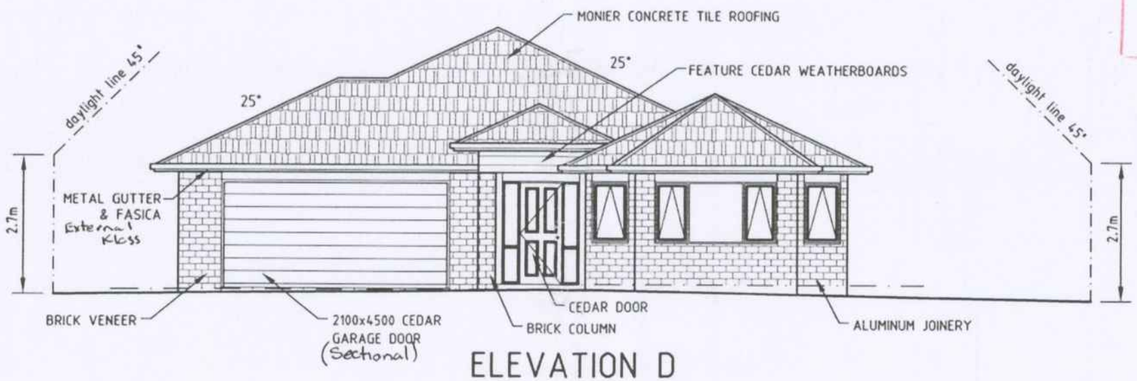
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ELEVATION C

Deck must comply with '3604

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ELEVATION D

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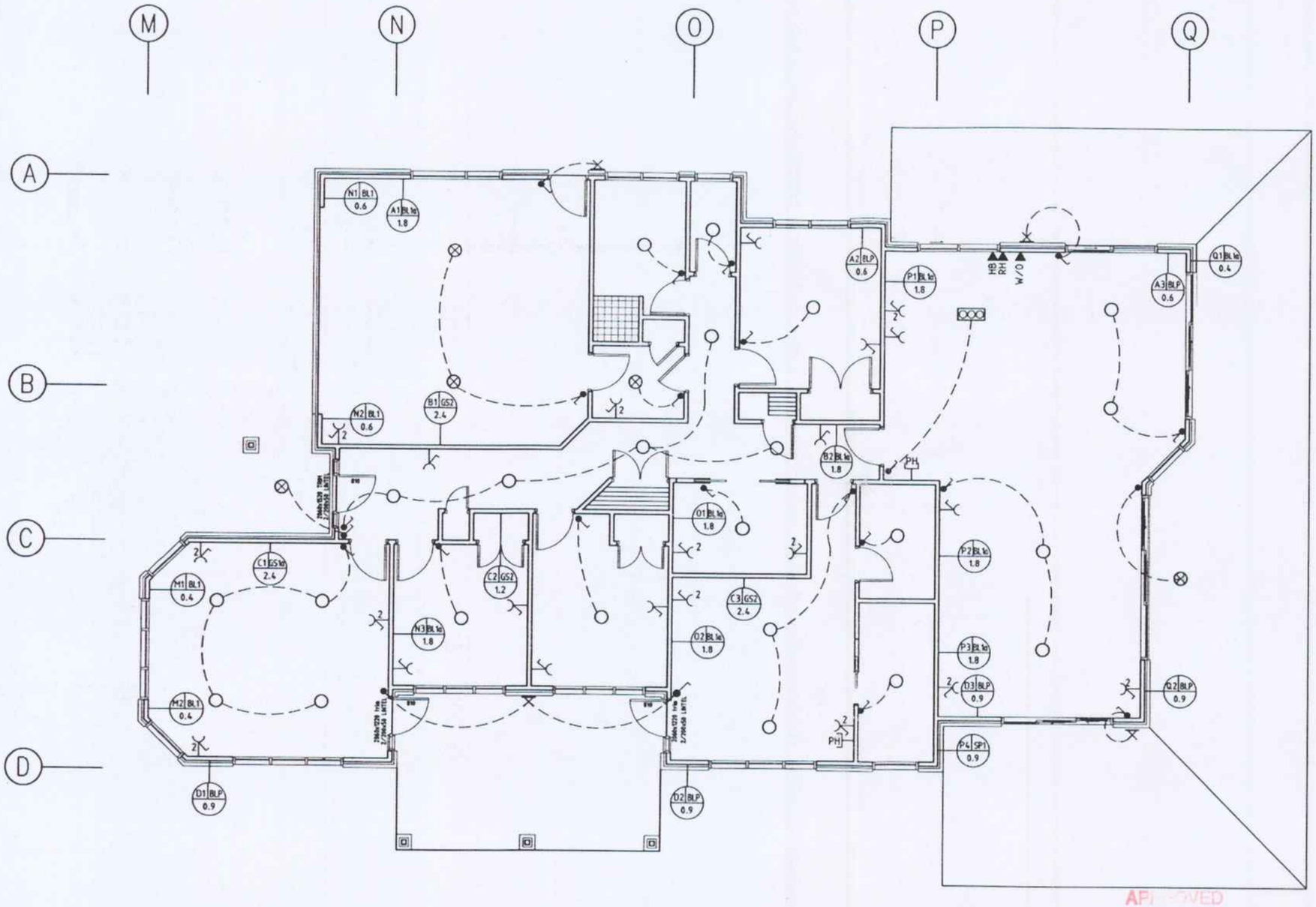
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LOT 8 EBB TIDE TAURANGA

AMENDMENT

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JOB No. :
SHEET : 3

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## ELECTRICAL LEGEND

- BATTEN HOLDER LIGHT
- DOWN LIGHT
- WALL MOUNTED LIGHT
- SENSOR LIGHT
- 3-WAY SPOTLIGHT
- LIGHT SWITCH
- 2-WAY LIGHT SWITCH
- TV TELEVISION AERIAL
- PH TELEPHONE OUTLET
- SH SHAVER OUTLET
- TOWEL RAIL
- SINGLE POWER OUTLET
- DOUBLE POWER OUTLET
- ST STOVE OUTLET
- DW DISHWASHER OUTLET
- HB HOBS OUTLET
- RH RANGEHOOD OUTLET
- UO UNDER OVEN OUTLET
- WD WASTE DISPOSAL OUTLET
- WO WALL OVEN OUTLET

## BRACE KEY

C1 GS1a 2.4 — LABEL No. / BRACE TYPE AS TABLE / BRACE ELEMENT LENGTH

## BRACE LEGEND

GS1a - 10mm GIB BOARD LINING ON ONE FACE WITH DIAGONAL BRACE

GS2 - 10mm GIB BOARD LINING ON BOTH FACES

BL1 - 10mm GIB BRACELINE ON ONE FACE

BL1a - 10mm GIB BRACELINE ON ONE FACE WITH DIAGONAL BRACE

SP1 - 7mm PLYWOOD ON ONE FACE LENGTH: 0.6 - 0.9m

NOTE- ALL BRACING PANELS ARE TO BE FIXED IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS & COMPLY TO NZS 3604:1999

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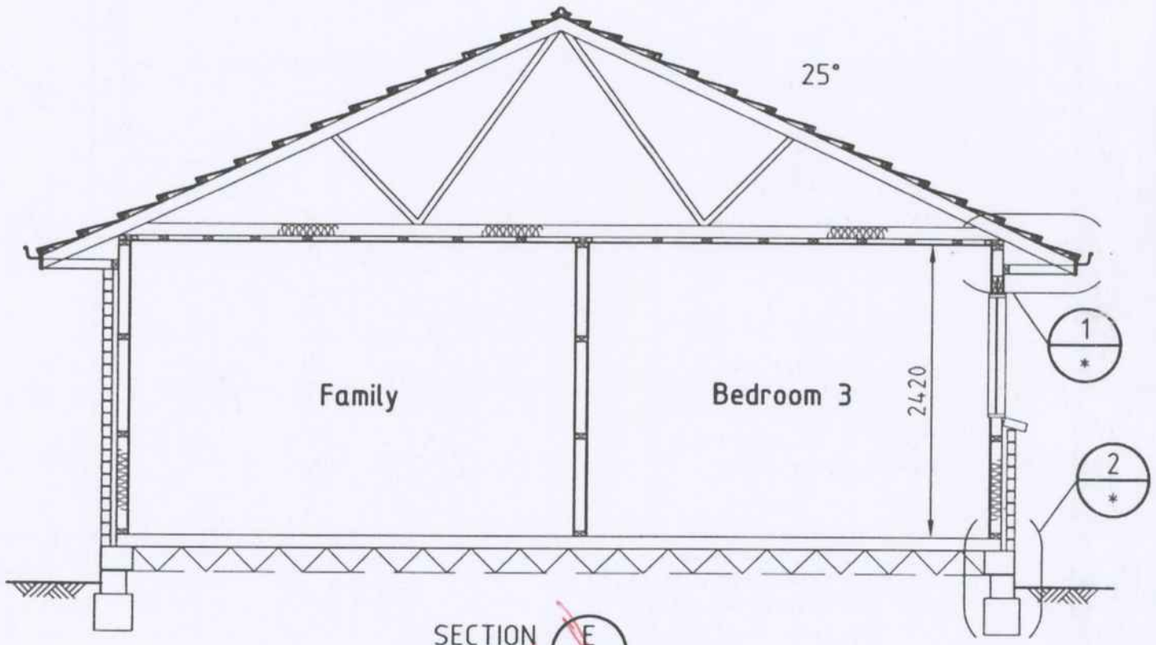
CAD. FILE : L171
LAST PLOT DATE : 27/05/06

# NEW RESIDENCE FOR LORAINE & DAVID GARDNER LOT 8 EBB TIDE TAURANGA

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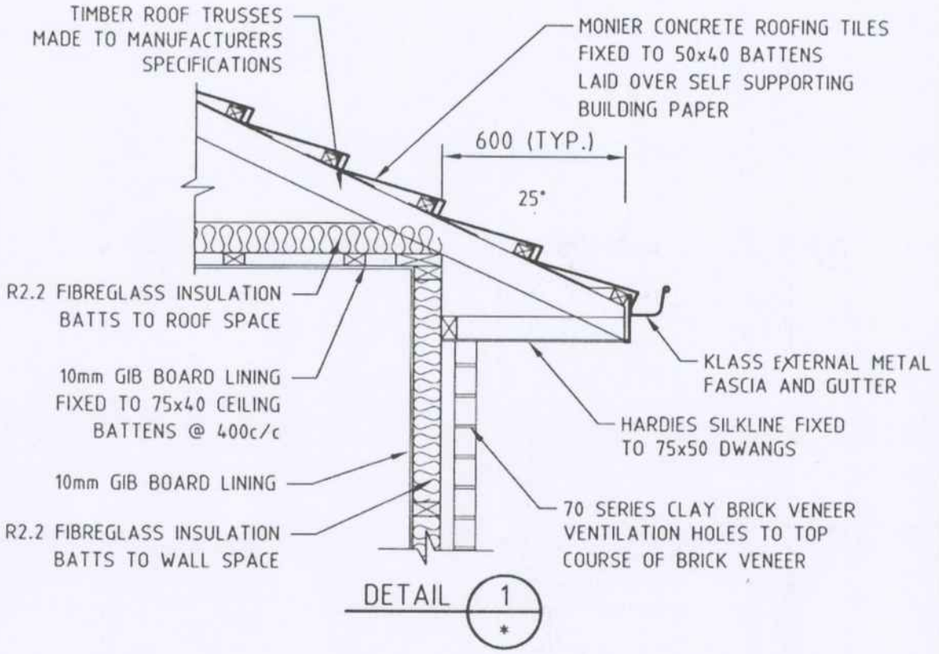
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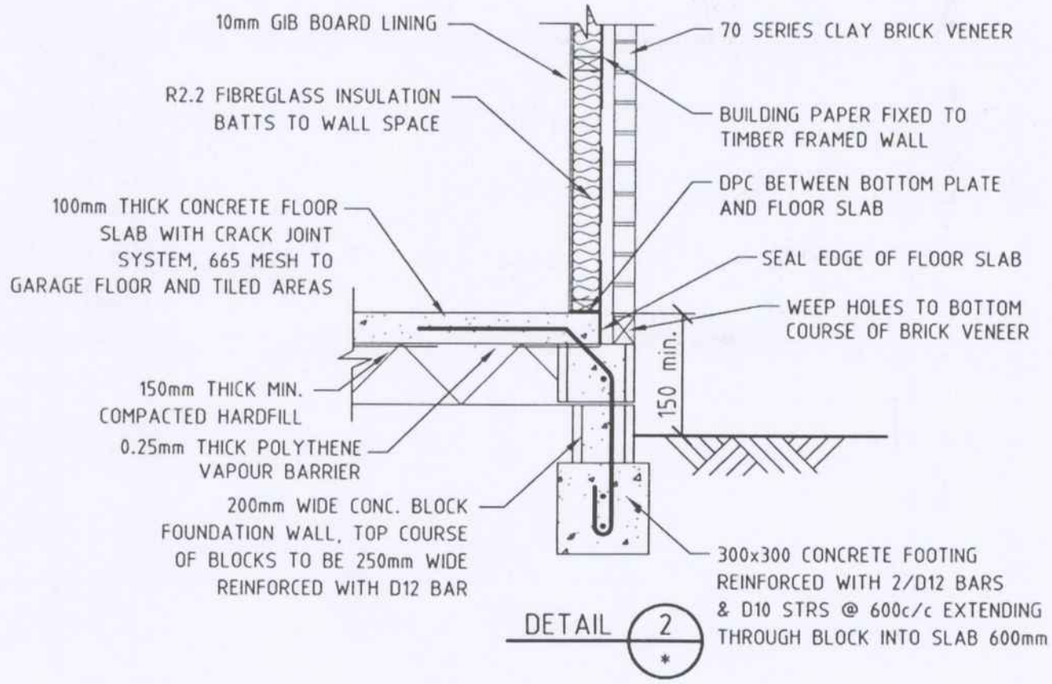



SECTION E 01

Typical.




DETAIL 1 *




DETAIL 2 *

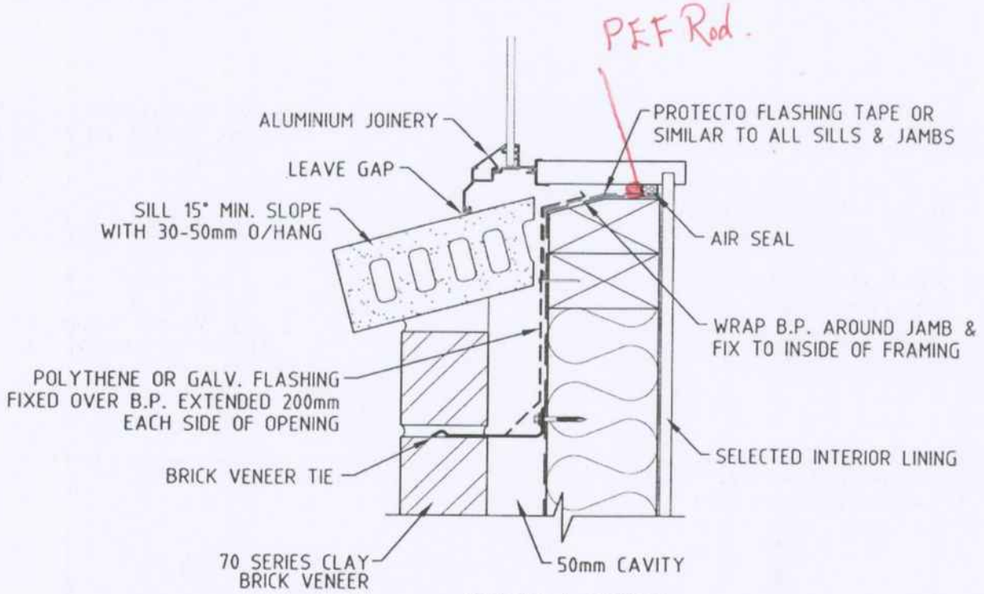
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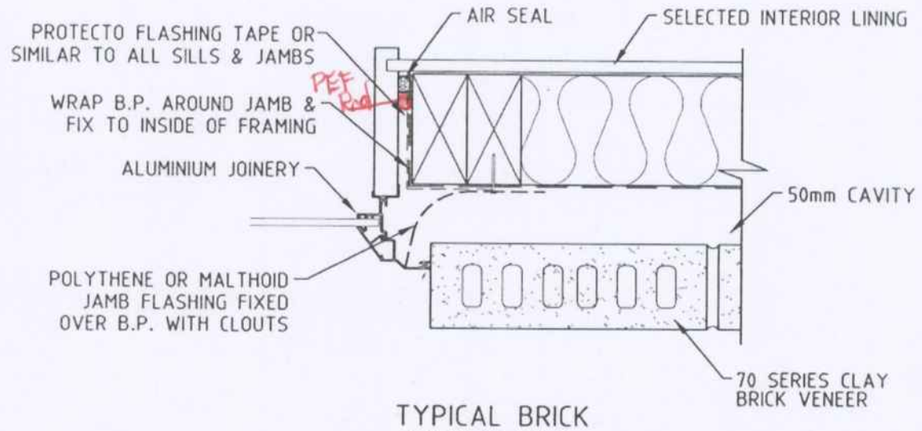
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# NEW RESIDENCE FOR DENIS & HAZEL SMALL 5 BOTONEY PLACE TAURANGA

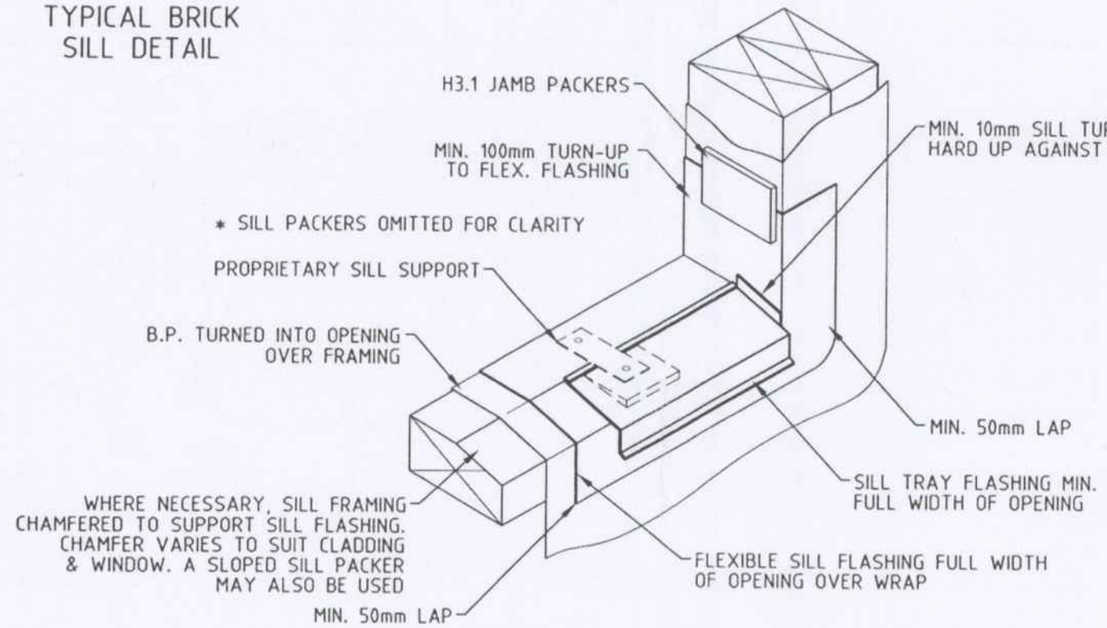
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| DATE : | 06/03/06 |
| SCALE : | 1:100 |
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| SHEET : | 5 |




TYPICAL BRICK
SILL DETAIL




TYPICAL BRICK
JAMB DETAIL




NOTE:
1. SILL FLASHING SHALL EXTEND BACK PAST THE CONDENSATION CHANNEL OF THE WINDOW
2. HEAD TO BE TREATED SIMILARLY WITH CONTINUOUS B.P. & FLEXIBLE FLASHING TAPE AT CORNERS

TYPICAL WINDOW OPENING

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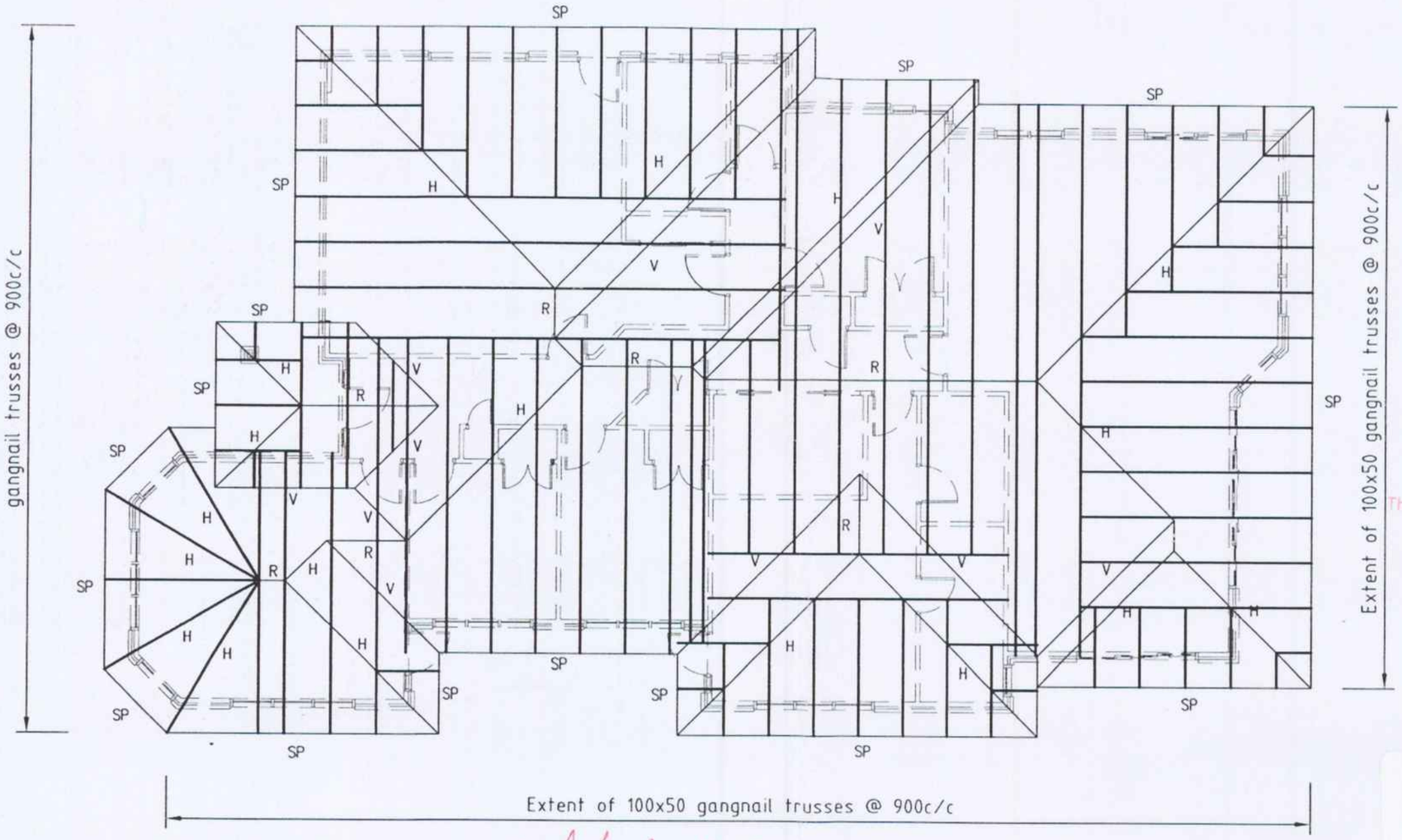
BUILDER SHALL ENSURE ALL DIMENSIONS ARE CHECKED ON SITE AND ALL CONSTRUCTION WORK COMPLIES WITH THE NZ BUILDING CODE, LOCAL BODY BYLAWS AND RELEVENT NZ STANDARDS

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LAST PLOT DATE : 26/05/06

NEW RESIDENCE FOR
LORAINE & DAVID GARDNER
LOT 8 EBB TIDE TAURANGA

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LEGEND

H – hip
V – valley
R – ridge
SP – spouting
B – barge

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Manufactures design to be on site.

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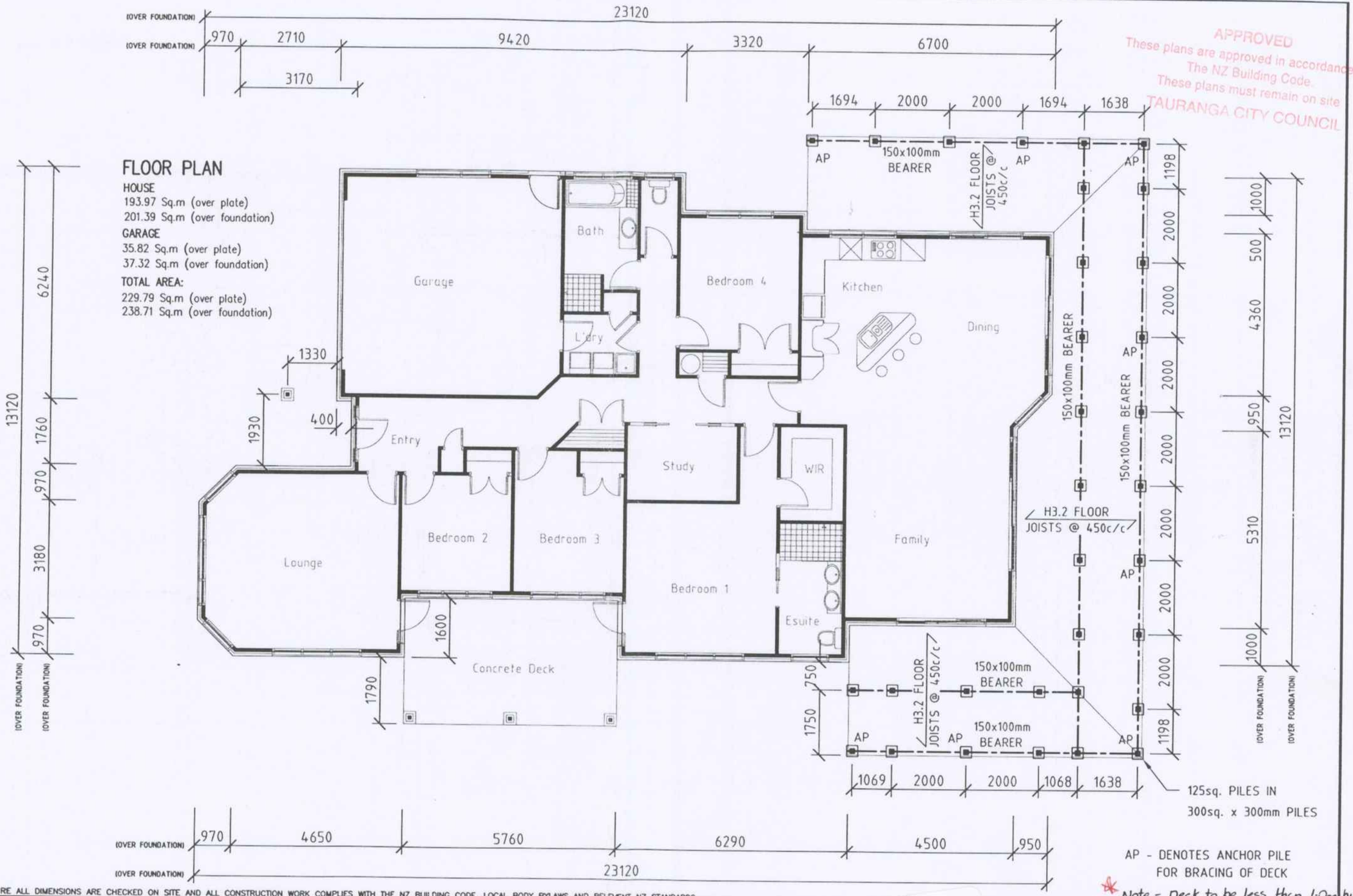
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# FLOOR PLAN

**HOUSE**
193.97 Sq.m (over plate)
201.39 Sq.m (over foundation)

**GARAGE**
35.82 Sq.m (over plate)
37.32 Sq.m (over foundation)

**TOTAL AREA:**
229.79 Sq.m (over plate)
238.71 Sq.m (over foundation)




AP - DENOTES ANCHOR PILE FOR BRACING OF DECK

Note - Deck to be less than 1.0m high

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NEW RESIDENCE FOR
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AS 3500.2 Drainage System Specified.

Separate under Floor Inspection Required.

TCC161286

(Moturiki Datum)
3.69m

3.60m
3.45m
BDY 23.55m 191° 20' 00"
3.25m
STORMWATER CONNECTION
3.10m
BDY 10.00m 191° 20' 00"
2.65m

BDY 2.33m 126° 49' 00"
4.50m
2.40m

ROAD

BDY 8.82m 126° 49' 00"
3.65m
BDY 18.24m 96° 18' 00"

Exposed Agrigate Drive
50m²

GT
TV
DP
DP
DP
GT
DP

Provide access to the gully

Deck

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PROPOSED HOUSE
195.35 Sq.m
F.F.L. @ 3.8m

LOT 8
DPS 20066
AREA 760m²

Deck To be less then 1.0m above ground level.

2.80m
BDY 20.28m 102° 51' 00"

BDY 2.57m
10° 07' 00"
3.70m

SEWER CONNECTION

BDY 10.49m 86° 40' 00"
3.60m
6.16m

DP
Conc. Deck To be 150mm below floor level
DP
GT
TV
DP

Deck

3.00m

4.75m
4.75m
BDY 20.28m 282° 51' 00"

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3.50m
3.40m
3.30m
3.25m
3.20m
BDY 5.30m 191° 20' 00"
BDY 22.41m 191° 20' 00"
BDY 10.00m 191° 20' 00"
3.05m

DRAINAGE
Verify sewer depth on site before commencement building. Ensure stormwater does not flow on to any adjoining property either during or on completion of building

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| JOB No. : | |
| SHEET : | 9 |

# SPECIFICATION

ADDRESS: LOT 3 Ebb Tide, Maungatapu, Tauranga

CLIENT: Lorraine & David Gardner

## SECTION ONE: PRELIMINARY AND GENERAL

### 1.1 MATERIALS AND WORKMANSHIP

All materials and workmanship shall be the best of their respective kind, qualities, classes and grades as specified. They shall comply with the relevant N.Z. Standard of their kind and with the New Zealand Building Code.

All tradesmen are to familiarise themselves with the Affordable Homes Tradesman's Specification and complete their work in accordance with it.

All timber, with the exception of the wall framing and lintels (Laser*frame*), is to comply with NZS 3604:1999 and NZS 3640:1992 (Minimum requirements of the N.Z. Timber Preservation Council Inc.)

The wall framing and lintels is to be Laser*frame* are is comply with NZS 3640:1992 and the Laser*frame* Instruction Manual No.3 June 1996

All builders are to ensure that they are fully conversant with the requirements of the Laser*frame* Instruction Manual.

All nails, screws, bolts and other fastenings are to be galvanised and shall be fixed in accordance with Appendix A NZS 3604:1999.

### 1.2 FINISHING

A high standard of workmanship is required by all contractors and tradesmen. Should any trade consider that any surface, fitting or joinery not be left in such condition as to allow that trade to produce a workmanlike finish, it shall be his responsibility to notify that contractor before any further work is done. No further finishing work shall then be done until acceptable improvements have been made. Failure to notify the contractor in this respect shall render that trade responsible for any subsequent substandard finish.

### 1.3 SITE CLEARANCE AND MAINTENANCE

The contractor shall be responsible for the building site being left in a tidy state free from all rubbish and residue and ready for occupation. Any site cleaning up work required to be done in this respect may be charged to the contractor responsible.

## SECTION TWO: SITE CLEARANCE

### 2.1 SCOPE

The contractor shall be responsible for the removal of all vegetation, trees, roots, and other unsuitable material from the area to be covered by the new building, decks, verandas and other associated works. This material is to be removed from the site and suitably disposed of.

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## 2.2 SURVEY MARKS

The contractor shall ensure that all survey markings or builders pegs are not damaged to disturbed during site clearance. Any marks close to the works should be suitably protected by the contractor before he begins work. Any marks disturbed or damaged shall be advised to the Building Overseer who shall arrange for their reinstatement.

# SECTION THREE: BUILDING CONTRACTORS

## 3.1 PRELIMINARY

All workmanship and materials shall comply with the New Zealand Building Code, relevant New Zealand Standards, and accepted trade practice. All work is to be carried out in accordance with the plans, specifications, and job sheets supplied with this contract and as varied from time to time.

## 3.2 SITE SET OUT

The contractor is responsible for ensuring that the works are correctly set out on the building site. He will confirm that all survey and/or ground marks required to achieve an accurate set out are in place. Any marks not in place or disturbed are to be notified to the Building Overseer. The contractor is responsible for ensuring that all such marks are not damaged or disturbed by his works and he shall take such measures as are necessary to protect these marks. He may be held liable for the cost of reinstatement of any marks disturbed by him.

## 3.3 CONCRETE FLOOR

### 3.3.1 EXCAVATION

The contractor is to excavate for all foundations, decks, porches, steps and other works included in this contract and as detailed on the plans. The foundations are to be excavated to a minimum depth of 300mm or to solid bearing.

A minimum depth of 100mm is to be excavated under all concrete floors. All excavations are to be cleaned out and the bottoms left dry and firm.

### 3.3.2 FILL UNDER CONCRETE FLOORS

Hardfill under all concrete floors shall be levelled. The minimum depth of hardfill is to be 150mm. Any concrete floors requiring hardfill to a depth exceeding 600mm shall require an Engineer's specific design in terms of NZS 3604:1999.

### 3.3.3 MATERIALS

All concrete shall be Ordinary Grade 17.5 MPA at 28 days and shall comply with NZS 3109:1987.

Reinforcing shall be mild steel rods (plain or deformed) and mesh if required as specified on the plans and will comply with NZS 3402:1989.

All ties to be black annealed tie wires.

### 3.3.4 FORMWORK

All formwork shall be ex 25mm rough sawn timber and braced so as to prevent any distortion. All joints shall be sufficiently tight so as to prevent any leakage and to ensure that a high standard of "fairfaced" finish is achieved.

Pour all foundation walls and footings as detailed on the plans. Allow to build in all pipes, conduits, and fittings as required by other trades. Any verandas, decks, or porches shall be tied to the foundation wall as detailed on the plans.

### 3.3.6 CONCRETE FLOOR

The concrete floor shall be 100mm minimum thickness poured over 0.25mm thick polythene vapour barrier. Vapour barriers are to be lapped a minimum of 150mm and shall be sealed with pressure sensitive tape. The concrete slab surface shall be smooth and level, free from any ridges or depressions and shall conform to an acceptable tradesmanlike finish.

### 3.3.7 CONCRETE DECKS AND STEPS

All concrete decks, steps and porch areas are to fully comply with NZBC D1/AS1 Table 1A for slip resistance: i.e. a broomed (Class 5 or 6)(6) or wood float finish (Class U2)(6) giving a coefficient of friction (wet) value of 0.65 - 0.85.

Steps are to have a minimum tread width of 280mm and a maximum tread height of 190mm (refer Table 5 NZBC D1/AS1).

All deck or step heights over 900mm in height above formed ground level are to comply with NZBC F4/AS1 in respect to balustrades or handrails.

Balustrades to decks, when required, are to comply with NZBC B1/AS2.

## 3.4 TIMBER FLOOR

### 3.4.1 EXCAVATION

Excavate for all timber piles to the minimum depth and width as detailed on the plans or to solid bearing. The bottoms of the holes should be square not rounded and the sides are to be perpendicular. The excavations should be left clean with the bottoms dry and firm.

### 3.4.2 MATERIALS

All timber is to comply with NZS 3604:1999 and NZS 3640:1992 (Minimum requirements of the N.Z. Timber Preservation Council Inc.)

All nails, screws, bolts and other fastenings are to be galvanised and shall be fixed in accordance with Appendix A NZS 3604:1999.

### 3.4.3 FLOOR FRAMING

All ordinary timber piles to be as detailed on the plans with 12 kn fixings and to comply with NZS's 3604:1999 and 3605:19 and the NZBC.

Level the tops of the piles and secure bearers to piles as detailed on the plans and to manufacturers specifications. Fixings to anchor piles to be 12 kn.
Floor joists to be fixed as per NZ Standard 3604:1999 Appendix A except where separately specified in respect to anchor piles on the plans.

Drape double sided perforated aluminium foil over floor joists with 100mm dish at mid-span between joists. Sisalation must be tightly butted against blocking.

A 450mm x 450mm clear opening is to be framed for the manhole; this is to be located conveniently and a ledge formed to support the manhole cover.

3.4.4 FLOORING

Lay 18mm thick high density particle board flooring over joists, all joints to be staggered, to manufacturers specifications. Form the manhole cover.

3.4.5 TIMBER DECKS AND STEPS

All timber decks, steps and porches are to comply with NZBC D1/AS1 Table 1A for slip resistance: i.e. an uncoated profiled (4) across profile giving coefficient or friction value of 0.45 - 0.60. Steps are to have a minimum tread width of 280mm and a maximum riser height of 190mm as per Table 5 NZBC D1/AS1.
Any decks or steps over 900mm in height above formed ground level are to comply with NZBC F4/AS1.
Balustrades to decks, when required, are to comply with NZBC B1/AS2.

## 3.5 HOUSE

3.5.1 WALL FRAMING

All framing to be Laser*frame* (F5+) 35mm x 90mm studs to be at 600 centres with two rows of dwangs equally spaced. Top and bottom plates are to be Laser Frame (F5+) 35mm x 90mm with top plates being joined over studs and at intersecting walls with nail plates. Exterior bottom plates are to be fixed with Lumberlock bottom plate connectors at 900mm centres. A Ramset nail and washer is to be fixed adjacent to each connector.

Interior bottom plates may be fixed with "Ramset" or similar approved fittings.

Ceiling plate is to be 150mm x 40mm.

All exterior wall framing is to be covered with building paper complying with NZBC E2/AS1 clause 2.4 and is to be securely fixed to studs, dwangs, and plates with a minimum 75mm overlap.

All noggings, trimmings, straightening and packing of studs, dwangs, and joists necessary to enable tradesmenlike fixing of gibraltar board is to be completed by the builder.

All lintels are to comply with NZ Standard 3604:1999 Table 16.

The builder should note any special engineers lintel designs where high load points may occur in terms of NZ Standard 3604:1999 cl 6.6.1.2 i.e. Girder trusses on hip roofs.

3.5.2 WALL BRACING

All wall bracing is to be fixed in accordance with NZ Standard 3604:1999 and the manufacturers instructions. Location and type of brace to be in strict accordance with the plans and bracing schedule that form part of this contract.

3.5.3 ROOF FRAMING

Roof framing is to be in accordance with NZ Standard 3604:1999 and the manufacturers instructions. Location and type of brace to be in strict accordance with the plans and bracing schedule that form part of this contract.

A truss certificate from the roof truss manufacturer showing the layout of the roof truss design is to be included in the set of plans included in this contract.

3.5.4 COLORSTEEL / COLORTILE / CONCRETE TILE ROOFING

Installation is to be by an approved contractor and comply fully with the manufacturers specifications and instructions, the NZBC E2/AS1 Table 1, and NZ Standards 3604:1999 and 4217:1980. All building contractors are responsible for familiarising themselves with information in regard to roof framing

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requirements.

Self Supporting building paper complying to NZBC E2/AS1 Clause 1.3 is to be fixed to roof timbers under concrete tiles.

### 3.5.5 GUTTER AND FASCIA SYSTEMS

Gutter and fascia systems are to be as stated in the clients specification and shall comply fully with the NZBC E1/AS1 clauses 5.0 - 5.2 and clauses B1 and B2.

All installation is to be in strict accordance with the manufacturers instructions and specification.

Downpipes are to comply with NZBC E1/AS1 Table 5.

### 3.5.6 INSULATION

Insulation is to comply with NZBC H1/AS1.

Ceiling insulation to be R 2.0 Fibreglass Batts and wall insulation to be R 1.8 Fibreglass Batts friction fitted to form a complete envelope.

### 3.5.7 INTERNAL WALLS/GIBSTOPPING

All linings are to be carried to floor level, into wardrobes and cupboards and behind all fittings.

The moisture content of all framing (including lintels and beams) shall be within the acceptable range and complying with Local authority requirements before fitting of linings.

All walls, ceilings, wardrobes and cupboards are to be lined with 9.5mm standard Gibraltar Board and stopped to a paint grade finish.

Fixing shall be in strict accordance with manufacturers instructions and good trade practice.

Skirtings shall be 60mm x 12mm single bevel skirting to all wall and floor junctions.

### 3.5.8 FIBRE CEMENT WEATHERBOARDS

All workmanship and materials are to comply with the NZBC E2/AS1, NZ Standard 3604:1999, and the manufacturers specification and instructions for installation. Fix weatherboards with 50mm x 2.8mm galvanised nails and fit soakers, mouldings and flashings as required.
All joints to be completed with an approved RTV sealant to manufacturers instructions.

The building contractor is to note the correct cutting and installation of these materials is essential to produce a quality finish, particularly around doors and windows.

### 3.5.9 JOINERY

### 3.5.9.1 DOORS, WARDROBES AND CUPBOARDS

All joinery for interior, exterior, wardrobes and cupboards is to be installed as shown on the plans and of the type shown in the client specification. The building contractor is to ensure that all doors are hung in a tradesmanlike manner being true and plumb. All sliding doors units are to be installed to permit the doors to slide truly along the tracks. Wardrobes and cupboards are to have shelves and rails etc installed as implied on the plans or in the client specification.

### 3.5.9.2 ALUMINIUM WINDOWS

All aluminium window joinery is to be installed in the positions shown on the plans and to the type specified in the client specification. The building contractor is to ensure that window reveals are fitted securely and square and that any flashings, particularly around box garden or bay windows are watertight. Any

manufacturers instructions provided or indicated are to be strictly adhered to.

All glazing is to comply with the NZ Standard 4223:pt3:1993 and the NZBC F2/AS1 in respect to safety glass. Ventilation to all areas of the house to comply with NZBC G4.AS1 except where mechanical or other means of ventilation are used.

3.5.9.3 KITCHEN JOINERY

Install kitchen joinery as shown on the plans and as indicated in the client specification.

Kitchen layout and joinery is to comply with NZBC G3/AS1 with particular emphasis on the preparation area as set out in Figure 1.

It is important that the building contractor ensures that all necessary plumbing fittings are installed before fitting of the joinery.

3.5.9.4 LAUNDRY CABINET AND TUB

Install laundry cabinet and tub as shown on the plans and in the client specification. Laundry layout and joinery is to comply with the NZBC G2/AS1 particularly Fig. 1.

The building contractor to ensure that tub pre-plumbing is completed before final fitting of the cabinet.

3.5.9.5 BATHROOM

Install bathroom joinery including vanity unit and shower cubicle which are to comply with the requirements of the NZBC G1/AS1 and E3/AS1 Clause 3.2.

The building contractor is to ensure that the plumber has installed the shower tray (plumbed) and any other required fittings are in place before he commences work refer clause 9.7 of this specification.

## SECTION FOUR: BLOCKLAYER

### 4.1 PRELIMINARY

All workmanship and materials to comply with NZ Standards 3604:1999 and 4230:Part 1:1990 and with the NZBC Parts B1 and B2.

The concrete blockwork includes the laying of all blockwork shown on the plans and as specified by any engineers design certificate.

### 4.2 CONCRETE BLOCKS

Shall comply fully with the requirements of NZ Standard 3102:1983 with all exposed edges laid true and square: damaged blocks will not be acceptable.

### 4.3 MORTAR

The cement used will comply with NZ Standard 3122, the water to be portable, and the sand used to comply with NZ Standard 3103 No.1 Grade.

### 4.4 BLOCKWORK

The concrete blockwork shall be laid in stretcher or stack bond with all joints to be full and struck to provide a good quality "FAIRFACED" finish to both faces. A complete bond between blocks and mortar is to be secured and no blocks are to be adjusted once the mortar has set thereby breaking the bond. All steel reinforcing is to comply with NZ Standard 3402:1989 and is to be placed as shown on the plans.

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All pipes, conduits and other fittings required by other trades are to be built in for their convenience and in the positions indicated on the plans. Form weepholes in the blockwork at least 50mm below all bottom plates and below finished floor level at approximately 800mm centres.

All blockwork is to be thoroughly cleaned down upon completion.

## SECTION FIVE: BRICKWORK

### 5.1 PRELIMINARY

All workmanship and materials are to comply with NZ Standards 3604:1999, 4229:1986 and 4230:1990 and the NZBC B1/AS1.

Bricks are to be as stated in the client specification and must be true to shape without blemish or defect.

### 5.2 MORTAR

Cement to be used to comply with NZ Standard 3122m water shall be potable, and sand shall be No.1 Grade NZ Standard 3103.

Mortar is to be mixed in an approved fashion to form a homogenous mass in a colour to match the brickwork (or as specified).

Any mortar not used within 90 minutes of mixing is to be discarded.

The bricklayer to note that Plasticisers are to be used in strict accordance with the manufacturers instructions and that no additives are to be used in conjunction with them.

### 5.3 BRICKWORK

Bricks are to be laid in stretcher bond to a true line level and plumb face. Joints are to be consistent.

A cavity of not less than 40mm nor more than 75mm in width is to be maintained between the timber frame and the brick veneer. The cavity is to be clean and free from mortar droppings, protrusions, pipework and electrical fittings.

Approved zinc or galvanised ties are to be fixed at 400mm vertically and 600mm horizontally (maximums).

100mm x 400mm subfloor vents are to be built into the veneer at 900mm maximum separation distances to provide required ventilation. (Based on 3500$m^2$ venting for each 1$m^2$ of floor area). Vents are to be a maximum of 750mm from house corners.

Bricklayer is to allow for any pipes, conduits, or other fittings required by other tradesmen.

Clean down face of brickwork when completed and leave free from mortar stains and efflorescence.

## SECTION SIX: EXTERIOR TEXTURE COAT

### 6.1 SCOPE

The application of an approved acrylic texture coat to all exterior walls and areas as denoted on the plans.

### 6.2 MATERIALS

Plaster systems MultiPlast texture coat system with a flex coat finish over 7.5mm Harditex to Manufacturers

Specifications.

6.3 WORKMANSHIP

All work is to be best trade practice with the work to be of a consistent grade and finish over the whole job. Comply with NZBC B2/AS1 and E2/AS1.

## SECTION SEVEN: FOUNDATION PLASTERER

7.1 MATERIALS

Cement shall comply with NZ Standard 3122, sand shall be No. 1 Grade NZ Standard 3103. Hydrated Lime to be "mill hydrated" of approved manufacture and any bonding agents are to be used in strict accordance with manufacturers instructions.

7.2 WORKMANSHIP

All work is to be best trade practice with the overall finish to be of a consistent finish over all of the work.

Keep all work damp as required during application.

Comply with NZ Standard 4251:1974.

## SECTION EIGHT: PLUMBER

8.1 SCOPE

The Plumber shall be responsible for the supply of all plant and labour necessary for the installation of water reticulation (from toby box), sanitary services and fittings (from gully traps/vents inclusive), all vent pipe flashings and cappings and downpipes and associated brackets. Also snow strapping if required.

8.2 STANDARDS

All work and materials are to comply with the relevant NZ Standard (as stated) and the NZBC Clauses G1 - G4 and G10 - G15.

Work is to be completed by Registered Craftsman Plumbers.

8.3 MATERIALS

8.3.1 COPPER TUBING

Shall be seamless cold drawn to comply with NZ Standard 3501:1976.

8.3.2 PLASTIC PIPE

Polybutylene to comply with ASNZ3500
UPVC: Wastes, vents and soil pipes shall be rigid pvc having solvent welded joints to comply with NZ Standard 7641:1978 and 7642:1971.
Polypropylene: Traps shall be white polypropylene with screwed joints to NZ Standard 7652:1976.
Polythene: Water supply pipes to be "h.d" polythene completed with approved pipe fittings to NZ Standard 7602:1977.

8.4 COLD WATER SUPPLY

> From point of supply in street (toby box) run a 20mm polythene pipe underground to the house foundation entry point thence to the gravity feed fed roof tank. All pipework to be PVC Polypropylene: 20mm dia mains with 15mm dia branches.

All pipe work to be clipped in accordance with NZBC G12/AS1 Table 7 and G13/AS1 6.3.1 Table 8.

8.5 HOT WATER SUPPLY

Install 180 Litre Hot Water Cylinder complete with 1500 watt element and thermostat with 20mm dia supply pipe and 15mm dia branches or risers to sink, wash hand basin, bath, shower and laundry tub.

HWC tempering valve to comply with NZ Standard 4617:1989 to all hot water supply pipe work prior to all fittings: Set valve to 55 degrees centigrade in accordance with NZBC G12/AS1 Clause 4.13.2. Fit seismic restraint.

All pipe work to be clipped in accordance with NZBC G12/AS1 Table 7 and G13/AS1 6.3.1 Table 8.

Insulate all hot water pipes with preformed fibreglass insulation or double thickness plumbers felt secured with wire tie wrap.

8.6 WASTE PIPES AND TRAPS

Waste pipes, vents, and traps are to be installed with all work carried out in accordance with the manufacturers instructions and specifications. Care is to be taken where pipes and wastes are running horizontally.

8.7 TAPS, FAUCETS, SHOWER MIXING VALVES, ETC

Refer to the clients specifications for brand and tupe of fitting required. All fittings to installed to manufacturers instructions.

The shower tray is to be installed before the builder finishes off shower joinery (refer Clause 3.5.9.4 of this specification) and must comply with NZBC E3/AS1 Clause 3.2.

8.8 DOWNPIPES

Supply and fit PVC downpipes to droppers in gutter system including two brackets per downpipe.

Comply with NZBC E1/AS1 clause 4.0 and Table 5.

8.9 TESTING

At completion of work test all water supply pipework at maximum pressure available and comply with any Local Authority requirements or procedures.

SECTION NINE: DRAINLAYER

9.1 SCOPE

The drainlayer is responsible for all surface and foulwater drainage up to ground level to connect to plumbers work. This includes all pipes and fittings, manholes and inspection chambers, gully traps and connections for terminal vents. The drainlayer is to confer with the building contractor before foundation work begins to fix the exact position of all pipes and fittings.

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## 9.2 STANDARDS

All work and materials are to comply with the relevant NZ Standards, with the NZBC Clauses G1 - G4, G10 - G15, and G13 AS2 and with good trade practice. The drainlayer is to obtain all relevant permits, service all notices, pay all fees required and arrange for all tests.

## 9.3 MATERIALS

### 9.3.1 PIPES

UPVC pipes shall comply with NZ Standard 7649:1988 and 100mm dia unglazed socket earthernware pipes will comply with NZ Standard 3302:1983 with approved rubber rings.

### 9.3.2 CONCRETE

Shall be 17.5 MPa Ordinary Grade to NZ Standard 3109:1987.

## 9.4 TRENCHES

Neatly cut trenches, graded to falls after approval, backfill and thoroughly consolidate. Lay all drains on 100mm of 20mm crushed metal.

## 9.5 SEWER DRAINS

Comply with the NZBC and NZ Standard 4452:1986.

Refer to the SITE PLAN for layout of sewer drainage:

- Provide all necessary bends, junctions, inspection fittings, etc.
- Bed gullies in concrete and fit preformed plastic sumps complete with grate and cover.
- Sumps shall be 100mm above existing ground level.
- Connect to terminal vent and gully trap and run to approved connection.

## 9.6 STORMWATER DRAINS

Comply with the NZBC and NZ Standard 4452:1986.

Refer to the SITE PLAN for the layout of stormwater drains:

- Provide all necessary bends, junctions, inspection fittings, etc
- Bed "easy bends" in concrete below downpipe entries; fit grating and cover plate cut around downpipe.
- Connect to stormwater drain and run to road side channel (or other approved stormwater outfall).

## 9.7 COMPLETION

Properly backfill all trenches, consolidate as filling is done, and leave the building site in a tidy and safe state.

# SECTION TEN: ELECTRICAL

## 10.1 SCOPE

The electrical contract consists of the supply of all plant, materials and labour for completion of the entire lighting and power system including the connection to the Local Power Supply Authority mains system.

## 10.2 STANDARDS

The whole of the electrical installation shall be in strict accordance with Electrical Wiring Regulations and all its amendments and shall comply with the NZ Electrical Code of Practice ECP50 and ECP51.

## 10.3 MATERIALS AND INSTALLATION

### 10.3.1 CABLES

Cables and flexibles shall be 250v grade T.P.S to comply with NZ Standard 6401:1973.

### 10.3.2 LIGHT SWITCHES

Shall be 10 amp, all insulated approved switches mounted 1200mm above the floor and will be supplied and wired up as shown on the plans and as stated on clients specifications.

### 10.3.3 POWER POINTS

All power points shall be 230v 10 amp 3 pin approved type mounted 300mm above the floor.. Mount power points for washing machine and refrigerator 1200 above floor level and will be supplied and installed as denoted on attached plans and client specification.

### 10.3.4 LIGHTS

Interior lights shall be approved white batten-holder complete with conical shade and approved downlights unless specified otherwise by the client.

Supply and wire up according to plans.
Supply and wire up two exterior lights.

### 10.3.6 METER BOX

Supply and install a steel meter box as denoted on the plans.

### 10.3.7 SWITCHBOARD

Supply and install the switchboard, complete with all necessary control and ancillary equipment in the recess provided and as denoted on the plans.

### 10.3.8 WATER HEATER

Supply and install water heating element and thermostat in HWC.

### 10.3.9 TRENCHES

To be a minimum 600mm in depth for mains cable and to be backfilled and consolidated upon completion of contract.

# SECTION ELEVEN: FINISHING

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## 11.1 INTERIOR PAINTING

Interior paint is to be applied to all walls, doors, wardrobes, cupboard doors, and ceilings. The colours are to be as specified by the client.

"All paints used are to comply with the requirements of their respective manufacturer in terms of what building products it is suitable for use on."

## 11.2 EXTERIOR PAINTING

Exterior paint is to be applied to all weatherboard areas including gable ends, soffits, over windows and doors and other areas as specified by the Building Overseer.

## SECTION TWELVE : DRIVEWAY

## 12.1 DRIVE WAY SPECIFICATION

Refer site plan in consent to determine type of driveway construction applicable. If no driveway detail shown on site plan then the formation of the driveway does not form part of the contract between Affordable Homes and its client and is not included within this building consent application.

Standard formation detail

- Minimum cross fall to be 1 in 100 grade
- Minimum grade of driveway to be 1 in 500 grade
- Kerb to be formed by utilising upstanding 150mm or 200mm x 25mm H4 Ground treated timber with H4 Ground Treated timber pegs at 1500mm centres. H4 75mm x 25 mm Ground Treated timber battens to other driveway formation bounds.

If required by local authority town planning or building regulations

- An approved Type 1 or Type 2 sump to NZBC E1 AS1 Figure 8 is to be placed so as to pick up driveway surface water and discharge it to the roadside curb and channel. This sump to be placed a minimum of 1.0 metres inside the legal road boundary.

Driveway construction detail – refer site plan for particulars of formation

Formed and shingled driveway

- Excavate 200 to 250mm
- Lay 150mm AP65 basecourse and compact
- Lay 50 - 70mm minimum AP40 or SAP 20 topcourse and compact and roll.

Ashphalt driveway

- Excavate and lay shingle basecourse at start of contract.
- Lay 75mm minimum compacted basecourse.
- Form driveway bounds with timber kerb and battens as specified.
- Lay 25mm asphaltic concrete topcourse to complete.

Concrete driveway

- Excavate and lay and compact basecourse to a depth of 150mm
- Box and pour 17.5 MPA concrete finished as per clients request to a depth of 75mm

# WATER CONSENT

- **Approval to Connect to Water Supply**
- **Return of As-Built Information**

Tauranga City

**DETAILS**

**Location:**
18 EBBTIDE WAY
**Legal Description:**
LOT 8 DP349963

**File No.** P/8985/18
**Application No.** 22613

| | |
|---|---|
| Domestic | ✓ |
| Commercial | |
| Subdivision | |

**OWNER (APPLICANT) DETAILS**

Name & Address:
GARDNER, LORRAINE ANN
36 IONA DRIVE
R D 3
PYES PA
Phone:
a/h 5434282
day 07 5789119

**OWNER'S AGENT (if not owner)**

Name & Address:
REALITY HOMES LIMITED
P O BOX 9020
GREERTON
TAURANGA 3030

Phone:

***The Council consents to a connection to its water mains at the above address subject to the conditions detailed hereafter. The supply of water is in terms of Part 8 of Tauranga City Council General By-Law 2001.***

**Approved by:**

Name: Sandy Fleet Signature: S Fleet Approval Date: 20/7/06

**CONNECTION DETAILS**

| | Yes | No | |
|---|---|---|---|
| *Does a Water Connection Already Exist?* | ✓ | | Condition 1 applies. |
| *Is the Water Connection Compliant?* | ✓ Condition 2 applies | | Condition 1 applies. |

**INSTALLATION REQUIREMENTS**

| | | | |
|---|---|---|---|
| **Condition 1** **(tick if this condition applies)** | | No. of Connections | |
| Connection Size | | | |
| Meter Size and Type | | | |
| Backflow Requirements | | | |

Other Requirements:

**You will need to contact one of the Approved Contractors listed overleaf** and make your own arrangements for them to carry out the installation requirements. These contractors know the methods and materials required by TCC and it is a condition of this consent that they do the work to Council's specified standards. Upon completion of the work, the nominated installer is required to sign the declaration overleaf (Section A) together with the As-Built information required .

**Condition 2 (tick if this condition applies)** ☑

A compliant water connection already exists at the site for which an application has been lodged. You are authorised to instruct your plumber to connect to the water meter (Number. 04150 7913 ).

Once this has been completed, you should complete Section B overleaf and return this to:

***Water Services Manager, Tauranga City Council, Private Bag 12022, Tauranga***

# NATURAL FEATURES CHECKLIST

**Property Address:** 18 Abbotside ..... **File No:**.....

..... **BC NO:** 22613

## 1. CHECKLIST

| | |
|---|---|
| Soils Report Number | CPU TL 2240 |
| Site identified in Land Feature Register or on Land Feature File | YES/NO |
| Details of identified Land Features known | YES/NO |
| Site inspection required | YES/NO |
| Site visit carried out | Date:..... |
| Slope of site excessive (20° or more) | YES/NO |
| Evidence of slippage | YES/NO |
| Evidence of subsidence or poor bearing capacity | YES/NO |
| Site affected by inundation (sea level rise, flooding) | YES/NO |
| Site affected by erosion | YES/NO |
| Site affected by avulsion | YES/NO |
| Site affected by falling debris | YES/NO |
| Site affected by alluvion | YES/NO |
| Site affected by exceptional wind effects | YES/NO |

**NOTES:** FE: S/Water Retic, BRL,

Consent Notice:

## 2. CONCLUSION

| | |
|---|---|
| Geotechnical report required?<br>Owner notified | YES/NO/NA<br>Date:..... |
| Specific design foundation required?<br>Owner notified: | YES/NO/NA<br>Date:..... |
| From information currently held by Council the site is suitable for conventional development? | YES/NO/NA |

for .....
**DEVELOPMENT ENGINEER**

20/7/06
**DATE**

# CHECKSHEET: ☑ PIM AND/ OR ☑ BUILDING CONSENT ☐ CERTIFICATE OF ACCEPTANCE

(FOR OFFICE USE ONLY)

RECEIVED

Received Date : 30 JUN 2006 Lodgement $ 500.00 Rec : 558295 Date : _____

PIM NO : 22613 Issued : 15-8-06 Bldg Con No: 22613 Issued : 15-8-06

File No : P 8935.18 Cert. of Acceptance No. _____ Issued: _____

| Officer | Initial | Date approved | Date info. requested | Date info. received | Processing time |
|---|---|---|---|---|---|
| Vetting | | | | | |
| Admin | | 3/7 | | | 0 |
| Planning | | 20/7 | | | 13 |
| Dev. Eng. | | 20-7-06 | | | 0 |
| Health | — | | | | |
| Trade waste | — | | | | |
| Haz. Sub. | — | | | | |
| Building | | 24/7 | | | 2 |
| Plumbing | | 24/7 | | | 0 |
| Structural | — | | | | |
| Consultant | — | | | | |
| Admin | | 25/7/06 | | | 1 |
| | | | | Total processing time | 16 |

ADMINISTRATION USE ONLY

| | | | | | Fees (GST incl) |
|---|---|---|---|---|---|
| Easement YES / NO | | | Issue B/C | IBC | $ 110-00 |
| | | | Issue PIM | IPI | $ 120-00 |
| | | | Issue CCC | CCC | $ 40-00 |
| Plan Processing fee | $ | | Plan Processing Fee | BIN | $ 290-25 |
| Bldg Inspection fee | $ | | Inspection Fee | BEX 12 | $ 1140-00 |
| Compliance Sched. | Yes / No | | | | $ |
| No of Sched features | | | Compliance Sched | COM | $ |
| | | | Xing / Asset Bond | VCB | $ 515- |
| PIM Planning fee | $ 115- | | Asset Dev Insp Fee | ADIF | $ 130- |
| PIM Dev. Eng. Fee | $ 100- | | Water Con Insp Fee | I06 | $ 60 |
| Total PIM Fee | $ 215- | | Process PIM | PIM | $ 215- |
| | | *Building Impact Fees* | *BIF Wastewater* | BIFW | $ 1424.64 |
| | | | *BIF Water Supply* | BIWS | $ 2502.48 |
| | | | *BIF Com Infrastructure* | BICI | $ 888.82 |
| | | | *BIF Reserves* | BIRC * | $ 1891-68 |
| | | Govt Levies | BRANZ Levy | I03 | $ 262-00 |
| | | | BIA Levy | BIA | $ 516-14 |
| SIF Fees P.T.O for Codes | | | Total Fee | | $ |
| | | | | | |
| | | | Total | | $ 10106-00 |
| B/C Conditions | Yes / No | | Less Lodgement | LOD | $ 500- |
| | | | Balance Owing | | $ 9606-00 |

| | Number(s) | Date | Amount |
|---|---|---|---|
| Invoice | 469897 | 25/7/06 | $ 9606-00 |
| Receipt | 50952 | 14/8/06 | $ 9606.00 |

### Bethlehem

| | | x No. | $ |
|---|---|---|---|
| BHH20 | Water | | |
| BHWW | Wastewater | | |
| BHSW | Stormwater | | |
| BHRD | Roading | | |
| BHCI | Com Infrastructure | | |
| BHFR | Reserves % | | |
| | **Total** (inc GST) | | |

### Pyes Pa

| | | x No. | $ |
|---|---|---|---|
| PYH2O | Water | | |
| PYWW | Wastewater | | |
| PYSW | Stormwater | | |
| PYRD | Roading | | |
| PYCI | Com Infrastructure | | |
| PYFR | Reserves % | | |
| | **Total** (inc GST) | | |

### Ohauiti

| | | x No. | $ |
|---|---|---|---|
| OHH2O | Water | | |
| OHWW | Wastewater | | |
| OHSW | Stormwater | | |
| OHRD | Roading | | |
| OHCI | Com Infrastructure | | |
| OHFR | Reserves % | | |
| | **Total** (inc GST) | | |

### Welcome Bay

| | | x No. | $ |
|---|---|---|---|
| WAIH2O | Water | | |
| WAIWW | Wastewater | | |
| WAISW | Stormwater | | |
| WAIRD | Roading | | |
| WAICI | Com Infrastructure | | |
| WAIFR | Reserves % | | |
| | **Total** (inc GST) | | |

### Papamoa

| | | x No. | $ |
|---|---|---|---|
| PAPH2O | Water | | |
| PAPWW | Wastewater | | |
| PAPSW | Stormwater | | |
| PAPRD | Roading | | |
| PAPCI | Com Infrastructure | | |
| PAPFR | Reserves % | | |
| | **Total** (inc GST) | | |

### West Bethlehem

| | | x No. | $ |
|---|---|---|---|
| WBHH2O | Water | | |
| WBHWW | Wastewater | | |
| WBHSW | Stormwater | | |
| WBHRD | Roading | | |
| WBHCI | Com Infrastructure | | |
| WBHFR | Reserves % | | |
| | **Total** (inc GST) | | |

### West Pyes Pa

| | | x No. | $ |
|---|---|---|---|
| WPYH2O | Water | | |
| WPYWW | Wastewater | | |
| WPYSW | Stormwater | | |
| WPYRD | Roading | | |
| WPYCI | Com Infrastructure | | |
| WPYFR | Reserves % | | |
| | **Total** (inc GST) | | |

### Pyes Pa Business

| | | x No. | $ |
|---|---|---|---|
| BUSW | Water | | |
| BUSWW | Wastewater | | |
| BUSSW | Stormwater | | |
| BUSRD | Roading | | |
| BUSFR | Reserves | | |
| | **Total** (inc GST) | | |

### Mt Maunganui Infill

| | | x No. | $ |
|---|---|---|---|
| MTH2O | Water | | |
| MTCI | Com Infrastructure | | |
| MTFR | Reserves % | | |
| | **Total** (inc GST) | | |

### Tauranga Infill

| | | x No. | $ |
|---|---|---|---|
| TGH2O | Water | | |
| TGWW | Wastewater | | |
| TGCI | Com Infrastructure | | |
| TGFR | Reserves % | | |
| | **Total** (inc GST) | | |

### Landscaping Impact Fees

| | | $ |
|---|---|---|
| LIFJ | Judea | |
| LIFM | Mt Maunganui | |
| | **Total** (inc GST) | |

# STEPS REQUIRED TO OBTAIN A CODE COMPLIANCE CERTIFICATE

26324

SITE ADDRESS: 18 Ibbotide Way LOT 8 DP 349963

OWNER: Gardner BUILDING CONSENT NO: 22613.

INTERNAL ASSESSMENTS: New Dwelling.

| | Time (Minutes) | Initial | ADDITIONAL INFO Request | Received |
|---|---|---|---|---|
| Building | 90 | | | |
| Plumbing/Drainage | 30 | | | |
| Structural | | | | |
| Other Specialist Assessors | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

FEES:

TOTAL FEES: _____

| INSPECTIONS REQUIRED: | (Tick where applicable) | Assessments | No. |
|---|---|---|---|
| Ground check | Cleared ground for raft slabs | ✓ | |
| Foundations | Prior to concrete placement..steel in place | ✓ | 2 |
| Block Fill/Bond beam | As above | | |
| Sub Floor Bracing | Prior to placement of flooring sheets | | |
| Underfloor plumbing/drains | Prior to covering in | ✓ | 1 |
| Slab | Prior to concrete placement | ✓ | 1 |
| Drainage | In place and under test before backfill | | |
| Retaining wall | Drainage & DPM in place before backfill | | |
| Columns | Prior to pouring..steel in place | | |
| Beams | As above | | |
| Precast (tilt up) panels | As above | | |
| Frame Connections | Wall & roof framing before wall/roof clad & Ply braces | ✓ | 1 |
| Bricks | ~~Half height~~..corner bricks out for flushing | ✓ | 1 |
| Cavity | Cavity frame complete & flashings in place | ✓ | 1 |
| Pre Plaster | Backing in place prior to solid plaster/texture | | |
| Preline Plumbing | Pipe work in place under 1500kPa test & visible | ✓ | 1 |
| Preline Building | Prior to lining with insulation in place | ✓ | 1 |
| Pre Stopping | To check fire walls & bracing panels | ✓ | 1 |
| Solid Fuel Heater | Once installed to manufactures specifications | | |
| (Inbuilt) | With chimney prepared before heater in | | |
| (Free standing) | With heater in & ceiling plate not in place | | |
| Final Plumbing | On completion of all works | ✓ | 1 |
| Final Building | On completion of all works & collection of documents | ✓ | 1 |
| Other (As specified here) | | | |
| | | | |
| | | | |
| | | | |

Total Inspections: 12

PUBLICITY PRINTING LTD

PROJECT INFORMATION MEMORANDUM CHECKSHEET

PIM No: 22613 File No. _____

VETTING OFFICER: If the proposed building work is of minor nature please provide standard information and complete process in readiness for the PIM to be issued.

- Are any other consents required? Yes/No
- Details of authorisations which have been granted Yes/No
- Historic Places Trust has been notified Yes/No Date notified ...../...../.....

**Information to be provided with PIM:** ✓ **COPY TO MONITORING** ☐

☐ **PIM1** The building as depicted in the attached Project Information Memoranda plans will comply with the District Plan provided it is constructed in accordance with these plans. Any variation from these plans may require a further consent.

☒ **PIM1A** The building as depicted in the attached Project Information Memoranda plans will comply with the District Plan, SUBJECT TO WRITTEN CONFIRMATION FROM A REGISTERED SURVEYOR, EMPLOYED BY THE APPLICANT AT THE APPLICANTS EXPENSE, THAT THE BUILDING COMPLIES WITH THE MAXIMUM HEIGHT AND DAYLIGHTING REQUIREMENTS OF THE DISTRICT PLAN.

Written confirmation is required prior to the closing in of the building.

The building as depicted in the attached Project Information Memoranda plans **does not** comply with the District Plan. Therefore if the project is to proceed the following authorisations are required:

☒ **PIM2A** Resource Consent for:

_____

_____

☒ **PIM2B** Outline Plan Approval

Therefore the following restrictions under Section 37 of the Building Act 2004 will apply until the Resource Consent has been obtained:

No building work to which the above consent relates may be undertaken.

Building work to which the above consent relates may be undertaken only to the extent specified herein:

_____

_____

☒ **PIM3** The building is to be erected and used in accordance with the attached Resource Consent conditions.

☐ **PIM4** A Citywide Development Contribution Fee together with the Building Consent fees and charges are to be paid before the building consent is uplifted.

☐ **PIM5** The Tauranga City Council Roading Hierarchy Plan showing the existing and proposed roading network is attached. For further information please refer to the Roading Division, Department of City Services, Tauranga City Council.

☐ **PIM6** Should an archaeological site be found on the site during excavations, the owner must apply for authority from Historic Places Trust prior to destroying, damaging, or modifying any archaeological site. Further information can be obtained by contacting the duty planner. Should koiwi (human remains) be uncovered during excavation, please contact the Tauranga City Council to arrange for tangata whenua to be advised, and appropriate steps taken for reburial.

☑ **PIM7** Site is suitable for proposed building subject to confirmation of ground conditions at time of footing inspection.

☑ **PIM8** Normal precautions adopted for excavation and filling within the Tauranga area should be observed. Excavation faces near to boundaries or other structures, that are over 1.5 metres high should generally be retained by walls designed in accordance with the New Zealand Building Code and fill in excess of 1 metre deep should only be placed under the guidance of a Registered Engineer. A Building Consent is required for retaining walls 1.5 metres in height or greater or irrespective of the height where there is likelihood of surcharge from buildings or vehicles. Excavations for the construction of retaining walls shall be contained within the legal boundaries of the lot, unless consent of the adjoining owners is obtained prior.

☒ **PIM10** The on-site effluent treatment system shall be designed, constructed and maintained to comply with the requirements of Environmental Bay of Plenty, under their "On-site Effluent Treatment Regional Plan". A reserve area shall be set aside on each lot for installing an alternative soakage bed system in the event of failure of the original. For further advice on the matter, please contact Environment Bay of Plenty phone 0800 368 267.

☒ **PIM11** Standard guidelines for the disposal of stormwater by ground soakage on residential lots at Mount Maunganui and Papamoa (exclusive of Bayfair Estate and Matapihi) are attached. In summary these guidelines recommend that soakpits shall be constructed of three 600mm diameter perforated rings, unless ground water conditions dictate otherwise, which shall not service more than 30 square metres of roof area. Such soakage may be duplicated and inter-connected in parallel if more than 30 square metres of roof is served by a downpipe dropper. During construction the drainlayer shall examine the soils present and after consideration of ground water levels and soil compaction present, make a judgement on whether good soakage is present to proceed with construction.

☑ **STAND1** Any lease agreement, rights of way and/or easement that relates to the property may require the applicant to obtain the consent of other interested parties to allow this proposal to proceed. Please check the terms of your lease agreement or Certificate of Title.

☑ **STAND2** Prior to the commencement of building, you are advised to verify on site, the invert levels of service connections intended to be utilised. Vehicle crossings are to be located clear of Council Stormwater Sumps.

☒ **STAND3** Any works associated with public utilities i.e sewer/stormwater/water which are required outside the legal boundaries of the site requires prior approval from the Asset Development Division of the Tauranga City Council. For further details please phone (07) 5777-000.

☒ **STAND4** Street Trees
Vehicle crossings are not to be constructed within 2.0 metres of the trunk or within the dripline of any street tree without the prior consent of the Tauranga City Council's City Arborist. Any costs associated with removing or relocating street trees will be at the sole expense of the applicant.

☒ **LISTEDTREES** This site or an adjoining site contains a Landscape or Notable Tree identified in the Tauranga District Plan. The Tauranga District Plan contains specific requirements for works undertaken within the the dripline of these tree. Please refer to the attached summary.

☑ **POLLUTION** Stormwater Pollution Prevention
The discharge to Council's stormwater system of any material other than clean rainwater is **prohibited.** For further information please contact the Pollution Prevention Officer, Tauranga City Council on phone (07) 5777-000

☒ **TRADEWASTE** Tradewaste
The discharge to Council's wastewater system of wastewater arising from any trade activity or process may require a Trade Waste Consent. Please contact Tauranga City Council on phone (07) 5777-000 for further information

☒ **HAZSUB** Hazardous Substances
Any storage or use of hazardous substances shall comply with the Hazardous Substances and New Organisms Act 1996. Please contact Tauranga City Council on phone (07) 577 7000 for further information.

☒ **HEALTH** The work is to comply with the Food Hygiene Regulations 1974 and the premises is to be registered with the Tauranga City Council prior to commencing operation.

☒ **BLDGCON** The Building Consent will be issued with conditions. Please refer to the Building Consent for specific details of the conditions.

☒ **WATER** Water Supply Protection
Pursuant to the Water Supply Protection Regulations 1961, it is a requirement of the Tauranga City Council that at the applicants expense, an appropriate backflow prevention device is installed on the water main servicing the property, in an accessible position for inspection and servicing, at a point as near as practicable to the boundary of the property.

☒ **SWIMPOOL** Swimming Pool Water Connection
Pursuant to the Tauranga City Council General By-Law 2001, it is a requirement of the Tauranga City Council that at the applicants expense, an appropriate backflow prevention device is installed on the water main servicing the property, in an accessible position for inspection and servicing, at a point as near as practicable to the boundary of the property. Refer Water Consent for backflow prevention device requirements.

☒ **CUTSERVICE** All existing service connections are to be adequately terminated and made safe.

☒ **SEC 363 –** Under Section 363 of the Building Act 2004 it is an offence to permit public use of a building for which no building consent or code of compliance certificate has been granted.

☒ **FIRESERVICE** The building owner is required to make provision for an evacuation scheme under Section 21A of the Fire Service Act 1975.

20 Feb 2005

**Circle** if applicable / **Cross** if not applicable

(X)

*a consent notice be registered on the Certificate of Title to Lots 1 – 12 stating that:*

- *"No further subdivision of any lot or development of more than one dwelling unit per lot shall occur, except through the consideration of a resource consent application, that would need to fully address the effects of further subdivision and/or development in relation to the private accessway.*

  *The number of dwellings and/or lots which can be served by a private accessway under District Plan 19.2.1.3(d)(iii) is a maximum of 12. This limit has been reached"*

- *Any application for building consent and or ongoing development on Lots 1 – 12 shall be in accordance with the Conditions given in the geotechnical completion report 17365 by S & L Consultants Ltd, dated 18/3/2005 and/or the Statement of Professional Opinion.*

(XI) Stormwater from roofs and hardstand areas is to be collected and piped to the connection provided.

# Application for
# Project Information Memoranda and / or
# Building Consent

Section 33 or Section 45, Building Act 2004

Tauranga City

Tauranga City Council
Private Bag 12-022 Tauranga
Phone 07 577 7000
Fax 07 577 7193
Website www.tauranga.govt.nz

## The Building

**Street address of building:**
*[for structures that do not have a street address, state the nearest street intersection and the distance and direction from that intersection]*
18 Ebb Tide Way Maungatapu Tauranga.

**Legal description of land and where building is located:**
*[state legal description as at the date of application and, if the land is proposed to be subdivided, include details of relevant lot number and subdivision consent]*
Lot 8 DPS No. 349963
Lot DPS No.

**Building name:**
New Dwelling

**Location of building within site/block number:**
*[includes nearest street access]*

**Number of levels:**
*[include ground level and any levels below ground]*
One

**Level / unit number:**

**Area:**
*[total floor area; indicate area affected by the building work if less that the total area]*
238m²

**Current, lawfully established, use:**
*[include number of occupants per level and use if more than 1]*
Residential Dwelling

**Year first constructed:**
*[approximate date is acceptable eg: 1920s or 1960-1970]*
To be Constructed

## The Owner
*[All contact details must be in New Zealand.]*

**Name of owner:**
[ Names must be in full]
Lorraine & David Gardner

**Contact person:**
[insert n/a if the applicant is an individual]
Lorraine

**Mailing address:**
36 Iona Drive.
R.D 3
Tauranga

**Street address / registered office:**

**Phone numbers** Landline 543 4232. Mobile -
Daytime N/A After hours -

**Email address:**
N/A

**Evidence of ownership is attached to this application:**

☑ Certificate of Title ☐ Lease ☐ Agreement for Sale and Purchase ☐ Other document
Attached

## Agent/Contact Person

*(Only required if application is being made on behalf of the owner)*

**Name of agent:** Reality Homes Ltd

**Contact person:**
*[insert n/a if the agent is an individual]* Tim Cox

**Mailing Address:** P·O Box 9020 Greerton Tauranga.

**Street address / registered office:** 21 21st Ave & Cnr Cameron Rd TGA

**Phone numbers** Landline 577 6374 Mobile 027 4 505 681

Daytime " " After hours

**Facsimile number(s):** 07 577 9510

**Email address(es):**

**Relationship to owner:**
*[State details of the authorisation from the owner to make the application on the owner's behalf]* Builder

**First point of contact for communications with the council / building consent authority:** Tim Cox

**Full name:**

***The owners agent/contact person nominated above is to receive the following:***

*Please tick box:*

- ☑ Processing enquiries
- ☑ PIM
- ☑ Invoice
- ☑ Service Consent
- ☑ Building Consent

## Application

I request that you issue a:

- ☐ Project Information Memorandum only
- ☐ Building Consent only. If applying for building consent only please provide PIM No.....
- ☑ Both PIM and Building Consent

For the building work described in this application

**Signature of the owner / agent on behalf of and with the authority of the owner:**

**Date:** 30/06/06

*(for issue use)*
**Application No:** 22613 **File no. P** 8985·18

## The Project

**Detailed Description of the Building Work:**

To construct new dwelling

**Will the building work result in a change of use of the building?** ☐ Yes ☑ No

If Yes, provide details of the new use:

N/A

**Intended life of the building if less than 50 years:** *[number of years]*

**List building consents previously issued for this project** *(if any)*:

N/A

**Estimated value of the building work on which the building levy will be calculated** *(state estimated value as defined in section 7 of the Building Act 2004)*

$ 245,000 (incl. GST)

$261,800

## Project Information Memorandum

*[Do not fill in this section if the application is for a building consent only]*

The following matters are involved in the project: [tick the matters relevant to the project]

- ☐ Subdivision
- ☐ Alterations to land contours
- ☑ New or altered connections to public utilities
- ☑ New or altered locations and/or external dimensions of buildings
- ☑ New or altered access for vehicles
- ☐ Building work over or adjacent to any road or public place
- ☑ Disposal of stormwater and wastewater
- ☐ Building work over any existing drains or sewers or in close proximity to wells or water mains
- ☐ Other matters known to the applicant that may require authorisations from the territorial authority: [specify]

## Building Consent

*[Do not fill in this section if the application is for a project information memorandum only]*

**The building work will comply with the building code as follows:**

*[if you're not sure which clauses are applicable, talk to the BCA or your architect]*

| Clause<br>*[tick relevant clause number of building code]* | Means of compliance<br>*[refer to the relevant compliance document(s) or detail or alternative solution in the plans and specification; if not applicable, put n/a]* | Waiver/modification required<br>*[state nature of waiver or modification of building code required; if not applicable, put n/a]* |
|---|---|---|
| ☑ **B1** Structure | As Per AS1 | |
| ☐ **B2** Durability | | |
| ☐ **C1** Outbreak of fire | | |
| ☐ **C2** Means of escape | | |
| ☐ **C3** Spread of fire | | |
| ☐ **C4** Structural stability during fire | | |
| ☐ **D1** Access routes | | |
| ☐ **D2** Mechanical installations for access | | |
| ☐ **E1** Surface water | | |
| ☑ **E2** External moisture | As Per AS1 | |
| ☐ **E3** Internal moisture | | |
| ☐ **F1** Hazardous agents on site | | |
| ☐ **F2** Hazardous building materials | | |
| ☐ **F3** Hazardous substances and processes | | |
| ☐ **F4** Safety from falling | | |
| ☐ **F5** Construction and demolition hazards | | |
| ☐ **F6** Lighting for emergency | | |
| ☐ **F7** Warning systems | | |
| ☐ **F8** Signs | | |
| ☑ **G1** Personal hygiene | As per AS1 | |
| ☑ **G2** Laundering | " | |
| ☐ **G3** Food preparation and prevention of contamination | | |
| ☐ **G4** Ventilation | | |
| ☐ **G5** Interior environment | | |
| ☐ **G6** Airborne and impact sound | | |
| ☐ **G7** Natural light | | |
| ☐ **G8** Artificial light | | |
| ☑ **G9** Electricity | As Per AS1 | |
| ☑ **G10** Piped services | " | |
| ☐ **G11** Gas and energy source | | |
| ☑ **G12** Water supplies | As Per AS1 | |
| ☑ **G13** Foul water | " | |
| ☐ **G14** Industrial liquid waste | | |
| ☑ **G15** Solid waste | As Per AS1. | |
| ☐ **H1** Energy efficiency | | |

## Compliance Schedule

*[Do not fill in this section if the application is for a PIM only ].*

☑ **There are no specified systems in the building**

☐ **The specified systems for the building are as follows**: (*Please tick.*)

- ☐ Automatic systems for fire suppression
- ☐ Automatic and manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit and serves only that unit)
- ☐ Fire doors – electromagnetic or automatic doors or windows (for example, ones that close on fire alarm activation)
- ☐ Emergency lighting systems
- ☐ Escape route pressurisation systems
- ☐ Riser mains for fire services use
- ☐ Automatic back-flow preventers connected to potable water supply
- ☐ Lifts, escalators, or travelators or other systems for moving people or goods within building
- ☐ Mechanical ventilation or air conditioning systems
- ☐ Building maintenance units for providing access to the exterior and interior walls of buildings
- ☐ Laboratory fume cupboards
- ☐ Audio loops or other assistive listening systems
- ☐ Smoke control systems
- ☐ Emergency power systems for, or signs relating to, a system or feature specified in any clauses 1-13

☐ **The following systems will be altered, added to, or removed in the course of the building work**:

- ☐ Automatic systems for fire suppression
- ☐ Automatic and manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit and serves only that unit)
- ☐ Fire doors – electromagnetic or automatic doors or windows (for example, ones that close on fire alarm activation)
- ☐ Emergency lighting systems
- ☐ Escape route pressurisation systems
- ☐ Riser mains for fire services use
- ☐ Automatic back-flow preventers connected to potable water supply
- ☐ Lifts, escalators, or travelators or other systems for moving people or goods within building
- ☐ Mechanical ventilation or air conditioning systems
- ☐ Building maintenance units for providing access to the exterior and interior walls of buildings
- ☐ Laboratory fume cupboards
- ☐ Audio loops or other assistive listening systems
- ☐ Smoke control systems
- ☐ Emergency power systems for, or signs relating to, a system or feature specified in any clauses 1-13

## Attachments

[Tick as applicable or put n/a if there are no attachments.]

**The following documents are attached to this application:**

☐ Plans and specifications [list]

x2 Working Plans: Site plan, Foundation plan, Truss layout. Window openings flashing, Cross section, bracing, Elevations, Floor plan. Top plate connections, Flitch Plate lintel design

Granglam Lintel Design

☐ Project information memorandum

☐ Development contribution notice

☐ Certificate attached to project information memorandum

## Contacts:

### Designer/Architect

Business/name: Reality Homes Ltd
Address: P.O Box 9020 TGA.
Daytime: 5776374 Mobile: 0274505681
After hours: Facsimile: 5779510
Registration/qualification:

### Engineer

Business/name: N/A.
Address:
Daytime: Mobile:
After hours: Facsimile:
Registration/qualification:

### Builder

Business/name: As Above.
Address:
Daytime: Mobile:
After hours: Facsimile:
Registration/qualification:

### Plumber

Business/name: Costar Plumbing Ltd.
Address: 121 King St, Matua TGA.
Daytime: Mobile: 0274 599 414
After hours: Facsimile:
Registration/qualification:

### Drainlayer

Business/name: W.H Kelly Ltd
Address: P.O Box 1050 TGA
Daytime: 578 6103 Mobile: 0275 786103
After hours: Facsimile:
Registration/qualification:

### Other

Business/name:
Address: N/A.
Daytime: Mobile:
After hours: Facsimile:
Registration/qualification:

# Service Connection Details

## Vehicle Crossing *(Please tick box)*

- ☐ Not applicable
- ☐ I intend using the existing vehicle crossing
- ☑ I intend installing a new residential vehicle crossing (Please note: maximum width 4.5m at kerb)
- ☐ I intend installing a new commercial vehicle crossing (Please note: maximum width 6m at kerb)
- ☐ I intend installing a new industrial vehicle crossing (Please note: maximum width 9m at kerb)

*Please note:*

- Your proposed vehicle crossing must be clearly illustrated on the site plans accompanying this application and is to be clear of any obstructions, such as:
  - **Trees** - **Stormwater Cesspits** - **Streetlights** - **Traffic Islands** - **Manholes**
- When uplifting your building consent, you will receive a copy of a Council pamphlet headed *"Vehicle Crossing and Asset Protection Requirements"*.
  It is important you read this pamphlet and following the instructions provided.
- If required, and prior to uplifting your building consent, the applicant shall pay Council a sum of money being the specified amount of a vehicle crossing and/or asset protection bond. No interest shall be payable to the applicant on the bond monies held by Council. All or any reasonable expenses incurred by Council in effecting repairs to a damaged vehicle crossing, footpath, wastewater, stormwater assets or arising there from, shall constitute a debt due to the Council by the applicant and may be recovered by Council by deduction from the monies deposited with the Council under this bond.
- When Council is satisfied that all specified works are completed and all as-built plans accepted, the said monies shall be repaid to the person nominated below and the bond cancelled. It should noted further that the applicant is the person/s making application for this building consent and / or project information memorandum and must be the owner of the land on which building work is contemplated or a person who or which has agreed in writing, whether conditionally or unconditionally, to purchase the land or any leasehold estate or interest in the land, or take a lease of the land, while the agreements remains in force.

**Please nominate who is to receive vehicle crossing and / or asset protection bond refund:** *(Please tick box)*

☐ Owner ☑ Owner's agent/contact person ☐ Builder

## Sewer Connection *(Please tick box)*

- ☐ Not applicable
- ☑ I intend using the existing sewer connection
- ☐ I intend installing a new ..... mm sewer connection and have completed and attached the application form.
- ☐ I intend installing an on-site effluent treatment system
- ☐ Other *(supply details)* .....
  .....

*Please note:*

- Your proposed sewer drainage system must be clearly illustrated on the site plans accompanying this application.
- If you intend installing an on-site effluent treatment system, it must be designed and installed in accordance with the Environment Bay of Plenty (EBOP) Operative On-Site Effluent Treatment Regional Plan.
- For further information, phone EBOP 0800 368.267.
- A trade waste consent is required for any wastewater discharge from a trade activity (Refer Trade Waste Officer, Tauranga City Council, phone 577 7000.)

## Stormwater Disposal *(Please tick box)*

- ☐ Not applicable
- ☑ I intend using the existing stormwater connection
- ☐ I intend installing a new ..... mm stormwater connection and have completed and attached the application form.
- ☐ I intend installing an on-site disposal system.
- ☐ I intend installing a new kerb connection
- ☐ Other *(supply details)*
  .....
  .....
  .....

*Please note:*

- Your proposed stormwater drainage system must be clearly illustrated on the site plans accompanying this application.

## Water Connection *(Please tick box)*

This section is to be completed where application for a water supply is made in association with a building consent, or where a separate connection is applied for, or where a change in water use occurs, or where an existing service connection is to be demolished or disconnected.

☑ I intend using the existing water connection and have confirmed with Council that it is compliant for its intended use.

***Sign declaration only.***

☐ I intend using the existing water connection for a purpose other than ordinary supply.

***Complete the Extraordinary Supply Section and sign the declaration.***

☐ I require a new connection.

***Complete either Ordinary Supply Section or the Extraordinary Supply Section depending on your type of water use and sign the declaration.***

## Water Service Required *(Please tick box)*

### ☑ Ordinary Supply

Ordinary Supply is the supply of water to a customer solely for domestic purposes, and includes using a hose to:

(i) Wash a car or boat;
(ii) Water the garden by hand;
(iii) Water the garden by portable sprinkler.

(This is a summary of clause 8.4.4.1(a) of the Water Supply Bylaw. For full details, please contact the Council.)

**Please provide the following details:** *(Please tick box)*

| | | |
|---|---|---|
| Single Dwelling | ☑ Yes | ☐ No |
| If No, then please complete the following: | | |
| Multiple Dwellings | ☐ Yes | ☑ No |
| Body Corporate | ☐ Yes | ☑ No |
| Separate Connections | ☐ Yes | ☑ No |

*Please note:*

In cases where there is a new multiple tenancy with a corporate body or corporate ownership, the developer can choose to install one connection for each dwelling unit or one connection for the whole development (see Clause 8.4.3.3 of the Water Supply Bylaw).

### ☐ Extraordinary Supply N/A

Extraordinary supply is the supply of water to a customer for all purposes other than ordinary supply. This includes the purposes below. (This is a summary of the clause 8.4.4.1(b) of the Water Supply Bylaw. For full details, please contact the Council.)

**Please provide the following details:** *(Please tick box)*

Intended Use:

| | |
|---|---|
| ☐ Domestic spa or swimming pool | ☐ Home based industry |
| ☐ Domestic fixed garden irrigation systems | ☐ Rural / out of district |
| ☐ Commercial | ☐ Fire supply |
| ☐ Industrial | ☐ Temporary |

* **Connection Size** _____ mm

Select from the following sizes: 20, 25, 50, 100, 150, 200mm

* **Applicant's Consumption Estimate:**

Average _____ litres per day

Peak _____ litres per minute

* *Water Services Division staff will assist applicants to complete this item if so required.*

## Declaration: I declare that:

1. I have read and understood the above conditions and agree to comply with the Tauranga City Council's conditions of water connect and ongoing supply as specified in Part 8 of the council's Water Supply Bylaw.
2. All the information stated above is true and correct and I will inform Tauranga City Council of any change in use from that specified.
3. I am the owner of the property or that I am authorised to make this declaration by the owner, who has agreed to comply with those conditions.
4. I shall notify Tauranga City Council in writing of change of use of the premises supplied by water and I understand that failure to comply with this requirement has an associated fine of up to $200,000 under Section 114 of the Building Act 2004.

Name (print) Tim Lane Signature _____ Date 30/06/06

## Privacy Information

Pursuant to the Privacy Act 1993 the following information is brought to your attention.

This document collects personal information about you and is collected pursuant to Section 33 and/or Section 45 of the Building Act 2004. Pursuant to Section 216 of the Building Act 2004, the Information contained in this document will be made available and passed on to the public on request.

The information contained in the document is being collected and held by the Tauranga City Council. You do have the right of access to and correction of this information subject to the provisions of the Privacy Act 1993.

Pursuant to Section 217 of the Building Act 2004 the building owner may request the plans and specifications be marked confidential for the purposes of copyright or security. Such a request must be in writing and addressed to:

Group Manager Environmental Consents
Tauranga City Council, Private Bag 12 022, Tauranga

# CHECKLIST

Tauranga City

**To avoid delays in the processing of your application, please ensure you have provided the following information:**

| | EVERY BOX MUST BE MARKED<br>Tick (✓) if information has been provided. N/A if not applicable or not required.<br>CHECK | |
|---|---|---|
| | APPLICANT | OFFICE USE ONLY |
| LODGEMENT & APPLICATION FORM (Completed in **Full** and **Signed**) | ✓ | ✓ |
| TWO SETS OF SPECIFICATIONS | ✓ | ✓ |
| TWO SITE PLANS: To acceptable metric scale generally 1:100 1:200 | ✓ | ✓ |
| a) North Point | ✓ | ✓ |
| b) The position of the building in relation to the boundaries of the site | ✓ | ✓ |
| c) Road frontage indicated<br>(Note: with existing buildings uncoloured; proposed buildings edged in red or otherwise well defined) | ✓ | ✓ |
| d) Site levels and finished floor levels relative to Moturiki Datum | ✓ | ✓ |
| e) Crossings/driveways marked on all site plans.<br>(Note normally one crossing per site only) | ✓ | ✓ |
| f) Off-street parking, loading, access and manoeuvring areas demonstrated | ✓ | ✓ |
| TWO SETS OF CONSTRUCTIONAL DRAWINGS: SCALE 1-100 or 1-50 SHOWING: | | |
| a) Elevations (site gradients relative to floor levels) | ✓ | ✓ |
| b) Overshadowing shown on all elevations | ✓ | ✓ |
| c) Plan of all floors describing the function of each room showing all doors, windows and ventilation, fireplaces and chimneys. BUT for additions and alterations, the **existing** shall be shown separately and alongside the **"proposed"**, to the same scale for comparison. | ✓ | ✓ |
| d) Foundation details and retaining structures | ✓ | ✓ |
| e) Cross-sections showing all construction details | ✓ | ✓ |
| f) Specific design details signed by engineer accompanied with calculations | ✓ | N/A |
| g) Bracing details accompanied with bracing calculations | ✓ | ✓ |
| h) Truss Layout | ✓ | ✓ |
| i) Lintel Sizes | ✓ | ✓ |
| j) Floor Joist Layout | N/A | N/A |
| All existing SEWERS, sewer connections and sewer drains shown | ✓ | ✓ |
| All existing STORMWATER drains and connections shown | ✓ | ✓ |
| Proposed sewer and stormwater drains/~~soakhole~~s shown | ✓ | ✓ |
| All existing and proposed sanitary fittings | ✓ | ✓ |
| Swimming Pool – Fenced/Gated – Backwash | N/A | N/A |
| Site works | ✓ | |

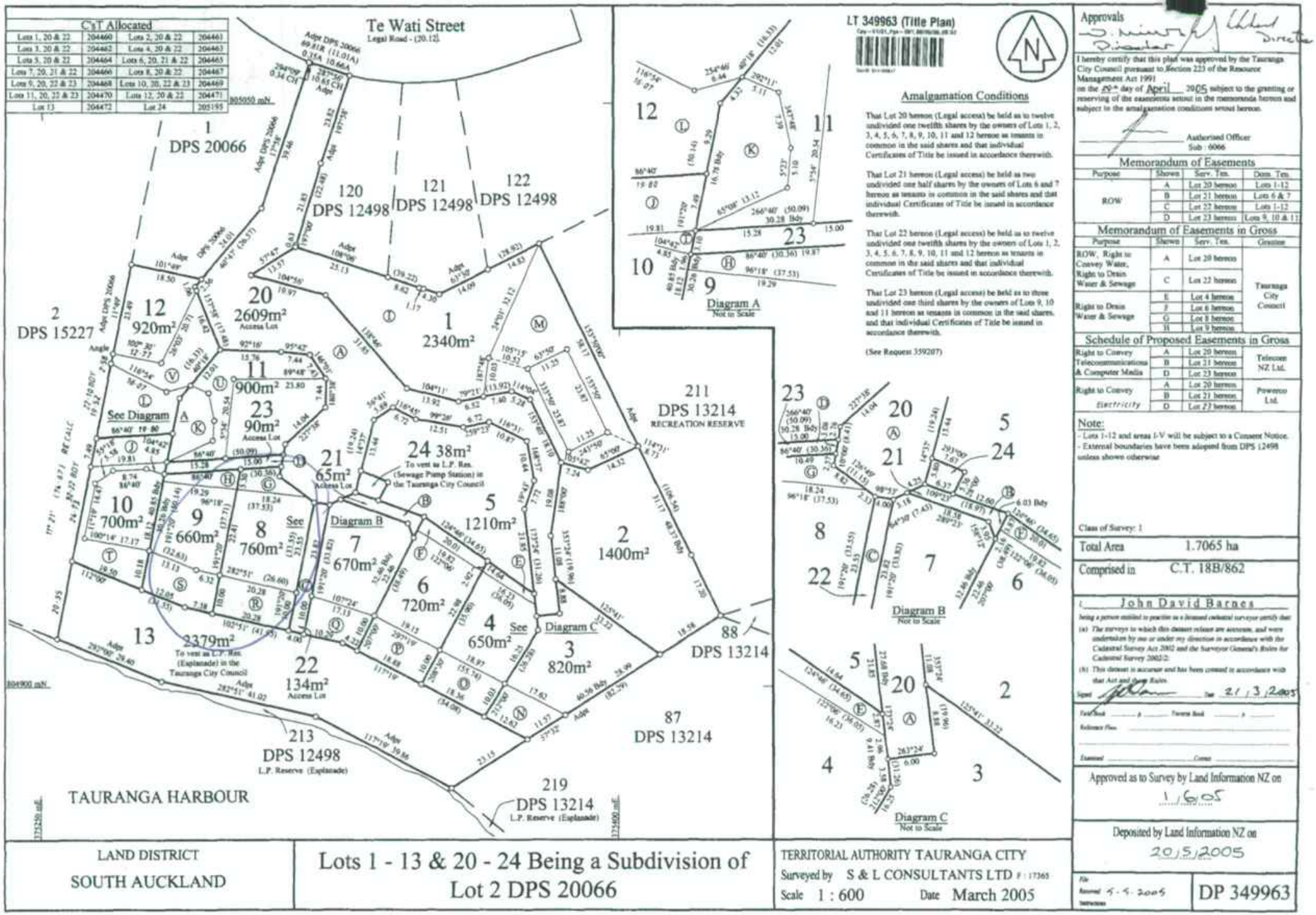
PLEASE TURN OVER ...

| | APPLICANT | OFFICE USE ONLY |
|---|---|---|
| COMMERCIAL/INDUSTRIAL | | |
| Compliance Schedule systems/features and relevant maintenance and inspection procedures | N/A | |
| - Two sets of Fire Reports & Design | " | |
| - Parking shown | " | |
| - Turning Curve HGV | " | |

**Present completed application form, checklist and the two sets of plans to office.**

**Accepted applications are quickly processed.**
**You will be asked to pay fees at a later date when advised by the office.**

**A RECEIPT FOR CONSENT FEES DOES NOT MEAN THE CONSENT IS APPROVED FOR ISSUE**




Approvals

I hereby certify that this plan was approved by the Tauranga City Council pursuant to Section 223 of the Resource Management Act 1991 on the 20th day of April 2005 subject to the granting or reserving of the easements setout in the memoranda hereon and subject to the amalgamation conditions setout hereon.

Authorised Officer
Sub : 6066

## Memorandum of Easements

| Purpose | Shown | Serv. Ten. | Dom. Ten. |
|---|---|---|---|
| ROW | A | Lot 20 hereon | Lots 1-12 |
| | B | Lot 21 hereon | Lots 6 & 7 |
| | C | Lot 22 hereon | Lots 1-12 |
| | D | Lot 23 hereon | Lots 9, 10 & 11 |

## Memorandum of Easements in Gross

| Purpose | Shown | Serv. Ten. | Grantee |
|---|---|---|---|
| ROW, Right to Convey Water, Right to Drain Water & Sewage | A | Lot 20 hereon | Tauranga City Council |
| | C | Lot 22 hereon | |
| Right to Drain Water & Sewage | E | Lot 4 hereon | |
| | F | Lot 6 hereon | |
| | G | Lot 8 hereon | |
| | H | Lot 9 hereon | |

## Schedule of Proposed Easements in Gross

| | | | |
|---|---|---|---|
| Right to Convey Telecommunications & Computer Media | A | Lot 20 hereon | Telecom NZ Ltd. |
| | B | Lot 21 hereon | |
| | D | Lot 23 hereon | |
| Right to Convey Electricity | A | Lot 20 hereon | Powerco Ltd. |
| | B | Lot 21 hereon | |
| | D | Lot 23 hereon | |

Note:
- Lots 1-12 and areas I-V will be subject to a Consent Notice.
- External boundaries have been adopted from DPS 12498 unless shown otherwise

Class of Survey: 1

Total Area 1.7065 ha

Comprised in C.T. 18B/862

I, John David Barnes

being a person entitled to practise as a licensed cadastral surveyor certify that:

(a) The surveys to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Cadastral Survey Act 2002 and the Surveyor General's Rules for Cadastral Survey 2002/2;

(b) This dataset is accurate and has been created in accordance with that Act and those Rules.

Signed Date 21/3/2005

Field Book p Traverse Book p

Reference Plans

Examined Correct

Approved as to Survey by Land Information NZ on 1/6/05

Deposited by Land Information NZ on 20/5/2005

File Received 5-5-2005 Instructions

DP 349963

LAND DISTRICT
SOUTH AUCKLAND

# Lots 1 - 13 & 20 - 24 Being a Subdivision of Lot 2 DPS 20066

TERRITORIAL AUTHORITY TAURANGA CITY

Surveyed by S & L CONSULTANTS LTD F : 17365

Scale 1 : 600 Date March 2005

P8985-18-1

COPY

Tauranga City

Willow Street, Tauranga
Private Bag, Tauranga
Telephone: 07 577 7000. Facsimile 07 577 7034

# BUILDING CONSENT

NO: 22613

**Issued By:** Tauranga City Council pursuant to Section 51 of the Building Act 2004

| THE OWNER | CONTACT PERSON |
|---|---|
| GARDNER, DAVID BURTON<br>GARDNER, LORRAINE ANN<br>36 IONA DRIVE<br>R D 3<br>PYES PA | |
| **THE BUILDING** | **BUILDING WORK** |
| Street Address: 18 EBBTIDE WAY<br>Legal Description: LOT 8 DP349963 | ERECT DWELLING |

**This building consent is issued under Section 51 of the Building Act 2004. This building consent does not relieve the owner of the building (or proposed building) of any duty or responsibility under any other Act relating to or affecting the building (or proposed building). This building consent also does not permit the construction, alteration, demolition, or removal of the building (or proposed building) if that construction, alteration, demolition, or removal would be in breach of any other Act.**

**This building consent is issued subject to following conditions :**

On behalf of the Tauranga City Council:

Name: Spencer

Position: SUPPORT OFFICER : BUILDING SERVICES

Date: 15 AUG 2006

Tauranga City

Willow Street, Tauranga
Private Bag, Tauranga
Telephone: 07 577 7000. Facsimile 07 577 7034

COPY

# PROJECT INFORMATION MEMORANDUM NO: 22613

Issued by: Tauranga City Council pursuant to Section 35 of the Building Act 2004.

| APPLICANT | PROJECT |
|---|---|
| GARDNER, DAVID BURTON<br>GARDNER, LORRAINE ANN<br>36 IONA DRIVE<br>R D 3<br>PYES PA | ERECT DWELLING<br><br>Intended Life: 50 years |

| PROJECT LOCATION | LEGAL DESCRIPTION | |
|---|---|---|
| 18 EBBTIDE WAY | Ref No: | 6530/52 |
| | Val No: | 06650 700 09 |
| | Legal Description | LOT 8 DP349963 |

This project information memorandum is confirmation that the proposed building works **may** be undertaken subject to the provision of the Building Act 2004 and compliance with all the information provided in this document.

1. The building work as depicted in the attached Project Information Memorandum plans will comply with the District Plan provided it is constructed in accordance with these plans. Any variation from these plans may require a further consent.

2. A Citywide Development Contribution Fee together with Building Consent Fees and charges are to be paid before the Building Consent is uplifted.

3. The Tauranga City Council Roading Hierarchy Plan showing the existing and proposed roading network is attached. For further information please refer to the Roading Division, Department of City Services, Tauranga City Council.

4. Should an archaeological site be found on the site during excavations, the owner must apply for authority from Historic Places Trust prior to destroying, damaging or modifying any archaelogical site. Further information can be obtained by contacting the Duty Planner. Should koiwi (human remains) be uncovered during excavation, please contact the Tauranga City Council to arrange for tangata whenua to be advised, and appropriate steps taken for reburial.

5. The site is suitable for proposed building subject to confirmation of ground conditions at time of footing inspection.

6. Normal precautions adopted for excavation and filling within the Tauranga area should be observed. Excavation faces near to boundaries or other structures, that are over 1.5 metres high should generally be retained by walls designed in accordance with the New Zealand Building Code and fill in excess of one metre deep should only be placed under the guidance of a Registered Engineer. A Building Consent is required for retaining walls 1.5 metres or greater or irrespective of the height where there is a likelihood of surcharge from buildings or vehicles. Excavations for the construction of retaining walls shall be contained within the legal boundaries of the lot, unless consent of the adjoining owner is obtained prior.

7. Any lease agreement, rights of way, easements or covenants that relate to the property may require the applicant to obtain the consent of other interested parties to allow this proposal to proceed. Please check the terms of your lease agreement or Certificate of Title.

8. Prior to the commencement of building, you are advised to verify on site, the invert levels of service connections intended to be utilised. Vehicle crossings are to be located clear of Council Stormwater Sumps.

9. Stormwater Pollution Prevention

The discharge to Council's STORMWATER SYSTEM of any material other than clean rainwater is PROHIBITED. For further information please contact the Pollution Prevention Officer, Tauranga City Council on phone (07) 5777-000

10. A consent notice is registered to the Certificate of Title of Lots 1 - 12 stating that:

'No further subdivision of any lot or development of more than one dwelling unit per lot shall occur, except through the consideration of a resource consent application, that would need to fully address the effects of further subdivision and/or development in relation to private accessway.

The number of dwellings and/or lots whcih can be served by private accessway under District Plan 19.2.1.3(d)(iii) is a maximum of 12. This limit has been reached'

Any application for building consent and or ongoing development on Lots 1 - 12 shall be in accordance with the Conditions given in the geotechnical report 17365 by S and L Consultants Limited, dated 18/3/2005 and/or the Statement of Professional Opinion.

11. Stormwater from roofs and hardstand areas is to be collected and piped to the connection provided.

On behalf of the Tauranga City Council.

Name: AA

Position: SUPPORT OFFICER : BUILDING SERVICES

Date: 25-7-06

Gardner

Apex consultants limited

Realty House
60 Durham Street
PO Box 13423
Tauranga 3141, New Zealand
telephone (64) (7) 578 3701
fax (64) (7) 578 5270
e-mail tauranga@apex-consult.co.nz
website www.apex-consult.co.nz
Our Ref: TGA1967

14 November 2006

Affordable Homes
P O Box 9020
**TAURANGA**

ENTERED

Attention: Greg Hooper

Dear Greg

**GARDNER HOUSE – LOT 8 EBB TIDE, MAUNGATAPU, UNDERSLAB FILL TESTING**

**INTRODUCTION**

This report is to certify the compaction of imported granular fines as under-slab fill material for a residential building. It assesses whether the fill has been constructed to sound engineering practice and specifications, and conforms to the requirements of NZS 3604:1999.

**SITE INSPECTION AND TESTS**

An initial site inspection was carried out on the 28 August 06 and confirmed that all topsoil and unsuitable material had been removed from inside the perimeter block foundation wall. A further site inspection and testing of the compacted fill was carried out by this office on the 29 August 06.

The depth of fill ranged from 800mm – 900mm depth. Scala penetrometer tests were carried out at the 4 locations shown in the affixed diagram and the results are attached. The imported granular fines fill showed average compaction values per 300mm of depth ranging between 10 mm/blow and 53 mm/blow.

**FILL CERTIFICATION**

The testing of the under-slab fill has been carried out in accordance with NZS 4402 test 6.5.2.

It is the opinion of this office that the fill has been soundly compacted to achieve the allowable bearing pressures (kPa) tabulated below.

| Bearing Pressure (kPa) | Test | | | |
|---|---|---|---|---|
| Depth (mm) | 1 | 2 | 3 | 4 |
| 300 | 131 | 72 | 83 | 150 |
| 600 | 245 | 127 | 190 | 200 |
| 900 | - | 190 | 230 | - |

It should be noted that the results obtained are limited to the test locations, and while design assumptions may be inferred for the rest of the fill, the final responsibility for the reliance upon the test results rests with the fill contractor/owner.

If you have any queries please contact us.

Apex Consultants Limited
Civil and Structural Engineers

Yours faithfully
**APEX CONSULTANTS LTD**

Phil Read
NZCE Civil

Reviewed by:

Geoff Morgan
NZCE, BE, CP Eng

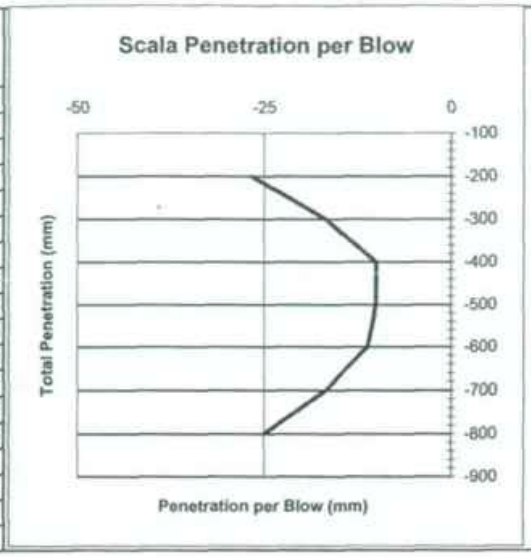
Site: Lot 8 Ebb Tide
Description: Underslab Fill
Test Location: See Photo

Date: 29/08/2006 Tested By: P Read

Apex consultants

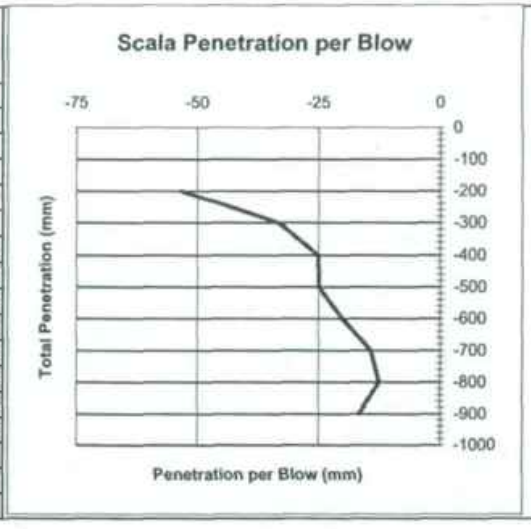
**Scala Penetrometer Tests - Test No 1**

| Total Depth mm | No of Blows (Cumulative) | Ave mm/blow/ 300mm | Bearing Pressure kPa | mm/ blow |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| 0 | | | | |
| -40 | 0.0 | | | |
| -200 | 6.0 | | | -26.7 |
| -300 | 12.0 | 21.7 | 131 | -16.7 |
| -400 | 22.0 | | | -10.0 |
| -500 | 32.0 | | | -10.0 |
| -600 | 41.0 | 10.3 | 245 | -11.1 |
| -700 | 47.0 | | | -16.7 |
| -800 | 51.0 | | | -25.0 |
| -900 | | | | |
| | | | | |
| | | | | |
| | | | | |



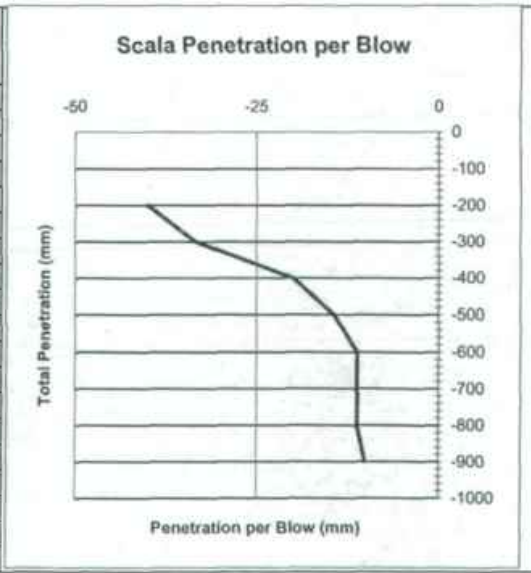

**Scala Penetrometer Tests - Test No 2**

| Total Depth mm | No of Blows (Cumulative) | Ave mm/blow/ 300mm | Bearing Pressure kPa | mm/ blow |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| 0 | | | | |
| -40 | 0.0 | | | |
| -200 | 3.0 | | | -53.3 |
| -300 | 6.0 | 43.3 | 72 | -33.3 |
| -400 | 10.0 | | | -25.0 |
| -500 | 14.0 | | | -25.0 |
| -600 | 19.0 | 23.1 | 127 | -20.0 |
| -700 | 26.0 | | | -14.3 |
| -800 | 34.0 | | | -12.5 |
| -900 | 40.0 | 14.3 | 190 | -16.7 |
| | | | | |
| | | | | |
| | | | | |




**Scala Penetrometer Tests - Test No 3**

| Total Depth mm | No of Blows (Cumulative) | Ave mm/blow/ 300mm | Bearing Pressure kPa | mm/ blow |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| 0 | | | | |
| -40 | 0.0 | | | |
| -200 | 4.0 | | | -40.0 |
| -300 | 7.0 | 37.1 | 83 | -33.3 |
| -400 | 12.0 | | | -20.0 |
| -500 | 19.0 | | | -14.3 |
| -600 | 28.0 | 14.3 | 190 | -11.1 |
| -700 | 37.0 | | | -11.1 |
| -800 | 46.0 | | | -11.1 |
| -900 | 56.0 | 10.7 | 230 | -10.0 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

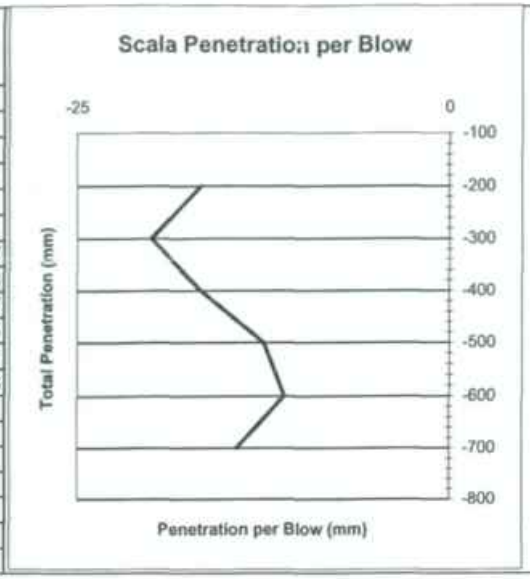


Site **Lot 8 Ebb Tide**
Description **Underslab Fill**
Test Location **See Photo**

Date 29/08/2006 Tested By: P Read

**Scala Penetrometer Tests - Test No 4**

| Total Depth mm | No of Blows (Cumulative) | Ave mm/blow/ 300mm | Bearing Pressure kPa | mm/ blow |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| 0 | | | | |
| -100 | | | | |
| -200 | 6.0 | | | -16.7 |
| -300 | 11.0 | 18.2 | 150 | -20.0 |
| -400 | 17.0 | | | -16.7 |
| -500 | 25.0 | | | -12.5 |
| -600 | 34.0 | 13.0 | 200 | -11.1 |
| -700 | 41.0 | | | -14.3 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |






NOTES

| REV | REVISION DETAILS | APPD | DATE |
|---|---|---|---|
| A | PLATFORM & SW FINAL DESIGN - FOR TENDER | BP | 09/06 |

Apex
Tauranga 60 Durham Street ph. (07) 578 3701
PO Box 13423 fax. (07) 578 5270
Also at New Plymouth and Hawera
web www.apex-consult.co.nz email mail@apex-consult.co.nz

# Lot 8 EBB TIDE

## GARDNER HOUSE

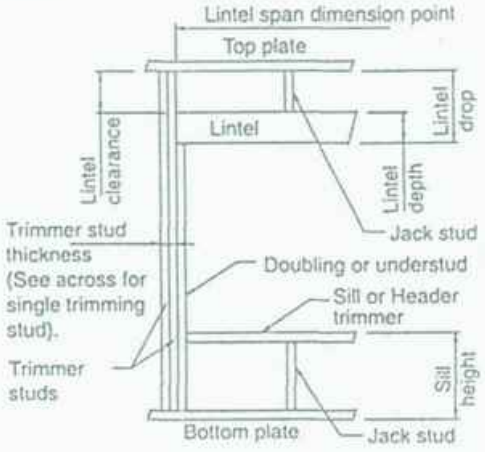
## UNDERSLAB TEST LOCATIONS

| | |
|---|---|
| JOB No | DESIGNED |
| CAD No. | DRAWN |
| DATE | CHECKED |
| ORIGINAL SCALES | A3 |

DRAWING No TGA1967 SHEET OF REV

# LINTEL FIXING SCHEDULE

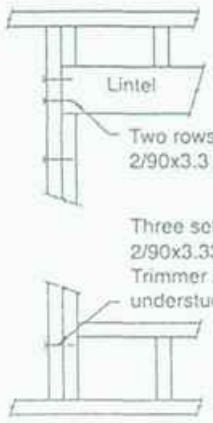
## (ALTERNATIVE TO NZS 3604:1999 TABLE 8.14 & FIGURE 8.12)




| Lintel Span | Loaded Dimension *See reverse side | Light Roof Wind Zone L | M | H | VH | Heavy Roof Wind Zone L | M | H | VH |
|---|---|---|---|---|---|---|---|---|---|
| 1.5 | 2.0 | A | A | B | B | A | A | B | B |
| | 3.0 | A | B | B | C | A | A | B | B |
| | 4.0 | A | B | C | C | A | A | B | C |
| | 5.0 | B | B | C | C | A | A | C | C |
| | 6.0 | B | B | C | D | A | A | C | C |
| 2.0 | 2.0 | A | B | B | C | A | A | B | B |
| | 3.0 | A | B | C | C | A | A | B | C |
| | 4.0 | B | B | C | C | A | A | C | C |
| | 5.0 | B | C | C | D | A | A | C | C |
| | 6.0 | B | C | C | D | A | B | C | D |
| 2.4 | 2.0 | A | B | B | C | A | A | B | B |
| | 3.0 | B | B | C | C | A | A | C | C |
| | 4.0 | B | C | C | D | A | A | C | C |
| | 5.0 | B | C | C | D | A | B | C | D |
| | 6.0 | B | C | D | D | A | B | C | D |
| 3.0 | 2.0 | A | B | C | C | A | A | B | C |
| | 3.0 | B | B | C | D | A | A | C | C |
| | 4.0 | B | C | C | D | A | B | C | D |
| | 5.0 | B | C | D | D | A | B | C | D |
| | 6.0 | C | C | D | - | A | B | D | D |
| 3.6 | 2.0 | B | B | C | C | A | A | B | C |
| | 3.0 | B | C | C | D | A | B | C | C |
| | 4.0 | B | C | D | D | A | B | C | D |
| | 5.0 | C | C | D | - | A | B | D | D |
| | 6.0 | C | D | D | - | A | B | D | - |
| 4.2 | 2.0 | B | B | C | C | A | A | C | C |
| | 3.0 | B | C | D | D | A | B | C | D |
| | 4.0 | C | C | D | - | A | B | D | D |
| | 5.0 | C | D | D | - | A | B | D | - |
| | 6.0 | C | D | - | - | A | C | D | - |
| 4.8 | 2.0 | B | C | C | D | A | A | C | C |
| | 3.0 | B | C | D | D | A | B | C | D |
| | 4.0 | C | C | D | - | A | B | D | D |
| | 5.0 | C | D | - | - | A | B | D | - |
| | 6.0 | C | D | - | - | A | C | D | - |

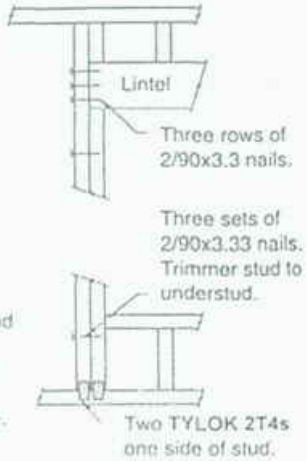
Lintels accepting Girder trusses for ALL load cases use:
Fixing type C where contributary area = 10m²
Fixing type D where contributary area = 20m²
All cases outside this require specific design

### TYPE A
1.4kN



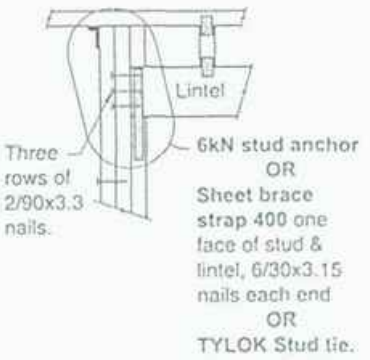

"All other nailing as Table 8.19"

### TYPE B
4.0kN



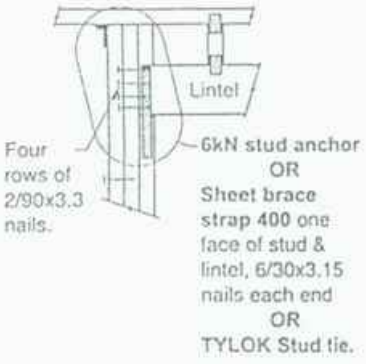

"All other nailing as Table 8.19"

### TYPE C
7.5kN

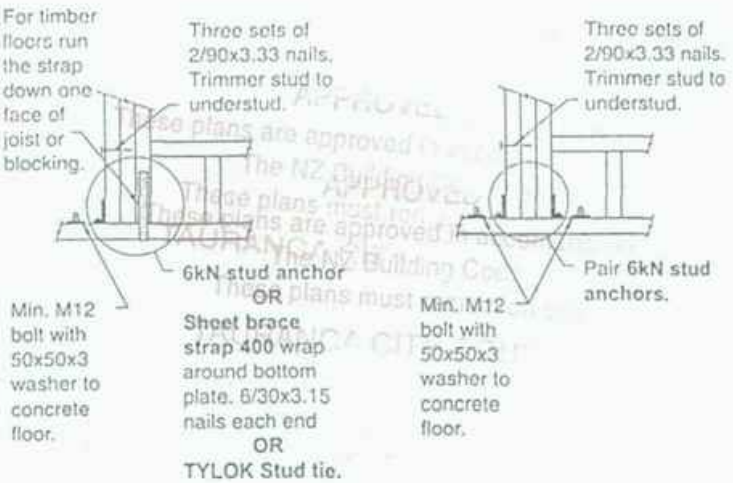



"All other nailing as Table 8.19"

### TYPE D
13.5kN

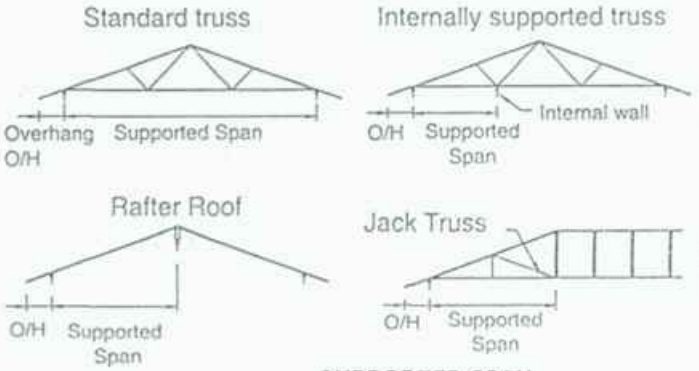



"All other nailing as Table 8.19"



# STUD TO TOP PLATE FIXING SCHEDULE
## (ALTERNATIVE TO NZS 3604:1999 TABLE 8.18)

- All fixings are designed for vertical loads only. Dead loads include the roof weight and standard ceiling weight of 0.20kPa. Refer to table 8.19, NZS3604:1999 for nailing schedule to resist horizontal loads.
- These fixings assume the correct choice of rafter/truss to top plate connections have been made. Refer to the **LUMBERLOK®** Truss Fixing Chart.
- Gable end wall top plate/stud connections require only 2x90x3.33 nails driven vertically into stud through top plate.
- All Fixings assume top plate thickness of 45mm maximum.
- Wall framing arrangements under girder trusses are not covered in this schedule.




$$\text{LOADED DIMENSION} = \frac{\text{SUPPORTED SPAN}}{2} + \text{OVERHANG}$$

| Loaded Dimension | Light Roof Wind Zone | | | | Heavy Roof Wind Zone | | | |
|---|---|---|---|---|---|---|---|---|
| | L | M | H | VH | L | M | H | VH |
| 1.5 | A | A | B | B | A | A | B | B |
| 2.0 | A | B | B | C | A | A | B | B |
| 2.5 | A | B | C | C | A | A | B | C |
| 3.0 | B | B | C | D | A | A | B | C |
| 3.5 | B | B | C | D | A | A | B | D |
| 4.0 | B | C | D | D | A | A | C | D |
| 4.5 | B | C | D | D | A | B | C | D |
| 5.0 | B | C | D | D | A | B | C | D |
| 5.5 | B | C | D | D | A | B | C | D |
| 6.0 | B | C | D | - | A | B | D | D |

- All studs at 600 crs.
- For studs at 400 crs decrease loaded dimension by 33%.
- All trusses at 900 crs.
- For trusses at 1200 crs increase loaded dimension by 33%.

FIXING TYPE A
0.7kN



2/90x3.33 plain steel wire nails driven vertically into stud.

FIXING TYPE B
1.7kN



2/90x3.33 plain steel wire nails driven vertically into stud, plus single **TYLOK 2T4** plate.

FIXING TYPE C
2.7kN



2/90x3.33 plain steel wire nails driven vertically into stud, plus pair **TYLOK 2T4** plates.

FIXING TYPE D
6.0kN



2/90x3.33 plain steel wire nails driven vertically into stud, plus **TYLOK Stud tie.**

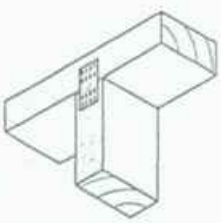
OR

**Sheet brace strap 400** with 6/30x3.15 nails each stud face.

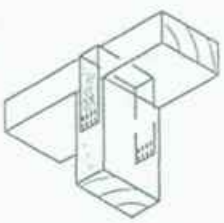
OR



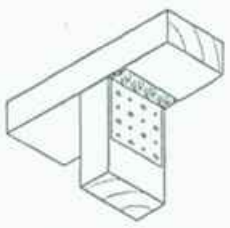
2/90x3.33 plain steel wire nails driven vertically into stud, plus **6kN Stud Anchor.**



TYLOK 2T4



TYLOK STUD TIE
OR
SHEET BRACE STRAP 400



6kN STUD ANCHOR

# AFFORDABLE HOMES

## Wall Bracing Calculation Sheet A

### Job Details

box 1

Name DAVID & LORAINE GARDNER

Street and Number

Lot and DP Number LOT 8 DP 20066

City/Town/District TAURANGA

Location of Storey: single/upper of two/lower of two

| | | | |
|---|---|---|---|
| Building height to apex | 5.0 m | Roof weight | light/heavy |
| Roof height above eaves | 2.7 m | Cladding weight | light/heavy |
| Stud height | 2.4 m | Room in roof space | y/n |
| Average roof pitch | | | |
| Building length BL = | 23.1 m | Gross Building | |
| Building width BW = | 13.1 m | Plan Area. | GPA = 239 m2 |

*Note: When the average roof pitch is over 25 degrees, use the eaves length and width to determine BL and BW.*

*Note: For heavy roofs use the roof plan at eaves level to determine GPA.*

### Wind Zone

box 2

| Region: | | Terrain: | | Exposure: | | Topography: | |
|---|---|---|---|---|---|---|---|
| R1 | 0 ✓ | Inland | 0 | Sheltered | 0 | Gentle | 0 ✓ |
| R2 | 1 | Coastal | 1 ✓ | Exposed | 1 ✓ | Moderate | 1 |
| | | | | | | Extreme | 3 |

Total points 2

Wind zone: Low (0) Very high (3)

Medium (1) Specific Design (4)

✓ High (2)

APPROVED
These plans are approved in accordance with
The NZ Building Code
These plans must remain on site
TAURANGA City Council

### Earthquake zone

box 3

From figure EQ1 select Earthquake Zone: A (B) C

### BUs required Wind

box 4

From Table W1A/W1B

W along = 78 BUs/m

W across = 78 BUs/m

Total wind load.

W ALONG

W along x BW = 1022 BUs

W ACROSSL

W across x BL = 1802 BUs

### BUs required Earthquake

box 5

From Table EQ1

E = 5.9 BUs/m2

Note For a room in the roof space use E+1

Total earthquake load.

EQ ALONG and EQ ACROSS

E x GPA BUs = 1410 BUs

# Wall Bracing Calculation Sheet B

## Along

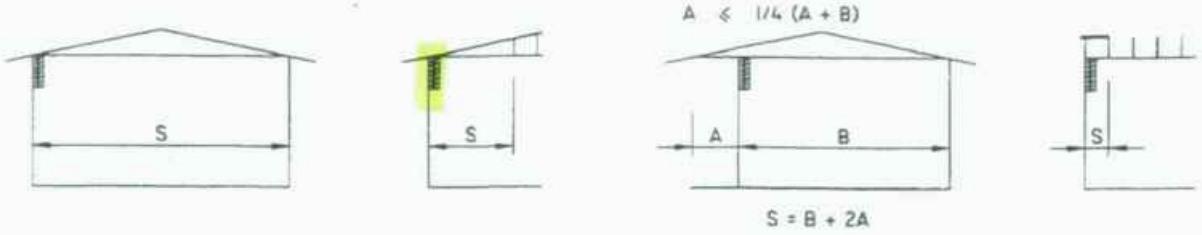
| Wall or Bracing Line | | Bracing Elements Provided | | | Wind | | Earthquake | |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 W | 7 W | 6 EQ | 7 EQ |
| Line Label | Minimum BUs Required | Bracing Element No. | Bracing Type | Length Element (m) L | Rating BU/m W | BUs Achieved (BU/m x L) W | Rating BU/m EQ | BUs Achieved (BU/m x L) EQ |
| A | | 1 | BL1a | 1·8 | 130 | 234 | 115 | 207 |
| | | 2 | BLP | 0·6 | 145 | 87 | 135 | 81 |
| | | 3 | BLP | 0·6 | 145 | 87 | 135 | 81 |
| B | | 1 | GS2 | 2·4 | 90 | 216 | 80 | 192 |
| | | 2 | BL1a | 1·8 | 130 | 234 | 115 | 207 |
| C | | 1 | GS1a | 2·4 | 75 | 180 | 65 | 156 |
| | | 2 | GS2 | 1·2 | 70 | 84 | 60 | 72 |
| | | 3 | GS2 | 2·4 | 90 | 216 | 80 | 192 |
| D | | 1 | BLP | 0·9 | 145 | 130 | 145 | 130 |
| | | 2 | BLP | 0·9 | 145 | 130 | 145 | 130 |
| E | | 3 | BLP | 0·9 | 145 | 130 | 145 | 130 |
| Totals Achieved | | | | | W | 1728 | EQ | 1578 |
| From Sheet A Totals Required | | | | | W | 1022 | EQ | 1410 |
| Wreq/EQreq = | | | | | | | | |

***If Wreq/EQreq is 1 or less complete EQ column only**
**If Wreq/EQreq is 1.5 or more complete W column only**
**Otherwise complete both W and EQ**

## Across

| Wall or Bracing Line | | Bracing Elements Provided | | | Wind | | Earthquake | |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 W | 7 W | 6 EQ | 7 EQ |
| Line Label | Minimum BUs Required | Bracing Element No. | Bracing Type | Length Element (m) L | Rating BU/m W | BUs Achieved (BU/m x L) W | Rating BU/m EQ | BUs Achieved (BU/m x L) EQ |
| M | | 1 | BL1 | 0·4 | 120 | 48 | 115 | 46 |
| | | 2 | BL1 | 0·4 | 120 | 48 | 115 | 46 |
| N | | 1 | BL1 | 0·6 | 120 | 48 | 115 | 46 |
| | | 2 | BL1 | 0·6 | 120 | 48 | 115 | 46 |
| | | 3 | BL1a | 1·8 | 130 | 234 | 115 | 46 |
| O | | 1 | BL1a | 1·8 | 130 | 234 | 115 | 207 |
| | | 2 | BL1a | 1·8 | 130 | 234 | 115 | 207 |
| P | | 1 | BL1a | 1·8 | 130 | 234 | 115 | 207 |
| | | 2 | BL1a | 1·8 | 130 | 234 | 115 | 207 |
| | | 3 | BL1a | 1·8 | 130 | 234 | 115 | 207 |
| Q | | 4 | SP1 | 0·4 | 100 | 90 | 110 | 99 |
| | | 1 | BL1 | 0·4 | 120 | 48 | 115 | 46 |
| | | 2 | BLD | 0·9 | 145 | 130 | 145 | 130 |
| Totals Achieved | | | | | W | 1864 | EQ | 1540 |
| From Sheet A Totals Required | | | | | W | 1802 | EQ | 1410 |
| Wreq/EQreq = | | | | | | | | |

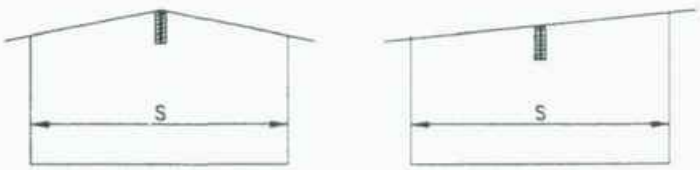
# Selection Charts




FAMILY ROOM

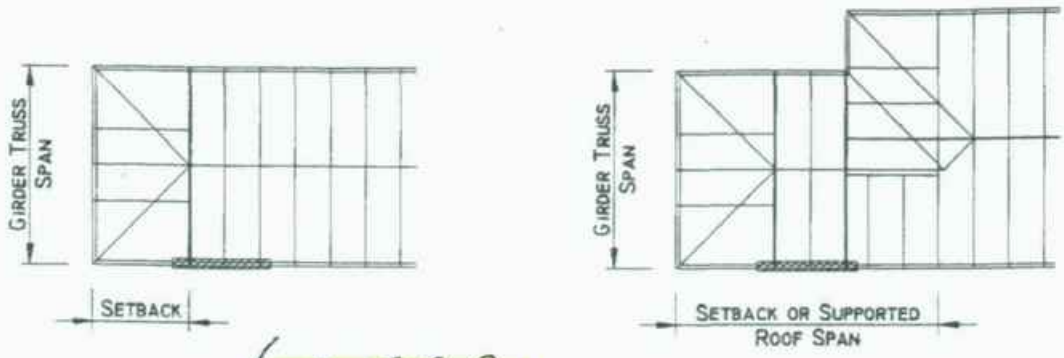
## TABLE 1:
**LINTELS SUPPORTING ROOF AND CEILING ONLY**

| | LINTEL SIZE | MAXIMUM LINTEL SPAN (m) SUPPORTED ROOF SPAN 'S' (m) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 |
| LIGHT ROOF | FB15L | 3.47 | 3.25 | 3.07 | 2.93 | 2.81 | 2.70 | 2.62 | 2.54 | 2.47 | 2.41 | 2.35 | 2.30 | 2.25 |
| | FB20H | 5.29 | 4.95 | 4.68 | 4.46 | 4.28 | 4.13 | 3.99 | 3.87 | 3.77 | 3.67 | 3.58 | 3.50 | 3.43 |
| | FB25L | 5.63 | 5.27 | 4.98 | 4.75 | 4.56 | 4.39 | 4.25 | 4.12 | 4.01 | 3.90 | 3.81 | 3.73 | 3.65 |
| | FB25H | 6.74 | 6.30 | 5.96 | 5.68 | 5.45 | 5.25 | 5.08 | 4.93 | 4.79 | 4.67 | 4.56 | 4.46 | 4.37 |
| | FB30H | 7.79 | 7.28 | 6.89 | 6.57 | 6.30 | 6.07 | 5.87 | 5.70 | 5.54 | 5.40 | 5.27 | 5.16 | 5.05 |
| HEAVY ROOF | FB15L | 2.81 | 2.63 | 2.48 | 2.37 | 2.27 | 2.19 | 2.12 | 2.05 | 2.00 | 1.95 | 1.90 | 1.86 | 1.82 |
| | FB20H | 4.28 | 4.00 | 3.79 | 3.61 | 3.46 | 3.34 | 3.23 | 3.13 | 3.05 | 2.97 | 2.90 | 2.84 | 2.78 |
| | FB25L | 4.56 | 4.26 | 4.03 | 3.84 | 3.69 | 3.55 | 3.43 | 3.33 | 3.24 | 3.16 | 3.08 | 3.02 | 2.95 |
| | FB25H | 5.45 | 5.10 | 4.82 | 4.60 | 4.41 | 4.25 | 4.11 | 3.99 | 3.88 | 3.78 | 3.69 | 3.61 | 3.53 |
| | FB30H | 6.30 | 5.89 | 5.57 | 5.31 | 5.10 | 4.91 | 4.75 | 4.61 | 4.48 | 4.37 | 4.27 | 4.17 | 4.09 |




## TABLE 2:
**FLITCH BEAM RIDGE BEAM SUPPORTING ROOF AND SARKING OR CEILING (RAFTERS @ 1200mm CRS MAX)**

| | LINTEL SIZE | MAXIMUM LINTEL SPAN (m) SUPPORTED ROOF SPAN 'S' (m) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 |
| LIGHT ROOF | FB15L | 3.35 | 3.15 | 2.99 | 2.86 | 2.75 | 2.66 | 2.58 | 2.50 | 2.44 | 2.38 | 2.32 |
| | FB20H | 5.11 | 4.81 | 4.57 | 4.37 | 4.20 | 4.06 | 3.93 | 3.82 | 3.72 | 3.63 | 3.54 |
| | FB25L | 5.44 | 5.12 | 4.86 | 4.65 | 4.47 | 4.32 | 4.18 | 4.06 | 3.95 | 3.86 | 3.77 |
| | FB25H | 6.51 | 6.12 | 5.82 | 5.56 | 5.35 | 5.16 | 5.00 | 4.86 | 4.73 | 4.62 | 4.51 |
| | FB30H | 7.52 | 7.08 | 6.72 | 6.43 | 6.18 | 5.97 | 5.78 | 5.62 | 5.47 | 5.34 | 5.21 |
| HEAVY ROOF | FB15L | 2.71 | 2.55 | 2.42 | 2.32 | 2.23 | 2.15 | 2.08 | 2.02 | 1.97 | 1.92 | 1.88 |
| | FB20H | 4.13 | 3.89 | 3.70 | 3.53 | 3.40 | 3.28 | 3.18 | 3.09 | 3.01 | 2.93 | 2.87 |
| | FB25L | 4.40 | 4.14 | 3.93 | 3.76 | 3.62 | 3.49 | 3.38 | 3.29 | 3.20 | 3.12 | 3.05 |
| | FB25H | 5.26 | 4.95 | 4.70 | 4.50 | 4.33 | 4.18 | 4.05 | 3.93 | 3.83 | 3.73 | 3.65 |
| | FB30H | 6.08 | 5.72 | 5.44 | 5.20 | 5.00 | 4.83 | 4.68 | 4.54 | 4.42 | 4.32 | 4.22 |



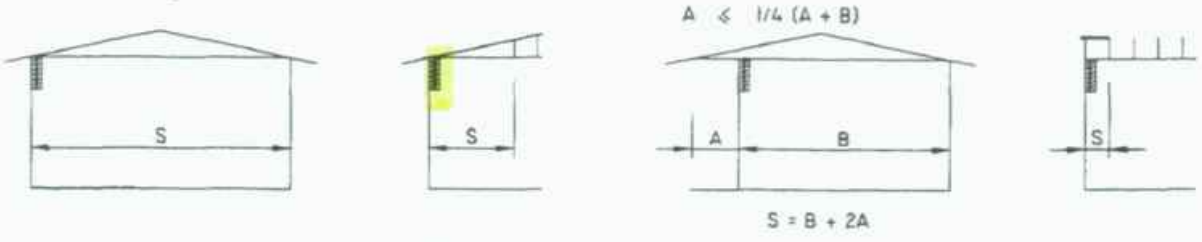

Garage

## TABLE 7B:
### LINTEL SUPPORTING GIRDER/SETBACK TRUSSES WITH HEAVY ROOF

| LINTEL SIZE | SETBACK (m) | MAXIMUM LINTEL SPAN (m) GIRDER TRUSS SPAN (m) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 |
| FB15L | 1.2 | 2.51 | 2.41 | 2.33 | 2.26 | 2.19 | 2.06 | 1.95 | 1.85 | 1.77 | 1.69 | 1.62 |
| | 2.4 | 2.45 | 2.25 | 2.04 | 1.87 | 1.72 | 1.60 | 1.49 | 1.39 | 1.31 | 1.24 | 1.17 |
| | 3.6 | 2.19 | 1.92 | 1.71 | 1.53 | 1.39 | 1.28 | 1.17 | 1.09 | 1.01 | 0.95 | 0.89 |
| | 4.8 | 1.94 | 1.65 | 1.45 | 1.28 | 1.15 | 1.05 | 0.96 | 0.88 | 0.82 | 0.76 | 0.71 |
| | 6.0 | 1.69 | 1.44 | 1.24 | 1.09 | 0.97 | 0.88 | 0.80 | 0.73 | 0.68 | 0.63 | 0.59 |
| | 7.5 | 1.47 | 1.23 | 1.05 | 0.92 | 0.81 | 0.73 | 0.66 | 0.60 | 0.56 | 0.52 | 0.48 |
| | 10.0 | 1.19 | 0.98 | 0.83 | 0.72 | 0.63 | 0.56 | 0.51 | 0.46 | 0.43 | 0.39 | 0.37 |
| FB20H | 1.2 | 3.83 | 3.68 | 3.56 | 3.45 | 3.35 | 3.26 | 3.19 | 3.12 | 3.05 | 2.99 | 2.94 |
| | 2.4 | 3.74 | 3.59 | 3.48 | 3.37 | 3.28 | 3.11 | 2.93 | 2.78 | 2.64 | 2.51 | 2.40 |
| | 3.6 | 3.69 | 3.55 | 3.38 | 3.10 | 2.86 | 2.66 | 2.48 | 2.33 | 2.19 | 2.07 | 1.96 |
| | 4.8 | 3.66 | 3.35 | 3.01 | 2.73 | 2.50 | 2.30 | 2.13 | 1.98 | 1.85 | 1.74 | 1.64 |
| | 6.0 | 3.47 | 3.04 | 2.69 | 2.42 | 2.19 | 2.01 | 1.85 | 1.71 | 1.59 | 1.49 | 1.40 |
| | 7.5 | 3.13 | 2.70 | 2.37 | 2.11 | 1.89 | 1.72 | 1.57 | 1.45 | 1.34 | 1.25 | 1.17 |
| | 10.0 | 2.67 | 2.26 | 1.95 | 1.71 | 1.53 | 1.38 | 1.25 | 1.15 | 1.06 | 0.98 | 0.92 |
| FB25L | 1.2 | 4.08 | 3.92 | 3.79 | 3.67 | 3.57 | 3.47 | 3.39 | 3.32 | 3.24 | 3.11 | 3.00 |
| | 2.4 | 3.98 | 3.82 | 3.70 | 3.57 | 3.34 | 3.14 | 2.96 | 2.80 | 2.66 | 2.53 | 2.42 |
| | 3.6 | 3.93 | 3.74 | 3.41 | 3.13 | 2.89 | 2.68 | 2.51 | 2.35 | 2.21 | 2.09 | 1.98 |
| | 4.8 | 3.84 | 3.38 | 3.04 | 2.75 | 2.52 | 2.32 | 2.15 | 2.00 | 1.87 | 1.76 | 1.66 |
| | 6.0 | 3.50 | 3.06 | 2.72 | 2.44 | 2.22 | 2.03 | 1.87 | 1.73 | 1.61 | 1.51 | 1.41 |
| | 7.5 | 3.16 | 2.73 | 2.40 | 2.13 | 1.92 | 1.74 | 1.59 | 1.47 | 1.36 | 1.27 | 1.19 |
| | 10.0 | 2.70 | 2.28 | 1.97 | 1.73 | 1.54 | 1.39 | 1.27 | 1.16 | 1.07 | 0.99 | 0.93 |
| FB25H | 1.2 | 4.79 | 4.63 | 4.51 | 4.39 | 4.27 | 4.16 | 4.06 | 3.97 | 3.89 | 3.81 | 3.74 |
| | 2.4 | 4.64 | 4.50 | 4.38 | 4.28 | 4.17 | 4.06 | 3.97 | 3.83 | 3.65 | 3.49 | 3.35 |
| | 3.6 | 4.57 | 4.44 | 4.32 | 4.22 | 4.01 | 3.75 | 3.52 | 3.32 | 3.14 | 2.98 | 2.84 |
| | 4.8 | 4.53 | 4.39 | 4.24 | 3.88 | 3.58 | 3.32 | 3.10 | 2.90 | 2.73 | 2.57 | 2.44 |
| | 6.0 | 4.49 | 4.30 | 3.87 | 3.51 | 3.21 | 2.96 | 2.74 | 2.55 | 2.39 | 2.25 | 2.12 |
| | 7.5 | 4.46 | 3.90 | 3.47 | 3.12 | 2.83 | 2.59 | 2.38 | 2.21 | 2.06 | 1.92 | 1.81 |
| | 10.0 | 3.90 | 3.35 | 2.93 | 2.60 | 2.34 | 2.12 | 1.94 | 1.78 | 1.65 | 1.54 | 1.44 |
| FB30H | 1.2 | 5.34 | 5.16 | 5.03 | 4.90 | 4.80 | 4.70 | 4.61 | 4.53 | 4.46 | 4.39 | 4.32 |
| | 2.4 | 5.18 | 5.02 | 4.89 | 4.77 | 4.67 | 4.57 | 4.49 | 4.41 | 4.34 | 4.19 | 4.02 |
| | 3.6 | 5.10 | 4.94 | 4.82 | 4.70 | 4.60 | 4.51 | 4.26 | 4.03 | 3.83 | 3.64 | 3.47 |
| | 4.8 | 5.05 | 4.90 | 4.77 | 4.66 | 4.36 | 4.06 | 3.80 | 3.57 | 3.37 | 3.19 | 3.03 |
| | 6.0 | 5.01 | 4.86 | 4.71 | 4.30 | 3.95 | 3.66 | 3.40 | 3.18 | 2.99 | 2.81 | 2.66 |
| | 7.5 | 4.97 | 4.77 | 4.28 | 3.86 | 3.53 | 3.24 | 3.00 | 2.78 | 2.60 | 2.44 | 2.30 |
| | 10.0 | 4.80 | 4.16 | 3.67 | 3.28 | 2.96 | 2.69 | 2.47 | 2.28 | 2.12 | 1.98 | 1.85 |

APPROVED
These plans are approved in accordance with the NZ Building Code
These plans must remain on site

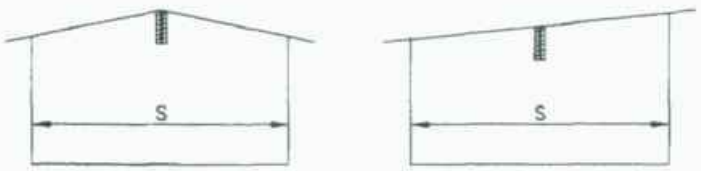
# Selection Charts




Dining Room

## TABLE 1:
**LINTELS SUPPORTING ROOF AND CEILING ONLY**

| | LINTEL SIZE | MAXIMUM LINTEL SPAN (m) SUPPORTED ROOF SPAN 'S' (m) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 |
| LIGHT ROOF | FB15L | 3.47 | 3.25 | 3.07 | 2.93 | 2.81 | 2.70 | 2.62 | 2.54 | 2.47 | 2.41 | 2.35 | 2.30 | 2.25 |
| | FB20H | 5.29 | 4.95 | 4.68 | 4.46 | 4.28 | 4.13 | 3.99 | 3.87 | 3.77 | 3.67 | 3.58 | 3.50 | 3.43 |
| | FB25L | 5.63 | 5.27 | 4.98 | 4.75 | 4.56 | 4.39 | 4.25 | 4.12 | 4.01 | 3.90 | 3.81 | 3.73 | 3.65 |
| | FB25H | 6.74 | 6.30 | 5.96 | 5.68 | 5.45 | 5.25 | 5.08 | 4.93 | 4.79 | 4.67 | 4.56 | 4.46 | 4.37 |
| | FB30H | 7.79 | 7.28 | 6.89 | 6.57 | 6.30 | 6.07 | 5.87 | 5.70 | 5.54 | 5.40 | 5.27 | 5.16 | 5.05 |
| HEAVY ROOF | FB15L | 2.81 | 2.63 | 2.48 | 2.37 | 2.27 | 2.19 | 2.12 | 2.05 | 2.00 | 1.95 | 1.90 | 1.86 | 1.82 |
| | FB20H | 4.28 | 4.00 | 3.79 | 3.61 | 3.46 | 3.34 | 3.23 | 3.13 | 3.05 | 2.97 | 2.90 | 2.84 | 2.78 |
| | FB25L | 4.56 | 4.26 | 4.03 | 3.84 | 3.69 | 3.55 | 3.43 | 3.33 | 3.24 | 3.16 | 3.08 | 3.02 | 2.95 |
| | FB25H | 5.45 | 5.10 | 4.82 | 4.60 | 4.41 | 4.25 | 4.11 | 3.99 | 3.88 | 3.78 | 3.69 | 3.61 | 3.53 |
| | FB30H | 6.30 | 5.89 | 5.57 | 5.31 | 5.10 | 4.91 | 4.75 | 4.61 | 4.48 | 4.37 | 4.27 | 4.17 | 4.09 |




## TABLE 2:
**FLITCH BEAM RIDGE BEAM SUPPORTING ROOF AND SARKING OR CEILING (RAFTERS @ 1200mm CRS MAX)**

| | LINTEL SIZE | MAXIMUM LINTEL SPAN (m) SUPPORTED ROOF SPAN 'S' (m) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 |
| LIGHT ROOF | FB15L | 3.35 | 3.15 | 2.99 | 2.86 | 2.75 | 2.66 | 2.58 | 2.50 | 2.44 | 2.38 | 2.32 |
| | FB20H | 5.11 | 4.81 | 4.57 | 4.37 | 4.20 | 4.06 | 3.93 | 3.82 | 3.72 | 3.63 | 3.54 |
| | FB25L | 5.44 | 5.12 | 4.86 | 4.65 | 4.47 | 4.32 | 4.18 | 4.06 | 3.95 | 3.86 | 3.77 |
| | FB25H | 6.51 | 6.12 | 5.82 | 5.56 | 5.35 | 5.16 | 5.00 | 4.86 | 4.73 | 4.62 | 4.51 |
| | FB30H | 7.52 | 7.08 | 6.72 | 6.43 | 6.18 | 5.97 | 5.78 | 5.62 | 5.47 | 5.34 | 5.21 |
| HEAVY ROOF | FB15L | 2.71 | 2.55 | 2.42 | 2.32 | 2.23 | 2.15 | 2.08 | 2.02 | 1.97 | 1.92 | 1.88 |
| | FB20H | 4.13 | 3.89 | 3.70 | 3.53 | 3.40 | 3.28 | 3.18 | 3.09 | 3.01 | 2.93 | 2.87 |
| | FB25L | 4.40 | 4.14 | 3.93 | 3.76 | 3.62 | 3.49 | 3.38 | 3.29 | 3.20 | 3.12 | 3.05 |
| | FB25H | 5.26 | 4.95 | 4.70 | 4.50 | 4.33 | 4.18 | 4.05 | 3.93 | 3.83 | 3.73 | 3.65 |
| | FB30H | 6.08 | 5.72 | 5.44 | 5.20 | 5.00 | 4.83 | 4.68 | 4.54 | 4.42 | 4.32 | 4.22 |

APPROVED
These plans are approved in accordance with
The NZ Building Code
Plans must remain on site
TAURANGA CITY COUNCIL

# As Built

## Drainage Plan

Tauranga City

Drainage Plan for: P8985/18/1

Reality.

- 1 DEC 2006

RECEIVED

Street Number 18 Street Name EBB TIDE Way

Lot 8 DP 349963

Suburb MAUNGATAPU.

ENTERED

Owner GARDNER

Type of Building DWELLING

Drainlayer W.H. KELLY LTD

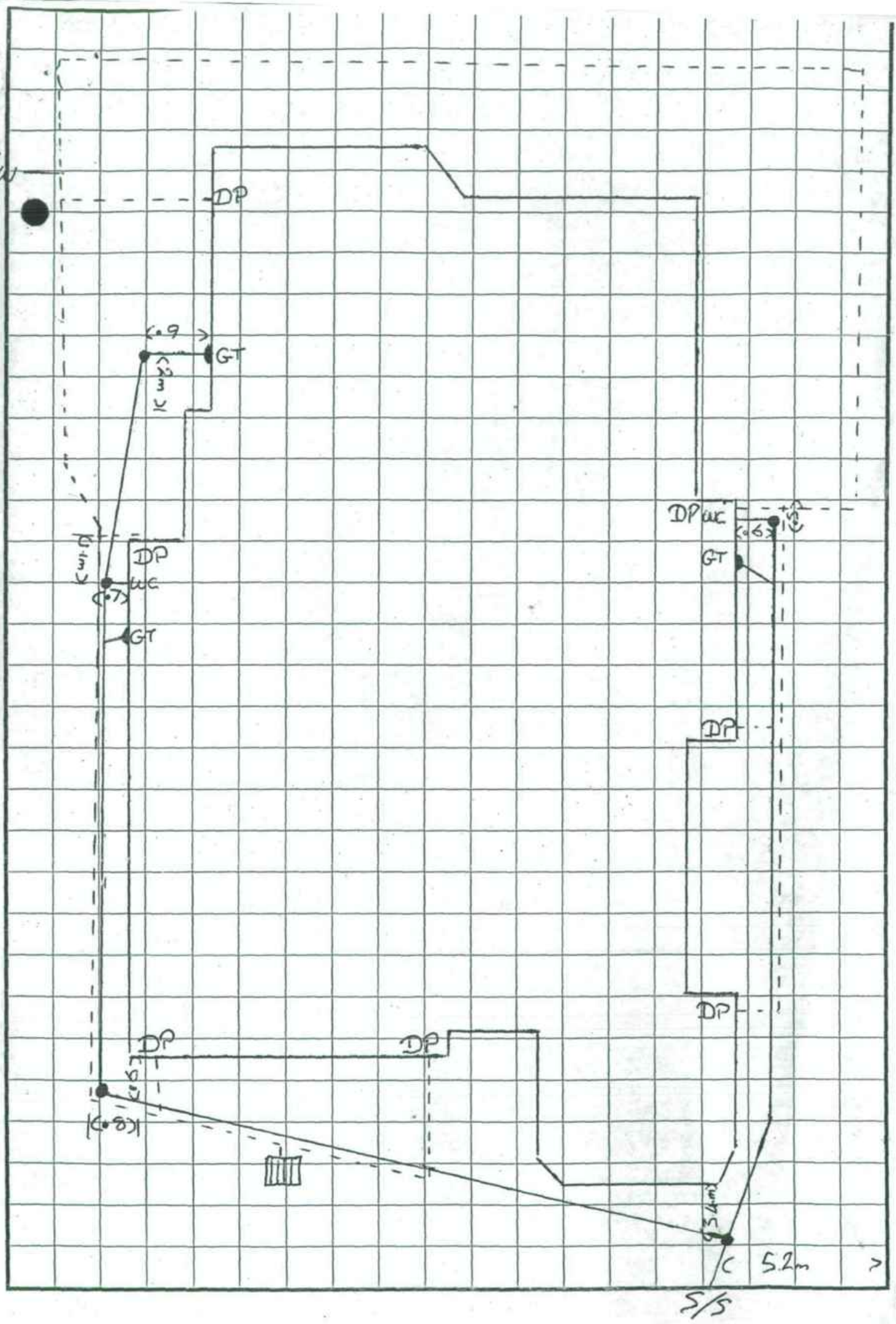
Date of Inspection 14/11/06 Inspector B.I.S. Malcolm Hunt

Drainage Permit No 22613

Note : Plan to be drawn in black ballpoint on graph opposite

Plan to include:

1. The correct position of the drains in relation to the building and boundaries.
2. The position of the street frontage.
3. Depth of drains at connection point.
4. Both foulwater and stormwater drains to be drawn.
5. Clearly define all inspection openings, with accurate measurements from two points.
6. Clearly define all buildings and boundaries.
7. Refer to example drain plan back page.


DP
GT
DP
WC
GT
DP
DP
DP
DP
DP
GT
5.2m
S/S

Tauranga City

Willow Street, Tauranga
Private Bag, Tauranga
Telephone: 07 577 7000. Facsimile 07 577 7034

# CODE COMPLIANCE CERTIFICATE NO: 22613

**Issued By:** Tauranga City Council pursuant to Section 95 of the Building Act 2004

| THE OWNER | CONTACT PERSON |
|---|---|
| GARDNER, DAVID BURTON<br>GARDNER, LORRAINE ANN<br>36 IONA DRIVE<br>R D 3<br>PYES PA | |

COPY

| THE BUILDING | BUILDING WORK |
|---|---|
| Street Address: 18 EBBTIDE WAY<br>Legal Description: LOT 8 DP349963<br>Current, lawfully established use:<br>Year first constructed: | ERECT DWELLING |

## Code Compliance

The Tauranga City Council is satisfied, on reasonable grounds, that –

(a) the building work complies with the building consent;

On behalf of the Tauranga City Council:

Name: _____

Position: SUPPORT OFFICER : BUILDING SERVICES

Date: 20 Feb 2007

# Statement of Compliance with the NZ Building Code
# Consent/COA No: 22613

ISSUED BY **CGAF Ltd t/a Bay Inspections**

24 Park Street, P.O.Box 2230
Tauranga
Ph. 07 578-3427
Fax 07 578-5395

☐

| PROJECT | | PROJECT LOCATION | |
|---|---|---|---|
| All | ☑ | Address | 18 Ebbtide Way<br>Maungatapu |
| Stage No. .... of an intended .... stages | | | |
| New or relocated building | ☑ | | |
| Alteration | ☐ | Lot | 8 |
| Intended use(s) (in detail) | | | |
| Erect dwelling | | D.P. | 349963 |
| | | **Owner** | |
| | | | David B & Lorraine A Gardner<br>36 Iona Drive<br>RD 3, Pyes Pa<br>Tauranga |
| Intended Life: | | | |
| Indefinite, but not less than 50 years | ☑ | | |
| Specified as ... years | ☐ | | |
| Demolition | ☐ | | |

TAURANGA CITY COUNCIL
PROJECT INFORMATION MEMORANDA
Refer to accompanying documentation

CGAF Ltd t/a Bay inspections confirms that work done in relation to this project has been completed in accordance with the Building Consent/COA and the New Zealand Building Code.

OK TO ISSUE
C.C.C.

Signed

Name: ..... Roger Bruce
OPERATIONS MANAGER

Position: .....

Signed ..... Date 2.2.07

Date: Thursday, 21 December 2006

# Bay Inspections
# Job Report

## Consent/COA No: 22613

as at Thursday, 1 February 2007

| Owner | Site Location |
|---|---|
| David B & Lorraine A Gardner<br>36 Iona Drive<br>RD 3, Pyes Pa<br>Tauranga | 18 Ebbtide Way<br>Maungatapu<br><br>Lot 8<br>D.P. 349963 |

| Job Description | Consent |
|---|---|
| **WorkType** Dwelling - New<br>**IntendedUse** Erect dwelling | **Number** 22613<br>**Date** Tuesday, 15 August 2006<br>**Process Time** 0. Hrs |

### Assessments Required

| | Required | Done | Passed | Failed | To Be Done |
|---|---|---|---|---|---|
| Building | 8 | 8 | 7 | 1 | 0 |
| Plumbing/Drainage | 4 | 5 | 3 | 2 | 0 |
| Structural | 0 | 0 | 0 | 0 | 0 |
| Total | 12 | 13 | 10 | 3 | 0 |

Extra Inspections: 1

## Notes

## Inspection Details

| Date | Time | Inspector | InspectionType | Result | Note |
|---|---|---|---|---|---|
| 22-Aug-06 | 11:30 a.m. | Ross Hamilton | Footing | Pass | Notice to builder to check whats contained in geotech report. |
| 25-Aug-06 | 04:30 p.m. | Ian Watson | Bond beam | Pass | Require engineers compaction report for fill in slab over 600 deep.Starter extensions to place with short starters. |
| 30-Aug-06 | 02:45 p.m. | Gary Cosford | Slab | Pass | |
| 20-Sep-06 | 11:00 a.m. | Gary Cosford | Framing | Pass | |
| 25-Oct-06 | 02:45 p.m. | Malcolm Hunt | Preline/Plumbing | Pass | |
| 30-Oct-06 | 09:45 a.m. | Gary Cosford | Preline/Building | Pass | Insulation okay also. Brick veneer fail. As per discussions on site. DPC on windows to fix accordingly. Preline plumbing also pass. Brick veneer D.P.C under windows to be chanelled into cavity as discussed on site with bricklayer ok to continue where fixed, also Butynol flashing above entrance is not doing the job, need attention, can check at final. |
| 03-Nov-06 | 04:00 p.m. | Gary Cosford | prestopping | Fail | Gib screws not done to new bracing code.Prestop not to new spec's check fixing requirements for B1 and GS2 braces, recheck required. |
| 06-Nov-06 | 03:30 p.m. | Gary Cosford | prestopping | Pass | Gib nailing now okay. |
| 09-Nov-06 | 01:45 p.m. | Malcolm Hunt | Drainage | Fail | Not ready. |
| 10-Nov-06 | 04:30 p.m. | Malcolm Hunt | Drainage | Fail | Still not ready. |
| 14-Nov-06 | 04:30 p.m. | Malcolm Hunt | Drainage | Pass | Plan to come.04/12/06 Received drainage plan. |
| 19-Dec-06 | 03:30 p.m. | Ross Hamilton | Final/Building | Pass | No requirements on approved plans to vent laundry to outside, all producer statements to come.21/12/06 Received producer statement from Black Tiling Ltd for waterproofing(Dribond),electrical certificate,compaction report from Apex Consultants Limited. |
| 19-Dec-06 | 04:00 p.m. | Ross Hamilton | Final/Plumbing | Pass | Notations as above.Letter sent 21/12/06 Received electrical compliance certificate from Stewart Browne |

Electrical confirming fan in laundry is mechanically vented to outside in response to Rogers letter.

# TAX INVOICE/STATEMENT

REGISTRATION NO. GST-REG-NO 51-938-283

GARDNER, LORRAINE ANN
36 IONA DRIVE
R D 3
PYES PA
TAURANGA 3021

| | |
|---|---|
| Invoice No: | 504591 |
| Date: | 02 Feb 2007 |
| Customer No: | 321483 |
| Your Reference: | BC – 22613<br>Additional inspections<br>18 Ebbtide Way |

| DETAILS | QTY | UNIT | AMOUNT |
|---|---|---|---|
| ***BUILDING CONSENT ACCOUNT*** | | | |
| BUILDING INSPECTION FEE | 1 | 84.44 | 84.44 |

**PAYMENT DUE WITHIN 20 WORKING DAYS**

| | | |
|---|---|---|
| **Payment due:** 02 Feb 2007 | INVOICE TOTAL | 84.44 |
| | G.S.T | 10.56 |
| | **TOTAL NOW DUE** | **$95.00** |

**REMITTANCE ADVICE:** Please detach and return with your payment:

**Tauranga City Council**
**Private Bag**
**TAURANGA**

CUSTOMER: 321483
GARDNER, LORRAINE ANN
BC 22613

INVOICE NO: 504591
**TOTAL DUE:** **$95.00**

PAYMENT MADE: $

Tauranga City

2 February 2007

Lorraine Gardner
36 Iona Drive
R D 3
Pyes Pa
TAURANGA 3110

*Dear Madam*

**Building Inspection Fees - Building Consent 22613**

During the construction of your dwelling at 18 Ebbtide Way our building inspectors were requested to carry out one additional site inspection.

Prior to issuing your Code Compliance Certificate, Council require payment for this inspection at a rate of $95.00 (GST inclusive) per inspection.

Enclosed is an invoice and record of inspections.

On receipt of this fee your Code Compliance Certificate will be issued.

If you require any further information please do not hesitate to contact me.

Yours faithfully

Faith Shortt
**Support Officer**
**Building Services**

**Tauranga** City Council
91 Willow Street Private Bag 12022 Tauranga New Zealand
Telephone 07 **577 7000** Facsimile 07 577 7193 Email: info@tauranga.govt.nz Website: www.tauranga.govt.nz

BAY INSPECTIONS LTD
**24 Park St**
**(PO Box 2230)**
**TAURANGA**

Ph: (07) 578-3427
Fax : (07) 578-5395

21 December 2006

D B & L A Gardner
36 Iona Dr
RD 3
Pyes Pa
**TAURANGA**

Dear Sir & Madam

**FINAL INSPECTION OF BUILDING WORK**
**Address: 18 Ebbtide Way**
**Consent: 22613**

Bay Inspections Ltd has been contracted by the Tauranga City Council to carry out inspections of buildings that are under construction pursuant to a current Building Consent.

On 19/12/06 a final inspection was carried out at the above address.

Unfortunately we are not in a position to recommend to the Council that a Code Compliance Certificate should be issued until the following matters have been addressed:

*Your internal laundry is not mechanically ventilated to the outside.* ✓

Yours faithfully,

JM Bruce PP

Roger Bruce
**OPERATIONS MANAGER**

EWRB 551

# Electrical Certificate of Compliance

No 2258647

for prescribed electrical work that is carried out on electrical installations and involves the placing or positioning or the replacing or repositioning of conductors (including fittings attached to those conductors). **To be completed whether or not an inspection is required.**

25/1/07 No. of attachments
FAXED

**CUSTOMER INFORMATION - PLEASE PRINT CLEARLY**

Name of customer: Reality Homes — Phone:

Address of installation: Lot 8 Ebbtide Way Tauranga.

Postal address of customer (if not as above): PO Box 7020 Tauranga

**WORK DETAILS**

- No. of lighting outlets
- No. of socket outlets
- Was any installation work carried out by the homeowner? Yes / No
- No. of ranges
- No. of water heaters

Please tick (✓) as appropriate where work includes:

- Mains
- Switchboard
- Main earthing system
- Electric lines

Description: Instal fan in laundry mechanically vented to outside.

It is recommended that test results be recorded here:

- Visual Examination ✓
- Earth Continuity ✓
- Bonding ✓
- Polarity ✓
- Insulation Resistance ∞ Mohm
- Other

If necessary attach any pages with sketches of work done

**CERTIFICATION OF WORK**

I certify that the above electrical work has been carried out in accordance with the requirements of the Electricity Act 1992 and Electricity Regulations 1997.

**ELECTRICAL WORKER DETAILS**

| | |
|---|---|
| Name | Stewart Browne |
| Registration no. | E2530 |
| Company | Stewart Browne Electrical Services |
| Signature | |
| Date | 22/1/07 |
| Contact Ph No. | 5780457 |

**CERTIFICATION OF ELECTRIC LINES**
(to be completed where a separate electrical worker has installed the electric line portion of the mains)

| | |
|---|---|
| Name | |
| Registration no. | |
| Company | |
| Signature | |
| Date | |
| Contact Ph No. | |

**INSPECTION DETAILS** Electrical work requiring inspection by a registered electrical inspector

- Mains
- Switchboard
- Earthing system
- Installation work in hazardous areas

I certify that the inspection has been carried out in accordance with the requirements of regulation 41 of the Electricity Regulations 1997.

| | |
|---|---|
| Name | |
| Signature | |
| Registration no. | |
| Date | |
| Contact Ph No. | |

ENTERED BC 22613. 18, Ebbtide Way

**FAX MESSAGE**

**PLEASE CONTACT AFFORDABLE HOMES - 07 577 6374**
**IF ALL PAGES ARE NOT RECEIVED**

| | | |
|---|---|---|
| **TO:** | **Bay Inspections** | **DATE: 25-01-07** |
| **ATTENTION:** | **Pat** | **FAX TO: 578 5395** |
| **FROM:** | **Larissa** | **FAX FROM:** (07) 577 9510 |
| **SUBJECT:** | **Consent Number 22613** | **PAGE 1 OF 2** PAGE(S) |

Hi Pat

**RE: 18 EBB TIDE WAY, TAURANGA**

Please find attached the Electrical Certificate for the Laundry fan.

You should now have all the information you require, to have the home signed off.

If you have any queries, please don't hesitate to contact me at the office on 577 6374.

Regards

p.p Larissa

2/21st Ave & Cameron Rd Tauranga
Telephone 07 577 6374, Facsimile 07 577 9510
THE BEST MOVE YOU'LL EVER MAKE

Affordable homes

075779510

**FAX MESSAGE**

**PLEASE CONTACT AFFORDABLE HOMES - 07 577 6374**
**IF ALL PAGES ARE NOT RECEIVED**

| | | |
|---|---|---|
| **TO:** | **Bay Inspections** | **DATE: 23-01-07** |
| **ATTENTION:** | **Pat** | **FAX TO:** 578 5395 |
| **FROM:** | **Larissa** | **FAX FROM:** (07) 577 9510 |
| **SUBJECT:** | **Consent Number 22613** | **PAGE 1 OF** 2 PAGE(S) |

Hi Pat

**RE: 18 EBB TIDE WAY, TAURANGA**

Please find attached the Electrical Certificate for the Laundry fan.

You should now have all the information you require, to have the home signed off.

If you have any queries, please don't hesitate to contact me at the office on 577 6374.

Regards

p.p Larissa

More info to come ... not sufficient

2/21st Ave & Cameron Rd Tauranga
Telephone 07 577 6374, Facsimile 07 577 9510
THE BEST MOVE YOU'LL EVER MAKE

# Electrical Certificate of Compliance

No. 2258647

To be completed whether or not an inspection is required.

OWNER INFORMATION - PLEASE PRINT CLEARLY

Name: Affordable Homes T/A Affordable Homes

Installation address: Lot 8 Eastside Way Tauranga

Postal address: PO Box 9020 Tauranga

WORK DETAILS

Description: INSTALL FAN IN LAUNDRY

If necessary attach any pages with sketches of work done

It is recommended that test results be recorded here:

- Visual Examination ☑
- Earth Continuity ☑
- Bonding ☑
- Polarity ☑
- Insulation Resistance ☒ Mohm
- Other

CONTRACTOR DETAILS

Name: Stewart Browne

I2530, Stewart Browne Electrical Services

Signature:

Date: 22/1/07

Contact Ph No: 5780457

INSPECTION DETAILS Electrical work requiring inspection by a registered electrical inspector

New mains ☐ Switchboard ☐ Earthing system ☐ Installation (new or altered) ☐

I certify that the inspection has been carried out in accordance with the requirements of Regulation 19 of the Electricity

Name:

Signature:

Date:

Contractor No:

CUSTOMER COPY - THIS IS AN IMPORTANT DOCUMENT AND SHOULD BE RETAINED

# BLACK TILING LTD

Professional floor and wall tiling
62 Western Road
Tauranga
Ph: 021 660006

**Producer Statement**

December 13th 2006
**Affordable Homes**
Re; Gardner Residence
Lot 8 Ebb Tide
Maungatapu

ENTERED

Construction Chemicals (Dribond) water proofing membrane was applied to both Shower wet areas at the above address in accordance with Construction Chemicals instructions.

Any queries please contact me

Regards,

Mathew Black

EWRB 55

# Electrical Certificate of Compliance

for prescribed electrical work that is carried out on electrical installations and involves the placing or positioning or the replacing or repositioning of conductors (including fittings attached to those conductors).
**To be completed whether or not an Inspection is required.**

No. 2134374

No. of attachments

ENTERED

## CUSTOMER INFORMATION - PLEASE PRINT CLEARLY

Name of customer Property Homes Phone:

Address of installation Lot 8 Tristone Way Tauranga

Postal address of customer (if not as above) PO Box 9020 Tauranga

## WORK DETAILS

55 No. of lighting outlets

44 No. of socket outlets

Was any installation work carried out by the homeowner? Yes ✓ No

1 No. of ovens

1 No. of ~~ranges~~ Hobs

1 No. of water heaters

Please tick (✓) as appropriate where work includes:

✓ Mains ✓ Main earthing system

✓ Switchboard — Electric lines

Description Permanent Supply to MI Meter Box Permanently Mounted M.E.N. Main System System 1 ϕ. This Number was Fitted to Lot 8. Plan is Available at our Office

If necessary attach any pages with sketches of work done

It is recommended that test results be recorded here:

Visual Examination ☑

Earth Continuity ☑

Bonding ☑

Polarity ☑

Insulation Resistance >1 Mohm Mohm

Other

## CERTIFICATION OF WORK

I certify that the above electrical work has been carried out in accordance with the requirements of the Electricity Act 1992 and Electricity Regulations 1997.

### ELECTRICAL WORKER DETAILS

Name Stewart Browne

Registration no. T2342

Company Stewart Browne Electrical Services Ltd

Signature

Date 15/12/06

Contact Ph No.

### CERTIFICATION OF ELECTRIC LINES

(to be completed where a separate electrical worker has installed the electric line portion of the mains)

Name A.W. Threlfall

Registration no. T2342

Company Stewart Browne Electrical Services Ltd

Signature

Date 18/8/06

Contact Ph No. 5780457

## INSPECTION DETAILS

Electrical work requiring inspection by a registered electrical inspector

✓ New mains ✓ Switchboard — Earthing system Installation work in hazardous areas

I certify that the inspection has been carried out in accordance with the requirements of regulation 41 of the Electricity Regulations 1997.

Name Rex Darvell

Signature

Registration no. T2857

Date 21-8-06

Contact Ph No. 0274 547866

**CUSTOMER COPY - THIS IS AN IMPORTANT DOCUMENT AND SHOULD BE RETAINED**

For the purposes of the Electricity Regulations 19 ... Wellington (freephone 0800 65 1000)

# ASSET PROTECTION BOND INSPECTION FORM

332584

10/1

| | |
|---|---|
| Building Consent ID: | 22613 |
| Building Consent Issued Date: | 15 AUG 2006 |
| Property File Number: | P/8985/18 |
| Site Address | **18 EBBTIDE WAY** |
| Ward: | Welcome Bay/Pyes Pa |
| Property Owner Details: | GARDNER, LORRAINE ANN<br>36 IONA DRIVE<br>R D 3<br>PYES PA |
| Project Description: | ERECT DWELLING |

FILE COPY

| Receipt Numbers: | Receipt Paid By: | Receipt Amount: |
|---|---|---|
| 2006 558295 | REALITY HOMES | |
| 2007 50952 | REALITY HOMES LIMITED | 9,606.00 |

| Refund Details | | |
|---|---|---|
| Payment of Fees Made by: | CONTACT | |
| Refund Due to: | | |
| **Fee Type:** | **Fee Amount:** | **Amount to Refund:** |
| IBC | $110.00 | |
| IPI | $120.00 | |
| CCC | $40.00 | |
| BIN | $290.24 | |
| BEX | $1,140.00 | |
| VCB | $515.00 | |
| ADIF | $130.00 | |
| I06 | $60.00 | |
| PIM | $215.00 | |
| BIFW | $1,424.64 | |
| BIWS | $2,502.48 | |
| BICI | $888.82 | |
| BIRC | $1,891.68 | |
| I03 | $262.00 | |
| BIA | $516.14 | |

**INSPECTIONS RESULTS** **DATE:** 12/1/07 SH

| | |
|---|---|
| Vehicle Crossing: | ✓ |
| Footpath: | NA. |
| Berm: | ✓ |
| Water Toby: | ✓ |
| Box: | ✓ |
| Backflow: | ACUFLO. |
| Meter Type: | SENSUS. |
| Meter Serial Number: | 04150791 3 |
| Meter Reading: | 49 |

Meter Location:

RHB 0.3.
OUT 0.5.

Tauranga District Council
91 Willow Street Private Bag 12022
Tauranga New Zealand
Telephone 07 577 7000
Facsimile 07 577 7103
Overseas callers use: 00 64 7 577 7000
Email: service@tauranga.govt.nz
Website: www.tauranga.govt.nz

Tauranga City

# REQUEST FOR VEHICLE CROSSING AND/OR ASSET PROTECTION BOND REFUND

## (ON COMPLETION OF WORKS TO TDC REQUIREMENTS)

Address Of Property: Lot 8 Ebb Tide, Maungatapu, Tauranga

Name Of Owner: Lorraine & David Gardner

Name Of Person/Company Claiming Refund: Reality Homes Ltd t/a affordable Homes

Address Refund To Be Sent: P.O Box 5020, Greerton, Tauranga

Name Of Contractor: N/A

Receipt Number: N/A

Building Consent Number: 22613

Note: Audit procedures require that the refund be made only to the receipt holder. Written authorisation is required from the receipt holder to refund monies to another party.

## DECLARATION

I declare that I am/we are entitled to the refund of the above bond.

p.p Alldresen 10/01/07
SIGNATURE DATE

577 6374 0274 851 483 Greg Hooper (Site Supervisor)
DAYTIME PHONE NUMBER AND CONTACT NAME

FORWARD TO: Manager: Asset Development
Department of City Services
Tauranga District Council
Private Bag
TAURANGA

**Applicant to Complete Check List**

Vehicle Xing ✓
Footpath ✓
Berm ✓
Backflow ✓
Meter Type ✓
Meter No ✓
Location ✓

217032

# ASSET PROTECTION BOND INSPECTION FORM

| | |
|---|---|
| Building Consent ID: | 22613 |
| Building Consent Issued Date: | 15 AUG 2006 |
| Property File Number: | P/8985/18 |
| Site Address | **18 EBBTIDE WAY** |
| Ward: | Welcome Bay/Pyes Pa |
| Property Owner Details: | GARDNER, LORRAINE ANN<br>36 IONA DRIVE<br>R D 3<br>PYES PA |
| Project Description: | ERECT DWELLING |

| Receipt Numbers: | Receipt Paid By: | Receipt Amount: |
|---|---|---|
| 2006 558295 | REALITY HOMES | |
| 2007 50952 | REALITY HOMES LIMITED | 9,606.00 |

| Refund Details | | |
|---|---|---|
| Payment of Fees Made by: | CONTACT | |
| Refund Due to: | | |
| **Fee Type:** | **Fee Amount:** | **Amount to Refund:** |
| IBC | $110.00 | |
| IPI | $120.00 | |
| CCC | $40.00 | |
| BIN | $290.24 | |
| BEX | $1,140.00 | |
| VCB | $515.00 | |
| ADIF | $130.00 | |
| I06 | $60.00 | |
| PIM | $215.00 | |
| BIFW | $1,424.64 | |
| BIWS | $2,502.48 | |
| BICI | $888.82 | |
| BIRC | $1,891.68 | |
| I03 | $262.00 | |
| BIA | $516.14 | |

**INSPECTIONS RESULTS** **DATE:**

| | | |
|---|---|---|
| Vehicle Crossing: | | Meter Location: |
| Footpath: | | |
| Berm: | | |
| Water Toby: | | |
| Box: | | |
| Backflow: | | |
| Meter Type: | | |
| Meter Serial Number: | | |
| Meter Reading: | | |

10 November 2026

## Rates Information for the 2013/14 Rating Year

| | |
|---|---|
| **Valuation Number** | 06650 700 09 |
| **Location of property** | 18 EBBTIDE WAY |
| **Legal Description** | LOT 8 DP 349963 INT IN ACCESS LOT 20 DP 349963 INT IN ACCESS LOT 22 DP 349963 |
| **Owner** | PATERSON, GORDON DONALD<br>PATERSON, HELENE ELIZABETH |

## Water Rates

**Water Meter:** ***YES***
**Current Water Balance:** $0.00 (Subject to Change for Final Reading)

****Please book final reading****
**By emailing *rateswater.admin@tauranga.govt.nz***
**All meters must be read at change of possession date as per Council bylaws.**

## Land Rates

**Annual rates 1 July 2013 - 30 June 2014** $ 2,549.52
(Regional rates are included in the figure)

| Instalment | Due Date | Penalties |
|---|---|---|
| One $1274.78 | 30 August 13 | 0.00 |
| Two $1274.74 | 28 February 14 | 0.00 |

| | |
|---|---|
| **Rates paid to** | 31 December 2013 |
| **Amount to clear instalment two** | $ 424.90 |

**Please note the second rates instalment has been set. invoices will be sent 1 Feb 2014 due 28 Feb 2014**

| Rates Penalty Dates | Water Penalty Dates |
|---|---|
| 05/07/2013 10% on total end of year balance | 16/09/2013 10% on balance of instalment |
| 05/09/2013 10% on balance of instalment | 09/12/2013 10% on balance of instalment |
| 06/03/2014 10% on balance of instalment | 17/03/2014 10% on balance of instalment |
| 09/01/2014 10% on balance of prior year | 16/06/2014 10% on balance of instalment |

**No Direct Debit or Automatic Payment operating.**

**Rates Direct Debit operating please email info@tauranga.govt.nz to cancel ( credit can be returned direct to vendor's bank account-please advise).**

**Water Direct Debit operating please email info@tauranga.govt.nz to cancel. ( credit can be returned direct to vendor's bank account-please advise).**

**Council's bank account number is 06 0433 0213474 00 please use the word Rates or Water and the valuation number 06650 700 09 when making an electronic payment.**

**When paying the final water rates invoice please ensure that the ratepayer does not also pay any prior period water rates invoices that may be included in the final invoice.**

**If the rates account is in credit, when the change of ownership is received, Council will return the credit to the vendor's bank account or the vendor's solicitor, unless specifically advised.**

Property File:.....

Job history for Code Compliance Certificate No: 22613
as at Monday, 28 November 2016

| Owner | Site Location |
|---|---|
| David B & Lorraine A Gardner<br>36 Iona Drive<br>RD 3, Pyes Pa<br>Tauranga | 18 Ebbtide Way<br>Maungatapu<br><br>Lot 8<br>D.P. 349963 |

| Job Description | Consent |
|---|---|
| WorkType Dwelling - New<br><br>IntendedUse Erect dwelling | Number 22613<br>Date Tuesday, 15 August 2006<br>Process Time 0. Hrs |

Inspection Summary

| | Required | Done | Passed | Failed | To Be Done |
|---|---|---|---|---|---|
| Building | 8 | 8 | 7 | 1 | 0 |
| Plumbing/Drainage | 4 | 5 | 3 | 2 | 0 |
| Structural | 0 | 0 | 0 | 0 | 0 |
| Total | 12 | 13 | 10 | 3 | 0 |

| Extra Inspections |
|---|
| 1 |

## Notes

## Inspection Details

| Date | Inspector | InspectionType | Result | Note |
|---|---|---|---|---|
| 22/08/06 | Ross Hamilton | Footing | Pass | Notice to builder to check whats contained in geotech report. |
| 25/08/06 | Ian Watson | Bond beam | Pass | Require engineers compaction report for fill in slab over 600 deep.Starter extensions to place with short starters. |
| 30/08/06 | Gary Cosford | Slab | Pass | |
| 20/09/06 | Gary Cosford | Framing | Pass | |
| 25/10/06 | Malcolm Hunt | Preline/Plumbing | Pass | |
| 30/10/06 | Gary Cosford | Preline/Building | Pass | Insulation okay also. Brick veneer fail. As per discussions on site. DPC on windows to fix accordingly. Preline plumbing also pass. Brick veneer D.P.C under windows to be chanelled into cavity as discussed on site with bricklayer ok to continue where fixed, also Butynol flashing above entrance is not doing the job, need attention, can check at final. |
| 03/11/06 | Gary Cosford | PreStopping | Fail | Gib screws not done to new bracing code.Prestop not to new spec's check fixing requirements for B1 and GS2 braces, recheck required. |
| 06/11/06 | Gary Cosford | PreStopping | Pass | Gib nailing now okay. |
| 09/11/06 | Malcolm Hunt | Drainage | Fail | Not ready. |
| 10/11/06 | Malcolm Hunt | Drainage | Fail | Still not ready. |
| 14/11/06 | Malcolm Hunt | Drainage | Pass | Plan to come.04/12/06 Received drainage plan. |
| 19/12/06 | Ross Hamilton | Final Building | Pass | No requirements on approved plans to vent laundry to outside, all producer statements to come.21/12/06 Received producer statement from Black Tiling Ltd for waterproofing(Dribond),electrical certificate,compaction report from Apex Consultants Limited. |
| 19/12/06 | Ross Hamilton | Final Plumbing | Pass | Notations as above.Letter sent 21/12/06 Received electrical compliance certificate from Stewart Browne Electrical confirming fan in laundry is mechanically vented |

to outside in response to Rogers letter.*01/02/07

15 August 2018

THE RESIDENT
18 EBBTIDE WAY
TAURANGA 3112

Dear resident,

**New Kerbside Glass Collection Service – Private Roads and Lanes**

From 1 October 2018, Tauranga City Council (TCC) will be providing a new kerbside glass collection service to all residents of the City. The provision of the service was approved in the most recent TCC Long Term Plan and will significantly improve our recycling efforts.

The new service fills the gap left when private kerbside collection providers stopped accepting glass in mixed recycling collections on 1 March 2018.

Glass recycling crates will be distributed to all Tauranga households 27 August until 28 September. The service is paid for via rates at $26 (incl. GST) per annum (per residential dwelling). Further information is available on the TCC website.

As part of preparing for this new service, Council has visited all private roads and lanes in Tauranga to check if the glass collection trucks will be able to safely and easily access them. Your private lane/road provides suitable access therefore please put your collection crate out at your property's kerbside when the new service starts (your crate will be dropped off at the point of collection).

Your new collection crate will have your address on the side so you can easily identify which crate is yours (should you share access with a number of other properties).

If you have any questions, please feel free to contact Council on 07 577 7000.

Thank you in advance for your cooperation.

Yours sincerely,



Rebecca Maiden
**Manager: Sustainability and Waste**
**Growth and Infrastructure**

Objective ID: A8935233

14 September 2018

THE RESIDENT
18 EBBTIDE WAY
TAURANGA 3112

Dear resident,

**Access to Private Roads and Lanes for the Purpose of Waste Collection**

We recently sent you a letter to confirm that Tauranga City Council is able to safely and easily access your private road or lane for the purpose of collecting glass for recycling from your kerbside.

In order to provide this service, Council requires the enclosed waiver form to be signed by all residents in your private road or lane.

Please complete and sign the form for your household and return to Council, using the enclosed reply paid envelope, by 28 September 2018.

If you have any questions, please feel free to contact Council on 07 577 7000.

Thank you in advance for your cooperation.

Yours sincerely,



Rebecca Maiden
**Manager: Sustainability and Waste**
**Growth and Infrastructure**

Objective ID: A9170594

FREQUENTLY ASKED QUESTIONS

# Tauranga Harbour Inundation Hazard Maps

## 1. What are the Tauranga Harbour Inundation Hazard Maps?

The Tauranga harbour inundation hazard maps identify land surrounding the city's harbour margins that is potentially at risk of flooding by the sea, especially during storms. The maps have been prepared using data from a new coastal hazards study completed by external experts on behalf of Tauranga City Council, Western Bay of Plenty District Council and Bay of Plenty Regional Council.

The study has modelled inundation levels and their likelihood from a range of storm events and made allowance for predicted sea level rise scenarios for Tauranga out to the year 2130. The sea level rise scenarios are based on information provided by the Ministry for the Environment.

## 2. Why have these maps been produced?

The requirement for councils to manage natural hazard risks is set out under a number of different pieces of legislation including the Resource Management Act, Building Act, Local Government Act and Civil Defence Emergency Management Act.

The Resource Management Act (RMA) requires council to recognise and provide for a number of nationally important matters when carrying out its functions under this Act. One of these matters includes the management of significant risks from natural hazards, whilst also having particular regard to the effects of climate change. In addition, the New Zealand Coastal Policy Statement (a national policy statement under the RMA) directs councils to identify areas that may potentially be affected by coastal hazards over a timeframe of at least 100 years.

Given these requirements, councils are required to have a good understanding of the areas potentially at risk from natural hazards in order to support appropriate land-use planning and development decisions within their districts. Mapping of these hazards is considered the most accepted method to identify hazard-prone areas and provide the greatest level of certainty to the public.

## 3. Where can I go to view these maps?

A specific online viewer has been created to allow you to view these hazard maps. This online tool will allow you to view your property, or any other property, and see how it may be affected by inundation from the harbour now and in the future. The viewer is available on our website:

*tauranga.govt.nz/harbourinundation*

Council's website also includes links to the harbour inundation study, which has been used to prepare these maps, along with a series of other helpful reports and other websites where further information on this hazard can be found.

## 4. What factors are considered when producing the Harbour Inundation Hazard Maps?

Harbour inundation can be influenced by a combination of factors including waves, long term weather patterns, high tides and storm surge.

A storm surge occurs when sea levels rise as a result of falling air pressure and then combine with high winds to drive water on to land. When a storm surge coincides with a high tide it produces higher than normal sea levels known as a storm tide. Waves can then combine with a storm tide to contribute to the extent of inundation. In addition to these factors, an allowance for sea level rise out to the year 2130 has also been included.

The maps illustrate the location and depth of inundation and the likelihood of this occurring at different locations around the harbour when the factors listed above combine.

The inundation levels shown on the maps are based on a set of annual exceedance probability (AEP) likelihoods of 2%, 1% and 0.2%. These AEP's describe the probability of these inundation levels being reached or exceeded in any calendar year.

## 5. What factors have not been considered when producing the Harbour Inundation Hazard Maps?

There are factors that the coastal hazard study has not included when determining the extent of inundation levels. These factors include the following:

- All existing private protection structures which may have been installed around a property. In the majority of cases the design, quality and maintenance of such structures are unknown.
- Any changes to the landform following the completion of this study have not been taken into account when producing the inundation maps.

## 6. What is meant by climate change?

Climate change refers to the changes to the climate associated with the effects of global warming. Climate change is projected to have a significant impact on the land near the coast and harbour, mostly due to sea level rise and the intensification of extreme storm events.

Information about the global impact of climate change is provided in the Fifth Assessment Report of the United Nation's Intergovernmental Panel on Climate Change (IPCC). National and regional analysis of climate change impacts have also been carried out by the National Institute of Water and Atmospheric Research (NIWA).

## 7. What will future sea level rise mean?

Rising sea levels in the future will increase the risks resulting from coastal hazards as well as the frequency of damaging or disruptive coastal hazards. For example, a modest sea level rise of 0.3 m to 0.4 m (possibly reached by 2050–60) will turn what currently is a rare storm-tide flooding event (e.g. with a 1% chance of happening in any year), into an event that will occur on average once a year (source: Parliamentary Commissioner for the Environment, 2015; Stephens, 2015).

## 8. Why are different sea level rise scenarios considered?

The use of different sea level rise scenarios reflects different assumptions made by the international scientific community about the degree to which ocean warming (water expands when it warms) and the melting of land-based ice (glaciers, polar ice caps, and ice sheets) will affect the rate and magnitude of global sea level rise over time.

The sea level rise scenarios that have been selected for use in this study are based on the most up-to-date technical guidance from the Ministry for the Environment on sea level rise projections. This guidance is based on the scenarios that have been presented by the IPCC. The scenarios used by the IPCC are called Representative Concentration Pathways (RCPs). The primary purpose of the RCPs is to provide time dependent projections of atmospheric greenhouse gas (GHG) concentrations that correspond to how greenhouse gas emissions may be managed worldwide.

## 9. What sea level rise can we expect in Tauranga?

Historic sea level rise in New Zealand has averaged 1.7 ± 0.1 mm/year with the Bay of Plenty exhibiting a slightly higher rate of 2.1 ± 0.1 mm/year. Climate change is predicted to accelerate this rate of sea level rise into the future.

NIWA have developed a range of possible sea levels rise projections for the Tauranga region using the four sea level rise scenarios recommended by the Ministry for the Environment (2017) guideline, set out in the table below:

**Table 1:** SLR projections (in metres above Moturiki Datum) in 2070 and 2130 for the Bay of Plenty region.

| Sea Level Rise Scenarios | | | | |
|---|---|---|---|---|
| Year | NZ RCP2.6 *M* (median) | NZ RCP4.5 *M* (median) | NZ RCP8.5 *M* (median) | NZ RCP H+ (83rd percentile) |
| 1986 - 2005 | 0.07 | 0.07 | 0.07 | 0.07 |
| 2070 | 0.39 | 0.43 | 0.52 | 0.68 |
| 2130 | 0.67 | 0.81 | 1.25 | 1.59 |

## 10. Will this information go onto property files?

The council has an obligation to make hazard information it holds available to the public under the Local Government Official Information and Meetings Act 1987. It will be made clear on any Land Information Memorandum (LIM) requested for a property within a hazard area that council holds information in respect of inundation for the property which has been derived from a harbour hazard study. This statement will direct any reader to the council website and inundation viewer.

## 11. Will this information affect my property value or insurance?

The council is required to make information, such as this harbour inundation hazard study, available upon request. We cannot advise you about any effect this information may have on property value or insurance. We recommend you seek professional advice from a property valuation or insurance expert about any concerns you may have regarding these matters.

## 12. What is the council doing in regard to planning for natural hazards?

The receipt of this information will allow the council to revisit its approach to addressing hazards, such as the potential impacts of harbour erosion, and harbour flooding and how these hazards will be exacerbated by possible sea level rise in the future. This will include consideration of regulatory provisions to manage future development (including intensification) within these hazard areas and how to best adapt to changes in hazard information in the future.

19 August 2019

GARETH JAMES HOPKINS
76 GRANGE ROAD
OTUMOETAI
TAURANGA 3110

Dear Sir / Madam

**Tauranga Harbour Inundation – Property Information Update**

Tauranga City Council has updated the hazard data it holds in respect of harbour inundation. The data has been utilised to identify areas of land surrounding the city's harbour margins that may be affected by inundation by the sea and includes consideration of a range of inundation levels and also different sea level rise scenarios.

The information used to identify potentially affected land is a result of a new study commissioned as part of Council's ongoing natural hazards program. It replaces existing data and provides a more robust understanding of inundation risks for the city's harbour margins.

The information shows that your property located at 18 EBBTIDE WAY, legal description LOT 8 DP 349963 INT IN ACCESS LOT 20 DP 349963 INT IN ACCESS LOT 22 DP 349963, is in an area that could be at risk from inundation by the sea over the next 110 years, based upon the range of different storm events and sea level rise scenarios considered under the study.

We have contacted you as the property owner. If you rent or lease your property, we expect that you notify your tenant or lessee about the contents of this letter.

**Where to find more information**

To assist your understanding of the information set out within the study and how it affects your property, background information on sea level rise, inundation and the maps that have been prepared to show these affected areas, is available on our website.

The maps showing these areas are available through an online viewer that allows you to see the impact that differing inundation levels and sea level rise and may have on your property over time. You will find this information and the viewer at tauranga.govt.nz/harbourinundation.

Enclosed with this letter are some questions and answers about harbour inundation that will provide some background and context to the information that is now available.

**Contacting us about inundation risk information**

If you wish to discuss further the outcomes of this study, please feel free to call us on 07 577 7000 or email naturalhazards@tauranga.govt.nz.

Alternatively, you can ask your questions in a private appointment with our team at one of the community sessions listed below. You will need to book a time to attend, please visit tauranga.govt.nz/harbourinundation to book. The community days will be held on the following dates at the following locations:

| Date | Location |
|---|---|
| 3 & 4 September 2019<br>3pm to 6pm | Otumoetai Golf Club |
| 5, 18, 19 & 25 September 2019<br>3pm to 6pm | Mount Maunganui Surf Club |
| 10 & 12 September 2019<br>3pm to 6pm | Waipuna Hall, Welcome Bay |
| 11, 17 & 24 September 2019<br>3pm to 6pm | TCC Offices, Willow Street |

Yours sincerely



Campbell Larking
Team Leader: Planning Projects

14 October 2019

GARETH JAMES HOPKINS
76 GRANGE ROAD
OTUMOETAI
TAURANGA 3110

Dear Property Owner

**Tauranga City Council Coastal Structures Policy Review**

We are writing to you as proposed changes to Council's Coastal Structures Policy may affect how Council manages the seawall or other structure protecting the Council land or reserve near or adjacent to your property. Council currently manages nearly 15,000 metres of structures, including groynes (breakwaters), seawalls, and rock revetments, along our coast and inner harbour.

Tauranga City Council first adopted a policy on coastal structures in 2006 in response to a regional council requirement for all structures in the coastal area to have a consent. We then identified which seawalls, jetties, and other structures council owned and would continue to maintain or renew. Now in 2019, councils around the country need to consider the needs of future communities, including the potential impact of climate change, when making decisions about how they manage their assets. This is a requirement of the Local Government Act 2002.

As such, Council is proposing to amend its Coastal Structures Policy to prioritise maintenance and renewal of seawalls and other structures that protect our most significant public assets, including water and wastewater pipes. This may mean we will not maintain structures protecting small esplanade reserves with limited or no public access.

Council recognises that private landowners may wish to take steps to protect their properties from the risk of erosion. We are suggesting that those landowners be allowed to build protection structures on Council land (subject to obtaining consents and permission). Council is also seeking feedback on whether private landowners should be able to take over the management of protection structures that council has decided not to maintain.

For a full copy of the draft 2019 Coastal Structures Policy and to provide feedback on the above issues, please visit www.tauranga.govt.nz/coastal-structures or feel free to contact me on (07) 577 7000 or emma.joyce@tauranga.govt.nz.

Ngā mihi



Emma Joyce

Policy Analyst
07 577 7200 extn 7766 | 027 641 1781

emma.joyce@tauranga.govt.nz

10 November 2020

Gareth James Hopkins
76 GRANGE ROAD
OTUMOETAI
TAURANGA 3110

Dear Sir/Madam

**Proposed Plan Changes to the operative Tauranga City Plan**

Tauranga City Council is currently progressing the following plan changes to the operative Tauranga City Plan (City Plan):

- **Proposed Plan Change 26 (Housing choice)**
  This plan change proposes changes to the City Plan to make it easier for people to build a variety of more compact types of homes, like duplexes, terraced houses, townhouses and apartments, to better suit their needs.
- **Proposed Plan Change 27 (Flooding from intense rainfall events)**
  This plan change introduces a new rule framework to manage the effects of flooding in intense rainfall events on people, properties and infrastructure.
- **Proposed Plan Change 30 (Earthworks)**
  This plan change proposes to clarify wording of existing provisions to ensure that earthworks are undertaken in a safe manner, avoiding negative effects on the environment.

As the owner of the property at 18 EBBTIDE WAY, you have been identified as likely to have an interest in the changes proposed for the following reasons.

Your property is located within the Suburban Residential Zone where the housing choice plan change proposes to enable a greater choice of housing, including duplexes and townhouses.

Through proposed Plan Change 27, mapping has been updated and will supersede existing flood hazard mapping that Tauranga City Council holds. Your property has been identified through the flooding from intense rainfall plan change as being in a potentially floodable area (such as overland flowpaths, floodplains or flood prone areas) and may be subject to additional rules for any future works on the site. This plan change will have legal effect from Monday, 16 November 2020. Proposed Plan Change 27 will have legal effect from Monday 16 November 2020. This means that all applications, where required, should have regard to the proposed objectives, policies and rules from the date of public notification.

In addition, we're proposing city-wide changes through Plan Change 30 (Earthworks) to improve existing rules for the control of earthworks at all stages of development (subdivision and post-subdivision), and sediment and erosion control.

**Where to find more information**

To help you understand the proposed plan changes and how they affect your property, the following information is available at www.tauranga.govt.nz/planchanges, at council's customer service centre and your local library:

- public notice as published in the Weekend Sun on Friday 30 October 2020 and Bay of Plenty Times Saturday 31 October 2020;
- annotated text showing the proposed changes to the City Plan and section 32 evaluation reports explaining the reasons for the proposed changes;
- online map viewer showing the location and extent of the plan change areas, including the City Plan zoning and flooding on your property;
- submission form to make a submission.

If you rent or lease your property, please ensure you notify your tenant or lessee about the contents of this letter.

These proposed plan changes have been initiated under the provisions of Schedule 1 of the Resource Management Act 1991.

**Community open days**

If you wish to discuss the proposed plan changes, please join us at one of the community open days listed below.

If you have specific questions about how your property is affected by proposed Plan Change 27 (Flooding from intense rainfall), we recommend booking a private appointment with our team at one of the community sessions listed below. Book online at www.tauranga.govt.nz/planchanges or call (07) 577 7000.

| Date | Time | Location |
|---|---|---|
| Monday, 23 November | 3pm to 6pm | Greerton Library, 139 Greerton Road |
| Tuesday, 24 November | 3pm to 6pm | Arataki Community Centre, Zambuk Way |
| Wednesday, 25 November | 3pm to 6pm | Otumoetai Golf Course, 25 Bureta Road |
| Thursday, 26 November | 3pm to 6pm | Council offices, 91 Willow Street |
| Friday, 27 November | 3pm to 6pm | Bethlehem Hall, 239A State Highway 2 |
| Saturday, 28 November | 9am to 12.00pm | Tauriko Hall, 776 State Highway 29 |
| Monday, 30 November | 3pm to 6pm | Papamoa Community Centre, 15 Gravatt Road |
| Tuesday, 1 December | 3pm to 6pm | Mount Rugby Club, 49 Miro Street |
| Thursday, 3 December | 3pm to 6pm | St Stephens Church, 15 Brookfield Terrace |
| Friday, 4 December | 3pm to 6pm | Welcome Bay Community Centre, 242 Welcome Bay Road |

**Making a submission**

Submissions on proposed plan change 26, 27 or 30 must be lodged in writing and either submitted online at www.tauranga.govt.nz/planchanges, emailed to city.plan@tauranga.govt.nz or posted to:

Manager: City and Infrastructure Planning
Tauranga City Council
Freepost Authority Number 370
Private Bag 12022
Tauranga 3143

**Submissions are open until 5pm, Friday, 18 December 2020**

The submission should be in the format of Form 5 of the Resource Management (Forms, Fees and Procedure) Regulations 2003 and must be dated and signed by you and include the following information:

(a) Your name, address, telephone and email address.
(b) The plan change number and details of the provisions to which the submission is being made.
(c) Whether you support or oppose the plan change provisions, in whole or in part.
(d) Reasons for your support or opposition.
(e) The decision you wish Tauranga City Council to make.
(f) Whether you wish to be heard in support of your submission.
(g) Whether or not you could gain advantage in trade competition through your submission.

For further information regarding the details of the amendments introduced by the proposed plan changes contact us on (07) 577 7000 or email city.plan@tauranga.govt.nz.

Yours sincerely



Janine Speedy
**Team Leader: City Planning**

22 December 2020

Hayden Edward Reeves
18 EBBTIDE WAY
MAUNGATAPU
TAURANGA 3112

Dear ratepayer

**New council rubbish, recycling and food scraps collections from July 2021 for 18 EBBTIDE WAY.**

Nearly 70% of Tauranga's household waste that ends up in landfill could be recycled or composted instead. Together, we can halve the amount of waste our households send to landfill each year by 2028*. That's why we're providing all households with new rubbish, recycling and food scraps bins to use alongside the current blue kerbside glass recycling bins from 1 July 2021. The service will cost $230 for the first year (which includes the current $37 a year charged for glass recycling) and be charged in residential rates from 1 July 2021 through a new targeted rate.

Households can also choose to have an additional garden waste collection for an extra $60 for the first year (4-weekly collections) or $95 (fortnightly collections).

**Households on private roads with limited space for turning collection trucks**

When the new bins are delivered to you in the months leading up to the start of the service in July 2021, they will be delivered to the kerbside directly outside your house. We will provide more information about when the bins will be delivered in your suburb closer to this time.

However, your road has unfortunately been identified as not having enough space for a standard collection truck to turn safely to complete kerbside collections after the initial bin delivery. Therefore, as we're unable to collect the bins from the kerbside outside your household, you'll need to take your bins to the nearest public road for ongoing collection instead.

Anyone who requires assistance taking their bins to and from the kerbside for collection due to a physical disability or ailment, can apply for our free assisted service on our website.

*See more about the new kerbside collections in the enclosed flyer or visit www.tauranga.govt.nz/kerbsidecollections*

Ngā mihi,
**Sustainability and Waste Team**
**Tauranga City Council**

*We expect the new service to halve the amount of waste the average household sends to landfill each year by 2028, based on the current household waste levels in other areas in New Zealand with a similar service.

# We’re growing up

## New housing rules are coming soon



Submissions are open on proposed Plan Change 33 – Enabling Housing Supply

**The Government is making some changes to housing rules that will change what you can do on your property. Your neighbourhood may change too, over time. In a nutshell, people will be able to build more on their residential sections without needing sign-off from council, or approval from neighbours.**

Like all major cities, we’re in the thick of a housing crisis. We’re short of homes, and there’s little choice in the type and size of dwellings we can live in. To help address these issues, Tauranga needs to grow up as well as out, and we’ve been given strict direction from the Government to enable this.

Through the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021, we’ve been instructed to amend the rules in our city plan so that we:

- allow people to build up to three dwellings of up to three storeys on most sections in residential zones, without needing to obtain a resource consent
- enable higher density housing with more building height around the city centre, and other identified commercial centres across the city and close to public transport.

**This means it will be easier for homeowners looking to build or expand, and that people will have access to more types of houses. It also means there will be more multi-storied buildings popping up around our neighbourhoods and city, over time – which will gradually change where and how we live.**

## Open for submissions

It's time to give your feedback on Proposed Plan Change 33 – Enabling Housing Supply, which implements the direction from the Government in our city plan. Some of these changes are dictated by the Government, especially for buildings of three storeys or less, but other parts we can influence, like what developments of four storeys or more will look like, and where these higher density areas are located.

## What's set in concrete



### It will soon be easier to build townhouses across the city (medium density)

- No resource consent needed to build up to three dwellings of up to three storeys (11 metres height) on most residential sections
- **Applies from 20 August 2022** to all residential zones (most of the city)
- New rules for how close you can build to your boundary, amount of open space per house, overshadowing, and more
- Resource consent required for four or more dwellings or storeys.

Where will this apply? See on the map.

**Find out about the rules at tauranga.govt.nz/housing-supply**
These changes are dictated by Government.

## We want to know what you think about



### Making it easier to build apartments within walking distance of shops and facilities (higher density)

- We're proposing that building heights between four and six storeys (16m to 21m) should be enabled in areas within five to 10 minutes' walk (400m to 800m) of some of the city's commercial centres.
- We're proposing that building heights of eight storeys (27m) should be allowed along Cameron Road, as proposed through the Te Papa peninsula spatial plan.
- Resource consent would still be required for developments of four or more storeys, but it would be easier to obtain and you wouldn't need approval from your neighbours if all our rules are met (restricted discretionary activity).

Where would this apply? See on the map.

- We will also provide more direction on design and amenity outcomes for residential developments in commercial zones citywide, like apartments built above shops.

**Tell us what you think about the areas we've identified and the different heights that would apply at tauranga.govt.nz/housing-supply**

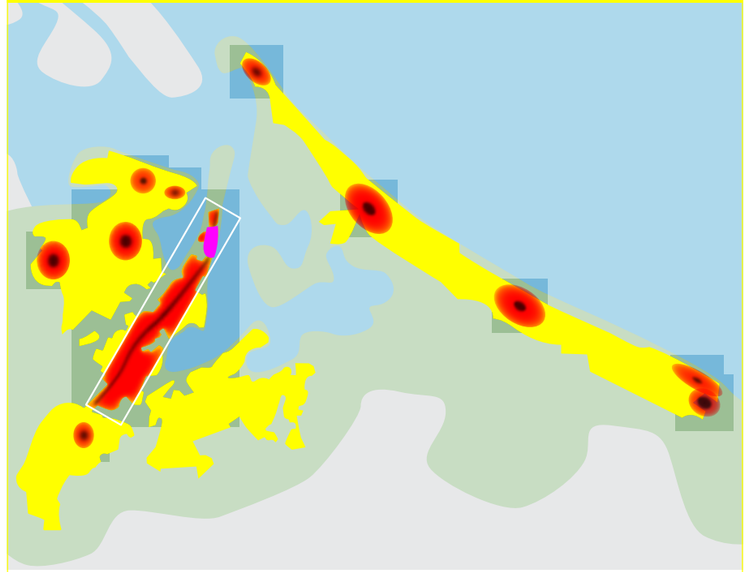
### Going higher in the city centre

- We aim to maximise building heights and density in and around the city centre, to enable more people to live in the heart of our city.
- We're proposing building heights of eight storeys (27m) within 1500m (15 minutes' walk) of the city centre.
- Within the city centre, we're proposing to enable building heights up to 48.7m above sea level (approx. 13 storeys) in most locations, with new rules on design to be applied. Anything above that will also need to consider the Tauranga Airport flight path.

Where would this apply? See on the map.

## Where the changes would apply

**Use the map viewer at tauranga.govt.nz/housing-supply** to find out which changes will apply to your property, or any other property in the city.



**KEY**

- Tauranga
- City Centre
- Te Papa peninsula
- Medium density in residential zones
- Higher density in and around commercial centres

## There are some places and cases where the new rules may not apply

- **Qualifying matters**: some areas of the city, such as cultural and heritage sites, areas subject to natural hazards, and areas with outstanding natural features like Mauao, are considered unsuitable for higher density development. Find out more at tauranga.govt.nz/housing-supply
- **Existing legislation** such as the Building Act still applies.
- **Covenants** across the city restrict how owners can use their property. These are separate to the city plan and will continue to apply if you have one on your property.



## Keeping good design in mind

To ensure new developments look good, meet community needs and are great spaces to live in, we're proposing new urban design criteria that larger developments would have to meet. These would apply to any development of four or more dwellings on a site, and within commercial areas including the city centre. This will be supported by a new urban design panel to review significant development proposals in Tauranga.

## Roads and pipes to support growth

Direction from Government limits what rules we can add that would manage the pressure of increased density on our roads and water, wastewater and stormwater pipes. While we can't require checks for three dwellings/three storeys, we are proposing to require assessments on the impact to our infrastructure (roads and pipes) for four or more dwellings.

## Find out more and tell us what you think

Submissions are open until Friday 23 September 2022. Find detailed information on the proposed changes and how they will apply to your property at tauranga.govt.nz/housing-supply and tell us what you think.

If you don't have a computer, head over to your local library to use one there for free, or look through the printed information we have available.

## Need help making your submission?

If you would like some guidance to lodge a submission, talk to our 'Friend of the submitter'. The friend of the submitter is an independent planner who can advise you on the submission process and how you might present your views in a submission. This free service is provided by the Ministry for the Environment to help the public participate in this plan change. Email PlanChange33@resourceplanning.nz to set up a time to talk.

## Any questions?

If you have questions about how these changes may apply to your property, please contact the city planning team on city.plan@tauranga.govt.nz or 07 577 7000.

Tauranga City

20 August 2022

REEVES, HAYDEN EDWARD
INGHAM, CAYLEY MAREE
18 EBBTIDE WAY
MAUNGATAPU
TAURANGA 3112

Dear Sir/Madam

**Proposed Plan Change 33 – Enabling Housing Supply to the Tauranga City Plan**

This letter is to let you know that we're amending the Tauranga City Plan to help address our shortage of homes and help our city grow up as well as out.

Passed in December 2021, the Resource Management (Enabling Housing Supply and Other Matters) Amendment Act 2021 directs councils of high-growth cities, including Tauranga, to amend their city plans to enable increased housing density.

Plan Change 33 proposes changes to the City Plan to implement these requirements from central government, which will make it easier for people to build a variety of more compact types of homes, like townhouses and apartments. Exemptions, called qualifying matters, will apply to some areas.

Find out more about the changes and how they may apply to your property

The information enclosed with this letter gives an overview of the changes we're proposing and how you can make a submission on them.

More detailed information, including an online map viewer that shows how the changes would apply to your property, is available at www.tauranga.govt.nz/housing-supply. The map viewer also shows the proposed city plan zoning (medium density residential and higher density residential zones) and the building heights that would apply in any area.

If you don't have access to a computer, head over to your local library to use one there for free. Our library staff will be able to point you in the right direction.

At the library you will also be able to view the plan change information on paper:

- The public notice as published in the Weekend Sun on Friday 19 August 2022 and Bay of Plenty Times on Saturday 20 August 2022
- Background information explaining why we're progressing this plan change
- The complete annotated text and maps showing the proposed changes to the City Plan for each zone, and section 32 evaluation reports explaining the reasons for the proposed changes
- Paper forms to make a submission.

If you rent or lease your property, please notify your tenant or lessee about the contents of this letter.

The proposed plan change has been initiated under the provisions of Schedule 1 of the Resource Management Act 1991.

**Tell us what you think: submissions are open until 5pm Friday, 23 September 2022.**

Submissions on proposed Plan Change 33 must be lodged in writing and either submitted online at www.tauranga.govt.nz/housing-supply, emailed to city.plan@tauranga.govt.nz or posted to:

Manager: City Planning and Growth
Tauranga City Council
Freepost Authority Number 370
Private Bag 12022
Tauranga 3143

The easiest way to share your feedback is to use the online form on our website. If you choose to send your feedback via letter or email instead, please note that your submission should be in the format of Form 5 of the Resource Management (Forms, Fees and Procedure) Regulations 2003 and must be dated and signed by you and include the following information:

(a) Your name, address, telephone and email address.

(b) The plan change number and details of the provisions to which the submission is being made.

(c) Whether you support or oppose the plan change provisions, in whole or in part.

(d) Reasons for your support or opposition.

(e) The decision you wish Tauranga City Council to make.

(f) Whether you wish to be heard in support of your submission.

(g) Whether or not you could gain advantage in trade competition through your submission.

For further information regarding the details of the amendments introduced by the proposed plan change contact us on 07 577 7000 or email city.plan@tauranga.govt.nz.

Yours sincerely

The City Planning team

city.plan@tauranga.govt.nz

REPORT

Tonkin+Taylor

# Maungatapu Landslide Advice

**Prepared for**
Tauranga City Council
**Prepared by**
Tonkin & Taylor Ltd
**Date**
September 2023
**Job Number**
1089569.0000 v4.0



*Together we create and sustain a better world*
www.tonkintaylor.co.nz

## Document control

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| 18/05/2023 | 0.1 | Draft for consultation | J Beetham | D Milner | D Milner |
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**Distribution:**

| | |
|---|---|
| Tauranga City Council | 1 electronic copy |
| Tonkin & Taylor Ltd (FILE) | 1 electronic copy |

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## Executive summary

Over 2022 and 2023, a number of large landslides occurred at several locations across Maungatapu which have caused property damage and social disruption. Tauranga City Council (TCC) is interested in understanding the factors that affect slope stability around Maungatapu and are considering what mitigation methods/processes could be applied to the peninsula to reduce the landslide risk. In this respect, TCC engaged Tonkin & Taylor Ltd (T+T) to help develop a greater understanding of the landslides occurring around Maungatapu Peninsula.

This report summarises publicly available geological, geotechnical and other relevant information associated with the peninsula including: ground elevation data, two theses and several reports associated with landslides in the Tauranga area, mapped relic landslide features, historic Toka Tū Ake Earthquake Commission (EQC) insurance claim information, historic rainfall records, and the TCC stormwater management zones.

It was found that there may be a number of factors influencing landslides across the Maungatapu Peninsula. Of these, rainfall and groundwater conditions along with slope steepness and height appear to exert the greatest influence. Literature and data reviewed as part of this report suggest that significant increases in landslide frequency across the peninsula are typically associated with prolonged periods of elevated rainfall which in turn leads to elevated groundwater conditions. Furthermore, extreme rainfall events in conjunction with previously elevated groundwater conditions also appear to result in an increased landslide frequency. In addition, the concentration of claims along the western and north-eastern edge of the peninsula is an evident trend observed when reviewing EQC insurance claim locations. The north-western and north-eastern slopes of the peninsula tend to be steeper than at other locations and this likely makes them more prone to instability.

Stormwater disposal via ground soakage may also be influencing groundwater dynamics across the peninsula and in turn, influencing the occurrence of landslides. However, the relationship between stormwater disposal methods, groundwater levels and landsliding remains difficult to quantify. More information is needed to assess the influence of stormwater disposal methods on groundwater levels across the peninsula.

To further understand the factors affecting landsliding across the Maungatapu Peninsula, we consider that it will be important to develop a greater appreciation of the underlying geology and groundwater dynamics. In addition, we are unaware of any long-term groundwater level monitoring stations across the Maungatapu. Developing a greater understanding of groundwater levels and their seasonal fluctuations and responses following rainfall would be beneficial to this understanding.

# 1 Introduction

Tonkin & Taylor Ltd (T+T) was engaged by Tauranga City Council (TCC) to help develop a greater understanding of the landslides occurring on the Maungatapu Peninsula (also described as the "Study Area", or "the peninsula" through the document). Over the past year, a number of large landslides have occurred in several locations across the peninsula which have caused property damage and social disruption. TCC is interested in understanding the factors that drive the landslides on the peninsula and are considering what mitigation methods/processes could be applied to the peninsula to reduce the impact of the landslides.

The Study Area associated with this project is shown in Figure 1.1.




*Figure 1.1: Study area (dashed line) associated with this project.*

## 1.1 Scope of work

To develop a greater understanding into the landslides occurring in the Study Area, we proposed a staged approach to TCC that comprised three tasks as follows:

- Task 1: Undertake a high-level desktop study of the landslides occurring in the Study Area.
- Task 2: Undertake geotechnical investigations and install monitoring equipment within the Study Area.
- Task 3: Investigate landslide management options for the Study Area and provide mitigation options for TCC to consider.

This report is only associated with Task 1. Task 2 and Task 3 may be undertaken at a later date.

The following scope of work was proposed for Task 1:

1 Undertake a literature review of historic EQC claims and TCC landslide information across the Study Area.
2 Undertake a literature review of academic research on the geology underlying the Study Area and on historic landslides.
3 Undertake a review of chronological aerial photographs to visually map historic landslides in the Study Area.
4 Geo-spatially analyse available LiDAR derived DEM datasets to assess ground surface elevation changes across the Study Area.
5 Develop a geomorphic map of the Study Area based on ground elevation data and recent aerial imagery.
6 Review available rainfall records that can be related to the Study Area and correlate to landslide inventory derived from historic EQC claims.
7 Undertake a review of available geotechnical investigations on the New Zealand Geotechnical Database (NZGD) and provide a high-level geological model of the Study Area.
8 Provide recommendations for further geotechnical investigations and/or monitoring equipment across the Study Area.

## 1.2 Site description

The Study Area covers the Maungatapu Peninsula, north of Welcome Bay Link Road. The majority of the peninsula is occupied by residential dwellings.

The Study Area is typically characterised by an elevated terrace, a landform that is common throughout the Western Bay of Plenty region (e.g., Ōmokoroa Peninsula, Te Papa Peninsula, Matua Peninsula etc). The upper ground surface of the terrace is gently undulating (slope angles typically less than 10°) and generally lies at an elevations between 20 and 30 m above sea level. The southern end of the peninsula generally increases in elevation, reaching a maximum height of approximately 38 m above sea level (Figure 1.2). The northern, eastern and western edges of the elevated terrace are characterised by steep slopes and coastal cliffs that typically terminate at the high tide mark associated with the Tauranga Harbour. However, it should be noted that in a few areas of the peninsula (e.g., Egret Avenue and Anchorage Grove), some of the steep slopes sit above low-lying land that has been developed and is occupied by residential dwellings. The steep slopes and coastal cliffs reach maximum heights of approximately 25 m (Figure 1.3) and are typically associated with slope angles greater than 45 degrees (Figure 1.4). The aspect of the steeply sloping land across the Study Area is variable, as shown in Figure 1.5.

Tidal mud flats surround the majority of the Study Area and are often exposed at low tide. However, one of the main channels associated with the harbour is positioned directly alongside the majority of the north western edge of the peninsula and constantly flows during low tide cycles (there are limited tidal flats between the peninsula and channel in this area).

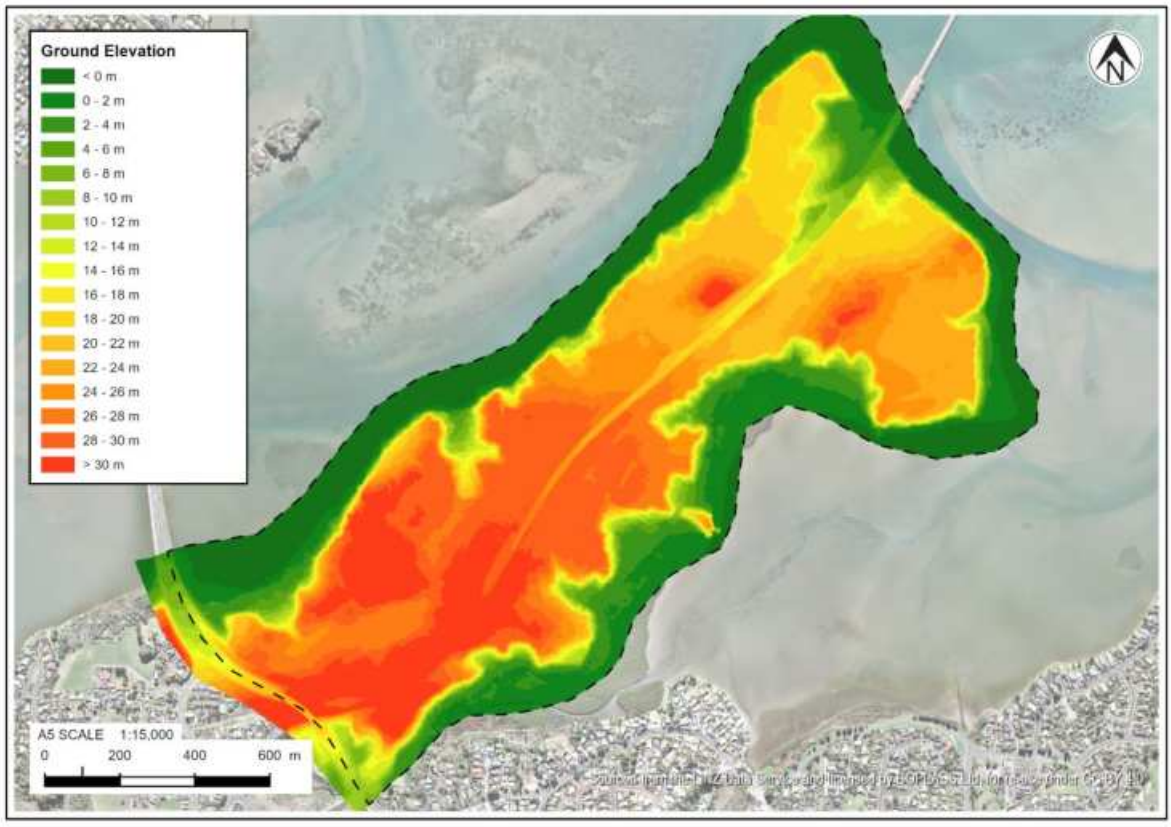



*Figure 1.2: Ground elevation levels across the Study Area.*

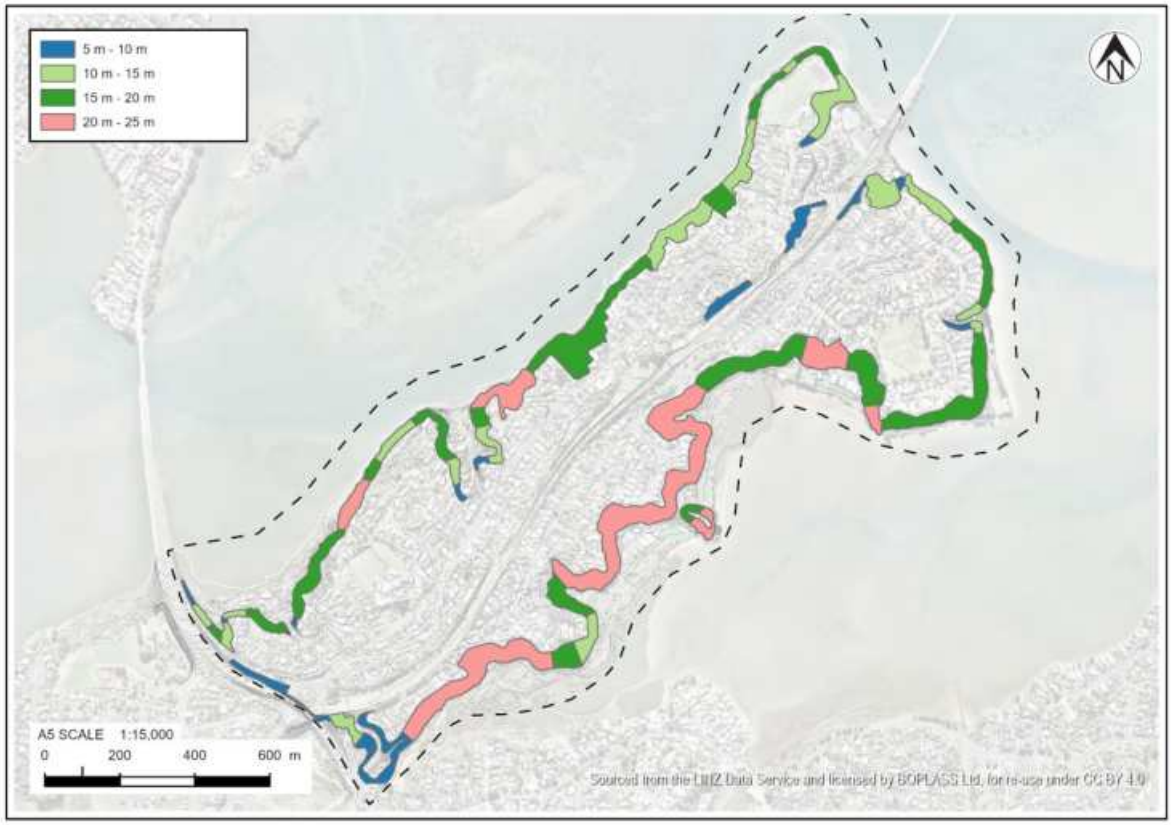



*Figure 1.3: Generalised slope heights associated with the Study Area.*

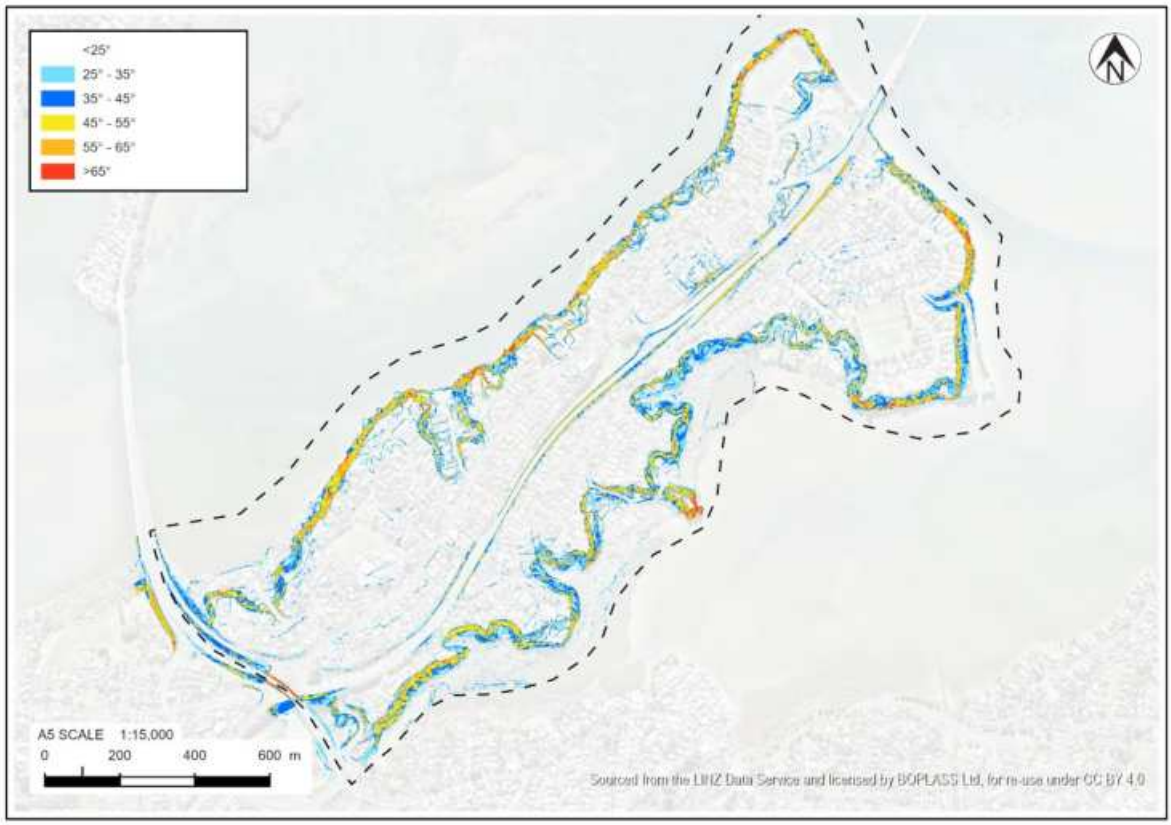



*Figure 1.4: Sloping land and slope angles across the Study Area.*

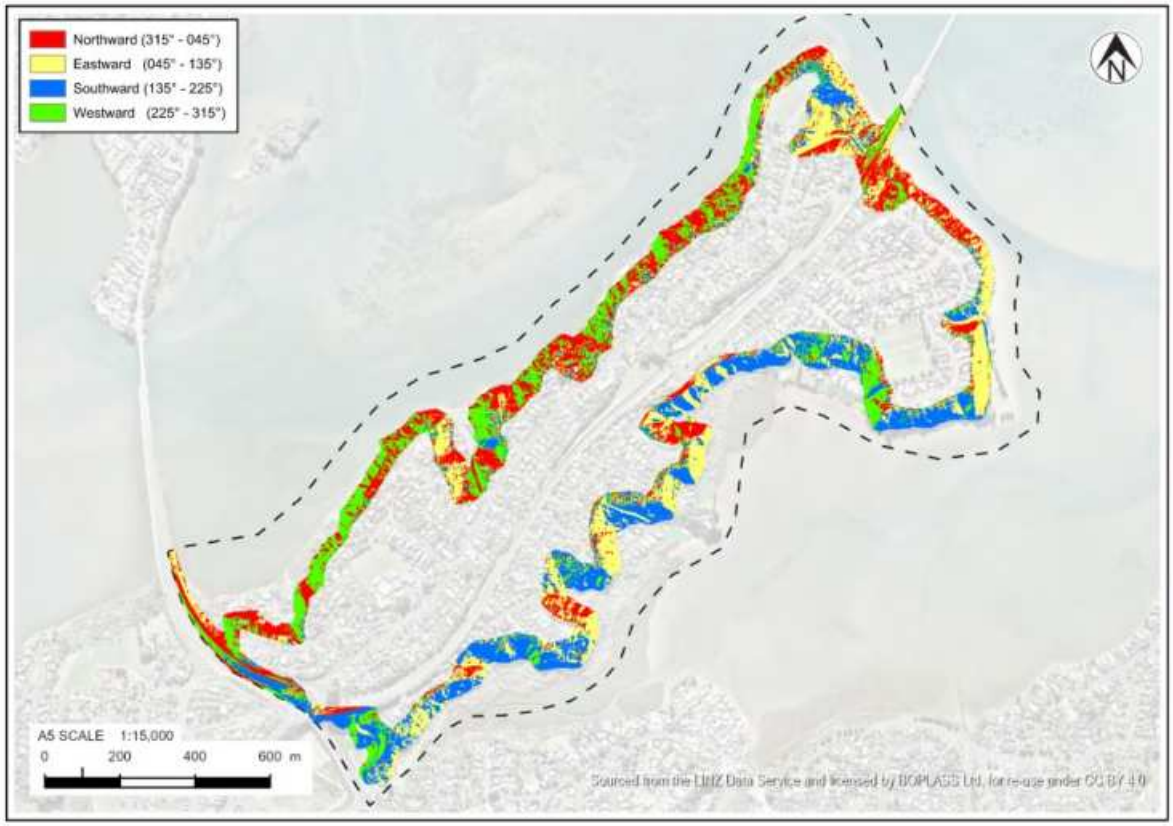



*Figure 1.5: Aspect of steep slopes across Study Area.*

# 2 Geological and geomorphic setting

## 2.1 Geological setting

The published geology of the Study Area (Briggs, et al., 1996) indicates that it is underlain by Matua Subgroup sediments (Early to Mid-Pleistocene-age) which are described as terrestrial and estuarine sedimentary deposits. These sediments comprise a wide variety of lithologies including fluvial pumiceous and rhyolitic silts, sands and gravels, lacustrine (diatomaceous) and estuarine muds, lignites and peats, interbedded with airfall tephras and thin distal ignimbrites. The depositional environments associated with these lithologies are known to be highly dynamic and spatially variable. As a result, the sediments comprising the Matua Subgroup do not often form continuous sedimentary layers, instead these sediments often vary both laterally and vertically (Briggs, et al., 1996).

A lithology of note within the Matua Subgroup is the Pahoia Tephra sequence. The Pahoia Tephra sequence, currently an active area of research for academia, is a series of primary and reworked rhyolitic volcaniclastic material that is known to be geotechnically problematic. The Pahoia Tephra sequence along with other layers is known to be highly sensitive and has been an influential factor in several large landslides across the Tauranga region. Similarly to the other Matua Subgroup lithologies, the Pahoia Tephra sequence is highly variable in both thickness and lateral extent (Moon, et al., 2013).

A series of unmapped volcanic ash deposits overly the Matua Subgroup sediments. These ash deposits have variable thicknesses and are known as the Hamilton Ash, Rotoehu Ash and post-Rotoehu Ash tephras (often referred to as “Younger Ashes”).

## 2.2 Geomorphic setting

The Study Area is characterised by an alluvial terrace that is mostly surrounded by the Tauranga Harbour. The outer edges of the terrace generally comprise steep slopes and coastal cliffs. The transition zone between the alluvial terrace and the steep edges is typically characterised by a sharp break in slope. In numerous areas across the Study Area, this break in slope is disrupted by relic landslide headscarps. These relic landslides are often associated with large, scalloped concave landforms that are frequently observed across the Maungatapu Peninsula. The top of slope and base of slope features within the Study Area is generalised in Figure 2.1.

## 2.3 Geotechnical investigations available within Study Area

Figure 2.2 shows the existing, publicly available geotechnical investigation data within the Study Area. As of 31 March 2023, there are 84 publicly available geotechnical investigation data points across the Study Area available on the New Zealand Geotechnical Database (NZGD). Table 2.1 summarises these geotechnical investigation data points.

**Table 2.1: Geotechnical investigation data points available on NZGD (as of 31 March 2023)**

| Geotechnical investigation type | Number of investigation points within Study Area | Investigation depth range (m) |
|---|---|---|
| 1 Machine drilled borehole | 25 | 10 – 60 |
| 2 Cone Penetrometer Test (CPT) | 31 | 7 – 33 |
| 3 Hand Auger borehole | 10 | 3 – 5 |
| 4 Hand Auger borehole and Scala Penetrometer tests | 6 | 1 – 3 |
| 5 Test pits | 12 | 1 – 4 |

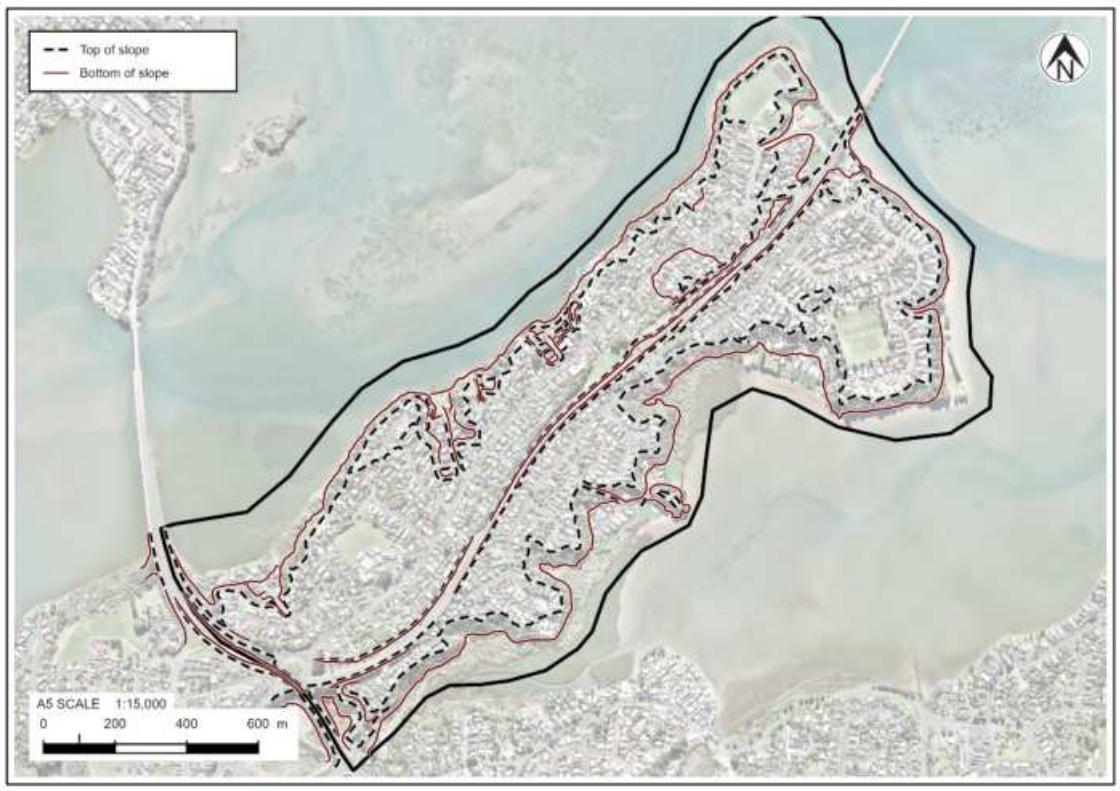



*Figure 2.1: Generalised map showing top and bottom of slope within the Study Area.*

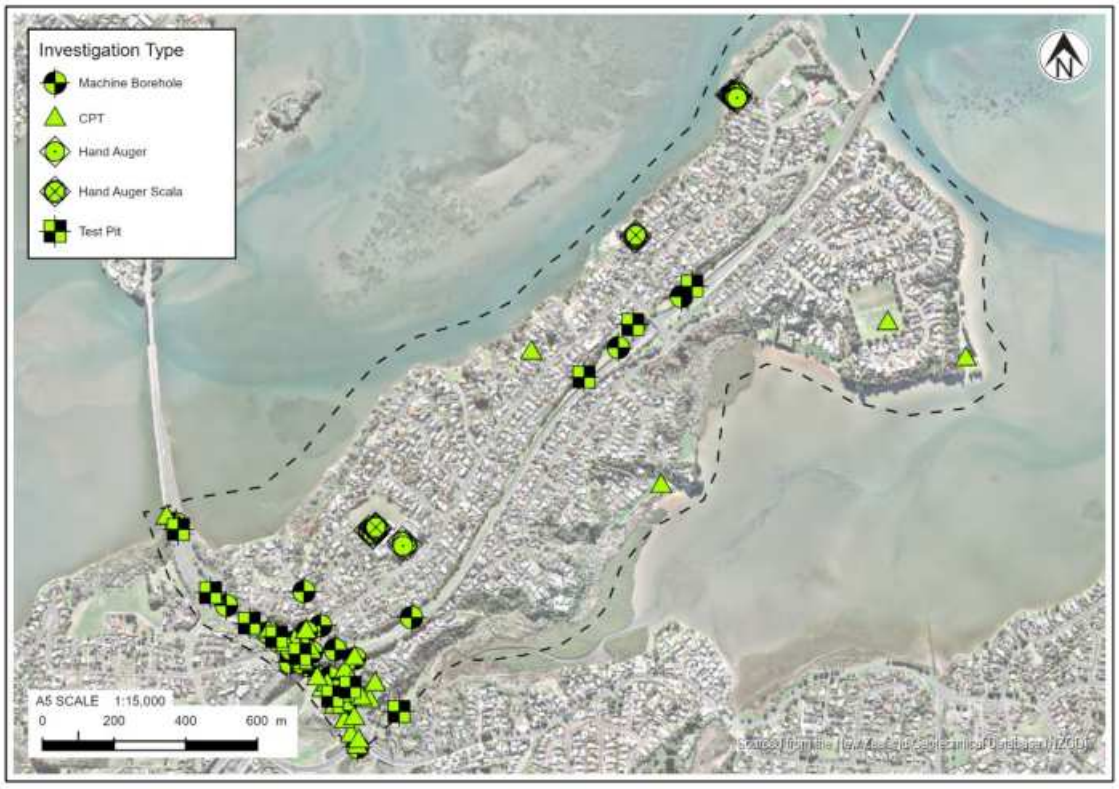



*Figure 2.2: Publically available geotechnical investigations on the New Zealand Geotechnical Database (as of 31 March 2023).*

The majority of the geotechnical investigations are located within the southern extent of the Study Area and are associated with Harini Link/Welcome Bay Link Road (Waka Kotahi New Zealand Transport Agency Project).

Several of the publicly available machine drilled boreholes and test pits were reviewed for this report to provide a general understanding of the ground conditions underlying the Study Area. A model has been developed to describe the sediments comprising the Study Area, from the elevated terrace surface down to the harbour margin (sea level). The generalised ground model based on the publicly available investigation datapoints is provided in Table 2.2. This schematic ground model is also illustrated in Figure 2.3.

**Table 2.2: Generalised ground model for Study Area**

| Geological unit | | Description |
|---|---|---|
| Younger Ash | | Where earthworks or large landslides haven't occurred in the Study Area (on the elevated terrace surface), the near surface soils are typically associated with volcanic airfall deposits that commonly form fine grained soils (SILT and sandy SILT). These soils are generally brown to brownish orange and several metres thick. |
| Rotoehu Ash | | This ash unit is generally coarser grained than the Younger Ashes and is usually described as SAND or silty SAND. This unit is typically whitish-grey and directly overlies the Hamilton Ash. The thickness of the Rotoehu Ash layer varies across the Tauranga region with 0.3 to 2.4 m documented. |
| Hamilton Ash | | The Hamilton Ash unit represents a series of older volcanic airfall deposits that generally underlie the Rotoehu Ash. This unit is characterised by fine grained soils (SILT) often with a higher clay content compared to the Younger Ash. The Hamilton Ash is easily identified by a paleosol which has formed at its upper surface (this unit is often described as the "chocolate brown" layer). The thickness of this unit is variable but generally less than 2.5 m. |
| Matua Subgroup | Upper Matua Subgroup | The Matua Subgroup forms the majority of the Study Area and can be observed within the steep slopes and coastal cliffs surrounding the Study Area. For the purposes of this report Matua Subgroup has been differentiated into 'Upper' and 'Lower'.<br>The Upper Matua Subgroup sediments that underly the Hamilton Ash are characterised by variable fine grained and coarse-grained sediments. The sedimentary layers within Upper Matua Subgroup comprise alternating layers of sand and silt with varying clay contents. Upper Matua Subgroup also includes the Pahoia Tephra sequence described in Section 2.1.<br>Upper Matua Subgroup generally makes greater than 50% of the slope profiles comprising the steep land and coastal cliffs. |
| | Lower Matua Subgroup | In the Study Area, Lower Matua Subgroup is predominantly characterised by granular sediments. Based on the publicly available geotechnical investigation data, the lower sections of the steeply sloping land and coastal cliffs across the Study Area comprise thick, coarse-grained sediments that extend below high tide mark. The main difference between this unit and Upper Matua Subgroup is the absence of extensive fine-grained sediments and the Pahoia Tephras. |

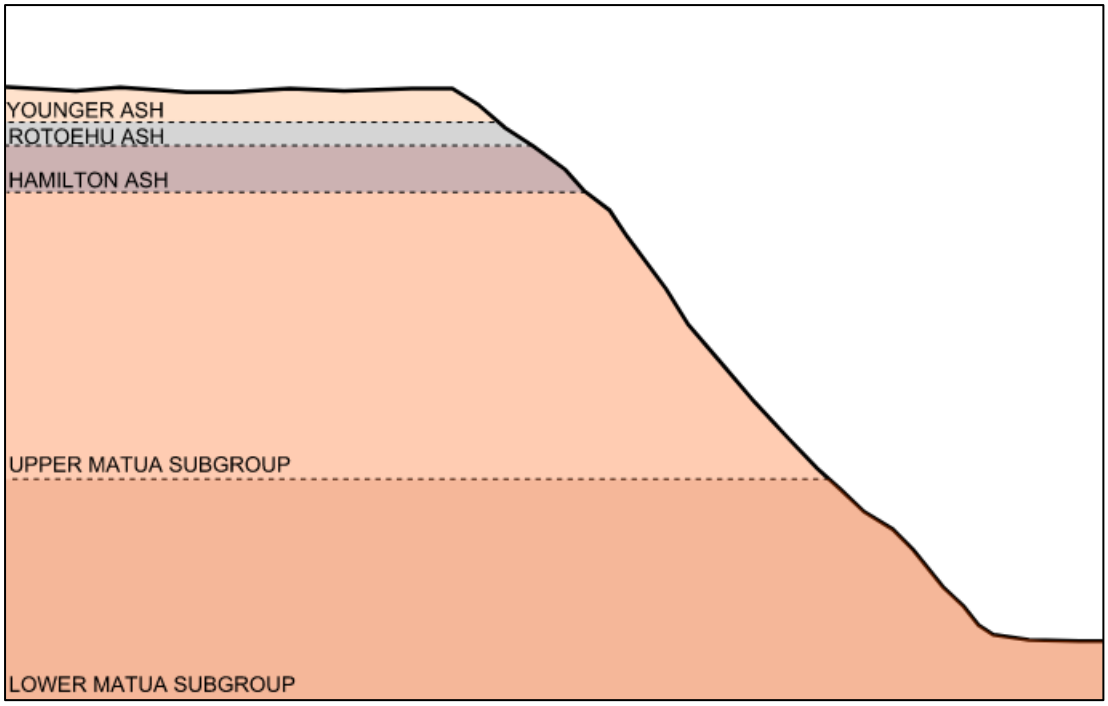



*Figure 2.3: Schematic ground model for sloping land associated within the Study Area.*

# 3 Literature review

## 3.1 General

Two theses and several reports were reviewed as part of this project to provide a better understanding of the geology and landslides occurring across the Maungatapu Peninsula. The following documents were reviewed:

- A geotechnical characterisation of volcanic soils in relation to coastal landsliding on the Maungatapu Peninsula (Oliver, 1997).
- The nature and causes of coastal landsliding on the Maungatapu Peninsula (Bird, 1981).
- Tauranga Storm event of 18 May 2005: Landslip issues (Hegan and Wesley, 2005)
- Study into the decommissioning of soak-holes in the Otumoetai Area (T+T, 2006)
- Maungatapu Road Slips: The present status of the slips below 310, 312A, 320, 326 and 330 (Ice Geo & Civil, 2023).
- Egret Avenue Landslides – Conceptual Remedial Options (T+T, 2023).
- Inspection of observed Slope Instability – 190 Te Hono Street (Aurecon, 2023).
- Inspection of observed Slope Instability – 3 Te Hono Street (Aurecon, 2023).
- Inspection of observed Slope Instability – 15 & 16 Mersea Place (Aurecon, 2023).

Relevant information from each of these documents is summarised in the following subsections.

## 3.2 A geotechnical characterisation of volcanic soils in relation to coastal landsliding on the Maungatapu Peninsula

A Master of Science thesis completed by Robert Oliver in 1997 titled "A geotechnical characterisation of volcanic soils in relation to coastal landsliding on the Maungatapu Peninsula, Tauranga, New Zealand" provides valuable information regarding the land instability across the Study Area. This thesis was reviewed as part of this project.

The Oliver thesis was funded by the Tauranga District Council following three landslides that occurred on Te Hono Street in May 1995 after a prolonged period of heavy rain. Rainfall records from the NIWA weather station at the Tauranga Aero AWS (Tauranga Airport, 5.5 km north of the site) were analysed as part of the thesis and were correlated with the landslides that occurred on Te Hono Street in 1995. Oliver stated that the average yearly rainfall between 1898 to 1978 was 1,342 mm and during this time period, the maximum recorded annual rainfall was 1,897 mm in 1916. The annual rainfall for 1995 (year of the Te Hono landslides) was 1,620 mm which was approximately 20% above the average annual rainfall.

During 1995, there were three separate periods of higher than average rainfall (March to April, July and November). Of note was the significant rainfall volume in April, which recorded a total of 312 mm (approximately 260% above average). Oliver looked into the daily rainfall magnitudes for March 1995, April 1995 and May 1995 and concluded that there were no daily rainfall events that exceeded the 1 in 2 year recurrence interval rainfall events (equivalent to a daily rainfall total of 101 mm). Oliver then concluded that, the landslides that occurred on Te Hono Street in May 1995 were not driven by singular extreme rainfall events, rather that they occurred following several months of above average rainfall. Oliver also observed this same trend in rainfall data from 1979 which was associated with a large number of landslides that were recorded across the Maungatapu Peninsula. One of the conclusions from the Oliver thesis was that "*…it takes approximately two months of double the average rainfall to produce adverse pore water conditions at the cliff edges where a rainfall event can trigger a piping-triggered block side…*".

Oliver's thesis also discussed the relationship between elevated porewater pressures and a series of aquifers and aquitards underlying the Maungatapu Peninsula. Geotechnical field investigations undertaken as part of the thesis suggested that there is a continuous hydraulic connection of the aquifer systems from the northern end of the peninsula back towards the southern end. The aquitards described by Oliver are believed to be one of the more influential factors causing instability across the Study Area, with groundwater infiltrating down to these layers and then flowing towards the free faces (steep slopes and coastal cliffs) around the outer edge of the peninsula. When the peninsula experiences significant rainfall events or prolonged periods of wet weather, these aquitards cause excessive porewater pressures to build within the subsoil profile, resulting in further instability on the outer edges. Oliver also suggested that this phenomenon is exacerbated by the disposal of stormwater via soakage across the Study Area.

Oliver described the Study Area as a "progressively eroding headland" that has experienced an extensive landsliding history. Initially, during the Late Pleistocene (126,000 – 781,000 years ago) when sea-levels were significantly lower than present, evidence suggests that the Tauranga area was being incised by large, braided river systems. It is thought that these river systems could have produced the larger scale landslides seen across the Maungatapu Peninsula (such as the relic headscarps at Fantail Drive and Egret Avenue) due to toe erosion by river channels. As sea level increased during the Holocene period (the last 12,000 years), the braided rivers were submerged and the frequency of the large-scale landslides decreased. Smaller scale landslides around relic headscarps and coastal cliffs then became more common within the Study Area. Urbanisation of the peninsula then began in the late 1960s which led to a greater frequency of recorded coastal landslides. Oliver suggests that most of the failures across the peninsula have become more prominent as vegetation density and size has increased. This theory is based on the increased root mass associated with the vegetation impeding drainage from the slopes across the peninsula and in turn increasing porewater pressures within the sediments (increased porewater pressures increase driving forces for landslides to occur). It is also likely that, before urbanisation, Tangata Whenua and/or farmers did not report landslides that were occurring across the peninsula.

Oliver used the terminology of Cruden and Varnes (1996) to describe the types of landslides and failure mechanisms across the Maungatapu Peninsula. From field investigations undertaken during the thesis, four major landslide failure types were delineated: larger scale block failures, piping-triggered block failures, wave erosion triggered block failures, and colluvium/topsoil failures. These failures are described in Table 3.1.

**Table 3.1: Summary of landslide failure mechanisms across Maungatapu Peninsula (Oliver, 1997)**

| Failure type | Description |
|---|---|
| Larger scale block failure | Large landslides identified from existing headscarp geomorphology (Fantail Drive and Egret Avenue). Possibly driven by historic braided river systems during lower stand sea-levels. Geomorphic features suggest that these landslides were retrogressive in nature and often increase in size due to downcutting of streams draining off the peninsula surface. |
| Piping-triggered block failure | Erosional structures (such as exfoliation defects, fractures, bioturbation and buried stream channels) within the soil structure underlying the peninsula allow rainfall to permeate through various soil units. The influx of rainwater into the soil profile increases porewater pressures in confined layers due to variable permeability. Increasing porewater pressures within sensitive soil layers can result in piping-type failure that can quickly expand laterally, removing support from the soil mass. Loss of support due to piping erosion can result in block sliding downwards then outwards along circular paths. |

| Failure type | Description |
|---|---|
| Wave erosion triggered block failure | An uncommon failure on the peninsula, typically associated with the north eastern edge of the peninsula where wave energy is the greatest. This failure type often starts as a small colluvium/topsoil failure at the base of a slope/cliff. Vegetation root clumps cause cavities to form as wave erosion removes toe support from slope/cliff. Cavities form as a result of erosion causing overhanging soil to fail. In most cases, cavities can result in colluvium/topsoil or shallow block failures occurring. |
| Colluvium/topsoil failure | The most common failure type on the peninsula that can involve all or part of the slope/cliff face. Involves shallow failures incorporating topsoil and shallow soil profile, most often mobilised by root mass associated with vegetation. Failures can be driven by toe erosion or overland stormwater flow from the slope above. |

Schematic representations of these failure types sourced from the Oliver thesis are provided in Appendix A of this report.

Oliver's theory on successive months of above average rainfall influencing landslides on the Maungatapu Peninsula was also suggested in a report produced by T+T in 1980. This T+T report, titled "Omokoroa Point Land Stability Investigation", also provided evidence to suggest that at least two months of above average rainfall caused an increase in landsliding on the Omokoroa Peninsula (the Omokoroa Peninsula comprises the same geological units as the Study Area).

## 3.3 The nature and causes of coastal landsliding on the Maungatapu Peninsula

An earlier Master of Science thesis completed by Bird in 1981 titled "The nature and causes of coastal landsliding on the Maungatapu Peninsula" also provided findings that aligned with the findings of Oliver's thesis (1997). The two following statements have been sourced from the Bird (1981) thesis:

- "*Stability analyses showed that individual failures are triggered largely by the occurrence of high pore water pressures in the lensoidal silt sands/sandy muds above the clay maker bed"*.
- "*In summary, the pore water pressure rises appear to be generate after long wet periods, which culminate in short, intense rainfalls*".

## 3.4 Tauranga Storm event of 18 May 2005: Landslip issues

Hegan and Wesley (2005) published a report on landslides that occurred in the Tauranga area following an intense storm in May 2005. The following text has been sourced from the report that supports the theories raised by previous academics/engineers:

"*The prime cause of the slips was (rather obviously) the extreme rainfall event of 18th May. Our understanding of this event is that it was approximately a 100 year event, which is a very severe event. We have been informed that there was also a period of heavy rain early in May, which was probably a significant contributing factor. Recent preceding rain would tend to saturate the ground and raise water levels, and thus increase the likelihood of slips during the storm that followed on 18th May. Many verbal reports of local residents who observed the storm from their properties speak of large "rivers" and "waterfalls" on their properties, which appear to confirm the very extreme nature of the rainfall at the time*".

## 3.5 Study into the decommissioning of soak-holes in the Ōtūmoetai Area

Another report of note that was commissioned by TCC in 2006 that is also relevant to this project/Study Area is the T+T report titled "Study into the Decommissioning of Soak-holes in the Ōtūmoetai Area". T+T was tasked with studying the effects of stormwater disposal via soak-holes on

the stability of slopes in Bellevue, Brookfield, Judea and Ōtūmoetai following a storm event in May 2005. It is important to note that the geological setting of these suburbs in Tauranga is very similar to the Maungatapu Peninsula.

The T+T soak-hole decommissioning report found that the major factor on the stability of slopes in the Ōtūmoetai was their height and gradient. The report also noted that the near surface geology capping the Ōtūmoetai peninsula generally followed the ground surface topography and that any water supplied into the ground would likely flow sub-parallel to surface water flows. T+T found that slopes greater than 5 m high with gradients greater than 25° were generally vulnerable to instability. These vulnerable slopes were further differentiated into major (greater than or equal to 15 m) and minor slopes (less than 15 m).

As part of the project, T+T mapped soil exposures in landslide headscarps related to the May 2005 event, drilled geotechnical boreholes to examine the variability of the shallow geology, analysed the geomorphology of the subject area, determined catchment boundaries for vulnerable slopes and investigated the storage capacity of the Rotoehu Ash later in relation to soak-hole discharge during major storm events. One of the main conclusions from the report issued by T+T was that the primary contributor to the porewater pressures in the areas of landsliding in Ōtūmoetai was overland stormwater flow. Soak-holes were not considered the primary contributor, however, they still had a detrimental effect on slope stability. As a result, the report outlined zones in Ōtūmoetai where decommissioning of soak-holes was recommended (including areas where groundwater was likely to flow towards vulnerable slopes).

## 3.6 Numerous recent landslide reports associated with the Study Area

As mentioned in Section 1, several large landslides have occurred within the Study Area over the past year. Reports have been commissioned by TCC to address some of the larger landslides that have occurred, with the intention of providing information on building safety and some guidance on risk mitigation. Table 3.2 summarises the key points from these recent landslide reports.

**Table 3.2: Summary of recent landslide reports associated with the Study Area**

| Report Title | Company | Date of landslide event(s) | Summary |
|---|---|---|---|
| Maungatapu Road Slips: The present status of the slips below 310, 312A, 320, 326 and 330. | Ice Geo & Civil | 320 and 326: 29/07/2022<br><br>326 and 330: 07/08/2022<br><br>312A: 02/2023<br><br>310: 11/2021, 08/2022 and 02/2023 | First landslide (Landslide 1) occurred on 29 July 2022 affecting 320 Maungatapu Road. Landslide was 10 m wide and came within 6 m of dwelling located on the site. Landslide extended into neighbouring property (326).<br><br>By 7 August 2022, the landslide at 320 regressed closer to the dwelling and undermined recently constructed deck. Landslide extended further into 326. During this time, another landslide (Landslide 2) occurred between 326 and 330.<br><br>Landslide 1 and 2 have continued to move in a sporadic manor with both landslides widening and headscarps regressing.<br><br>A third landslide occurred at 310. Started as a small failure in November 2021. Landslide increased in size dramatically in August 2022. Landslide was approximately 6 m from the top of the slope at this time and was described as having a steady water |

| Report Title | Company | Date of landslide event(s) | Summary |
|---|---|---|---|
| | | | flow from the landslide scarp. A large hole with "milky" water discharge was observed in August 2022. Hole extended in size resulting in soil above collapsing (cyclic process). Author of report considered that supply of groundwater to the landslide was controlling enlargement and collapse cycle. Owners of neighbouring property (304) noted "*Two springs in the slope below their property that flowed clear water continuously, stopped flowing after the August 2022 failures below 302 and 310*", author of report suggests that groundwater flow paths have changed since the August landslide.<br><br>A fourth landslide (Landslide 4) occurred at 312A in February 2023. It comprises a very active 10 m high slip face, headscarp is approximately 9.3 m from the dwelling. Arcuate failure observed in lower portion of landslide, feature appeared to be growing in size and could be related to subsurface flow.<br><br>Cause of landslides considered to be high rainfall. Report relates back to Oliver thesis (1997) and the theory of two successive months of above average rainfall driving the landslides. |
| Egret Avenue Landslides – Conceptual Remedial Options | Tonkin + Taylor | 28/01/2023 | Two landslides occurred above Egret Avenue affecting 8 properties (3 properties above the landslide and 5 below):<br>• 9 Egret Avenue.<br>• 11 Egret Avenue.<br>• 15 Egret Avenue.<br>• 16 Egret Avenue.<br>• 18 Egret Avenue.<br>• 19 Te Mutu Crescent<br>• 21 Te Mutu Crescent<br>• 23A Te Mutu Crescent<br>Landslides occurred on night of 28 January.<br><br>Both landslides were suggested to be "piping triggered block failure" in accordance with the categorisation developed by Oliver (1997).<br><br>Large debris flow generated from Landslide 1.<br><br>There is an erosional cavity associated with Landslide 1 that extends back into the headscarp. Turbid groundwater observed flowing from landslide. |
| Inspection of observed Slope Instability – 190 Te Hono Street | Aurecon | 28/01/2023 – 30/01/2023 | Landslide occurred on 15 m high slope with the headscarp being approximately 10 – 12 m from dwelling on site. Headscarp was described as near vertical and approximately 6 m high.<br><br>Ponded water and uncontrolled stormwater runoff from the dwelling on site observed near headscarp. |

| Report Title | Company | Date of landslide event(s) | Summary |
|---|---|---|---|
| | | | Stormwater was flowing down and adjacent to affected slope. |
| Inspection of observed Slope Instability – 3 Te Hono Street | Aurecon | 28/01/2023 – 30/01/2023 | Landslide occurred approximately 7 m away from deck associated with dwelling on property. Tension cracks were observed between landslide headscarp and dwelling. No dimensions were given for the landslide size. |
| Inspection of observed Slope Instability – 15 & 16 Mersea Place | Aurecon | 28/01/2023 – 30/01/2023 | Majority of landslide positioned on 15 Mersea. 16 Mersea located immediately adjacent to landslide. Headscarp was approximately 1 – 2 m from the deck associated with dwelling. No dimensions were given of landslide size. Water seepage and small erosional tomos were observed 2 – 3 m below headscarp.<br><br>Dwelling at 15 Mersea Place approximately 17 m away from headscarp. Deck associated with dwelling at 16 Mersea directly above landslide. No evidence was observed to suggest evacuating residents. |
| Inspection of observed Slope Instability – 16 Mersea Place | Aurecon | 24/02/2023 | This report was issued following continued landslide movement and signs of wider instability at the subject site.<br><br>Additional landslides had occurred on the slope below the dwelling on the property and some property damage was observed.<br><br>It was concluded that there was active instability at the subject property and that "*given the sensitive nature of the soils and their tendency to fail with no warning, the risk to life is not considered acceptable for occupancy within the property*."<br><br>The report also recommended that a pool positioned adjacent to the house be drained immediately to reduce the load on the slope and eliminate the risk of pool water leakage affecting the slope stability. |

# 4 Mapped relic landslide features within the Study Area

The Tauranga City Council GIS MAPI platform provides a publicly available relic landslide feature dataset that extends across the Tauranga City Council area. These relic landslides were mapped by Houghton and Hegan in 1979, and Bell, Richards and Thomson in 2001. Figure 4.1 shows the mapped relic landslides within the Study Area.

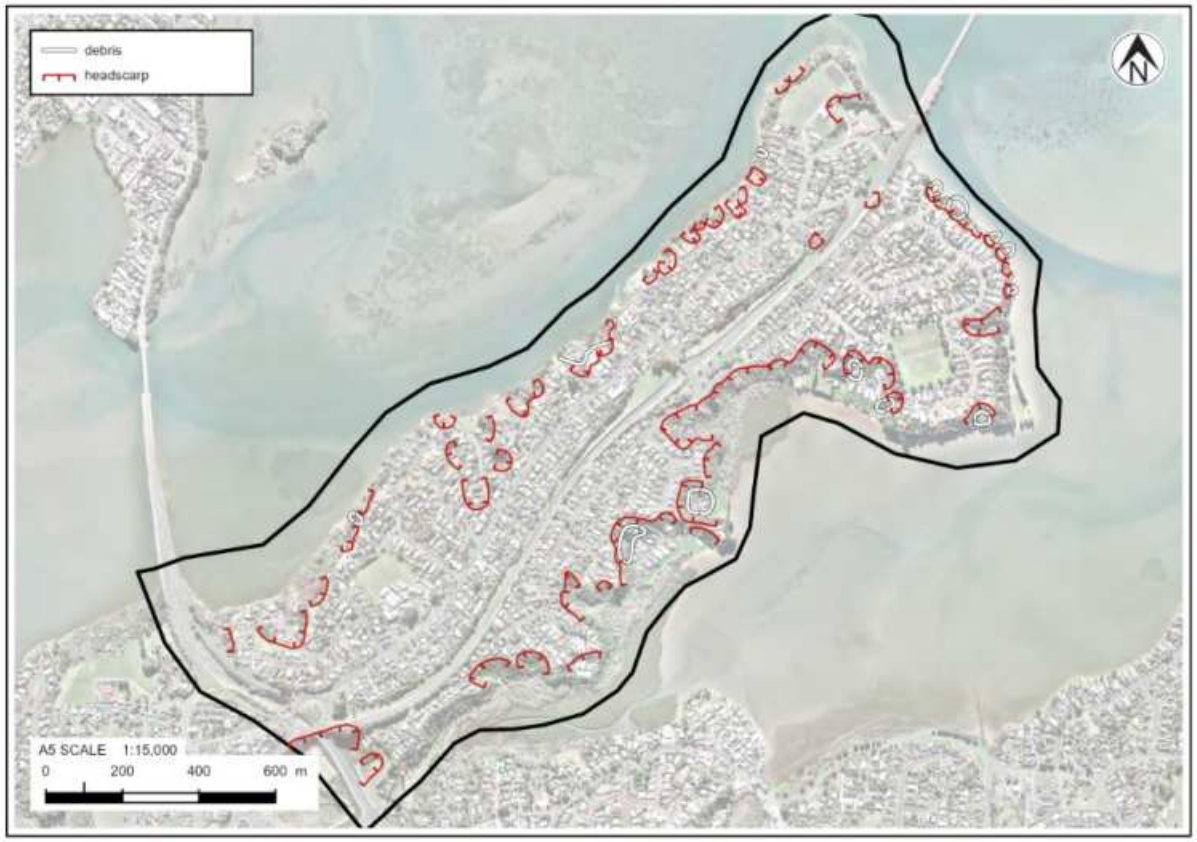



*Figure 4.1: Relic landslides mapped within the Study Area (sourced from TCC MAPI platform).*

# 5 Toka Tū Ake Earthquake Commision insurance claims within the Study Area

In New Zealand, if a landslide damages private property and the private property is insured, the land damage may be covered by Toka Tū Ake Earthquake Commission (EQC). EQC has provided T+T with a record of all EQC insurance claims that have occurred within the Study Area between April 2000 and September 2022. During this 22-year period there have been 190 no. EQC claims for landslides within the Study Area. There have been no documented accounts of earthquake-induced landslides occurring within the Tauranga area over the past 23 years so we assume that these EQC claims are associated with rainfall-induced instability. A colour coded density map of the 190 no. EQC claims within the Study Area is provided in Figure 5.1.

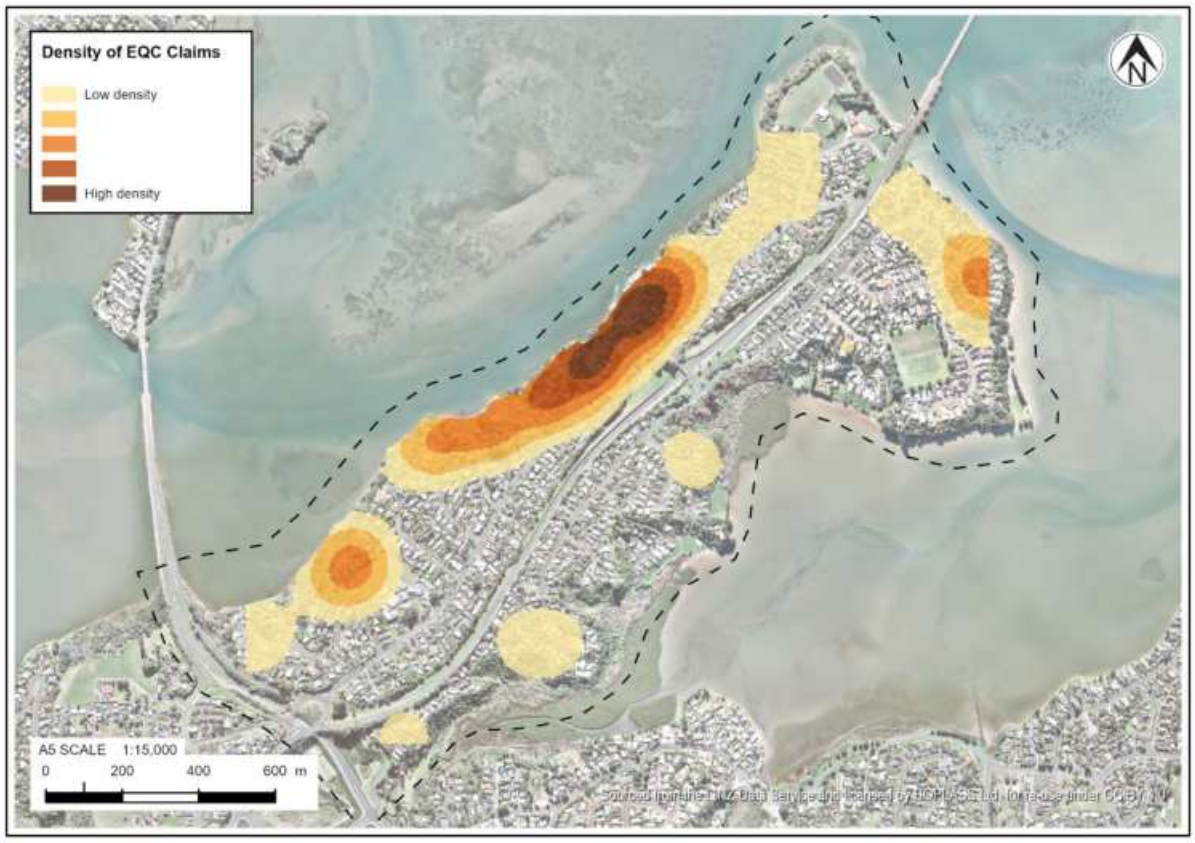



*Figure 5.1: Spatial density of EQC claims within Study Area (note that areas that are not coloured represent no claims).*

It is likely that there were more landslides within the Study Area over the past 23 years, but they would not have been recorded if either a claim wasn't made, or if they affected areas that were not covered by EQC.

**Table 5.1: Frequency of EQC claims since 01/01/2000**

| Year | Number of EQC claims |
|---|---|
| 2000 | 11 |
| 2001 | 3 |
| 2002 | 0 |
| 2003 | 0 |
| 2004 | 21 |
| 2005 | 65 |
| 2006 | 13 |
| 2007 | 5 |
| 2008 | 4 |
| 2009 | 1 |
| 2010 | 9 |
| 2011 | 14 |
| 2012 | 1 |
| 2013 | 4 |
| 2014 | 2 |
| 2015 | 0 |
| 2016 | 0 |
| 2017 | 20 |
| 2018 | 4 |
| 2019 | 2 |
| 2020 | 4 |
| 2021 | 1 |
| 2022[1] | 6 |
| 2023[2] | 14 |

[1]Data only available up until September 2022.

[2]Data from 2023 only related to claims T+T has worked on between January and March 2023 (these claims are not included in the density Figure 5.1).

Table 5.1 shows that the number of claims across the peninsula in 2005 is a significant outlier to the dataset. In 2005, there were 65 EQC claims within the Study Area. However, 51 of these claims are associated with the extreme weather event that caused significant flooding and landslides across the western Bay of Plenty Region (including the Matata Debris flows) on 18 May 2005.

# 6 Historic rainfall

Two rainfall datasets have been interpreted and related to the Study Area to identify significant rainfall events. One of the datasets is associated with a NIWA weather station located at the Tauranga Airport (Tauranga Aero Aws) and the other is a Tauranga City Council owned weather station at Ila Place, Hairini. Monthly rainfall data was retrieved from the Tauranga Airport station for the past 32 years (Table 6.1) and from the Ila Place station for the past 15 years (Table 6.2).

**Table 6.1: Monthly rainfall totals since June 1990 (Tauranga Aero Aws Station)**

| Year | Rainfall (mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | JAN *70.8[1]* | FEB *82.6[1]* | MAR *95.1[1]* | APR *128.5[1]* | MAY *116.6[1]* | JUN *126.1[1]* | JUL *132.3[1]* | AUG *110.4[1]* | SEP *88.7[1]* | OCT *84.7[1]* | NOV *68.1[1]* | DEC *101.9[1]* | Total |
| 1990 | - | - | - | - | - | 145.4 | 158 | 178.8 | 59.6 | 122 | 92.7 | 22.2 | > 778.7 |
| 1991 | 63 | 95.6 | 58.4 | 122 | 43.6 | 105.2 | 102 | 129 | 187.2 | 75.8 | 55 | 42 | 1078.8 |
| 1992 | 167.4 | 68.4 | 47.2 | 52.4 | 108.2 | 104 | 124.6 | 128 | 97 | 139.6 | 43.8 | 189.4 | 1270 |
| 1993 | 13.8 | 71.8 | 77 | 65.8 | 50.2 | 125.2 | 32.6 | 85.4 | 38.2 | 21.7 | 84.4 | 63 | 729.1 |
| 1994 | 53.8 | 138.8 | 48.2 | 128.6 | 45.6 | 95.4 | 170 | 112.2 | 125 | 135.2 | 19.8 | 15.6 | 1088.2 |
| 1995 | 52.8 | 70.6 | 157.6 | 296 | 141.6 | 135 | 183.8 | 116.2 | 57.4 | 95.2 | 204.2 | 111.8 | 1622.2 |
| 1996 | 36.8 | 48.4 | 122 | 183.8 | 92 | 125.8 | 196.2 | 169 | 128.8 | 44.2 | 38.4 | 262.6 | 1448 |
| 1997 | 35.8 | 74.2 | 138.2 | 49 | - | 210 | 41.4 | 57 | 163.6 | 81.8 | 23.6 | 35.8 | > 910.4 |
| 1998 | 46.8 | 70.6 | 114.2 | 49.4 | 101 | 111.4 | 314.8 | 93 | 54.6 | 85.6 | 86.6 | 131 | 1259 |
| 1999 | 119.4 | 11.4 | 72.4 | 103.4 | 32.2 | 99 | 136.8 | 88.8 | 63.6 | 46.6 | 160.2 | 68.8 | 1002.6 |
| 2000 | 69.2 | 11.6 | 68.6 | 311.2 | 87 | 79.2 | 67.9 | 190.4 | 75.6 | 64 | 85.2 | 40.4 | 1150.3 |
| 2001 | 36.4 | 267.8 | 60 | - | 194.8 | 39.4 | 38.4 | 95.4 | 91.2 | 102.4 | 100.2 | 208 | > 1234 |
| 2002 | 72.2 | 30.2 | 35.4 | 105 | 55.4 | 109.8 | 107.2 | 46.8 | 64.6 | 41 | 33.8 | 45.6 | 747 |
| 2003 | 98.6 | 100.8 | 132.4 | 105.6 | 80.8 | 104.8 | 52.6 | 74.6 | - | 108.8 | 48 | 72.6 | > 979.6 |
| 2004 | 35.4 | 237.2 | 15 | 229.2 | 192.4 | 114.4 | 178 | 65 | 81.7 | 93.8 | 51.8 | 136.3 | 1430.2 |
| 2005 | 23.2 | 55.6 | 103.2 | 14 | 633.8 | 89.6 | 161.6 | 76 | 73 | 192.6 | 70 | 188.6 | 1681.2 |
| 2006 | 98.6 | 66 | 109.4 | 203.4 | 77.4 | 51.4 | 80 | 125.9 | 50.4 | 77.2 | 60.2 | 49.6 | 1049.5 |
| 2007 | 105.8 | 100 | 191 | 86 | 26.6 | 101.2 | 231.1 | 83.2 | 51.9 | 75.6 | 38.8 | 61.6 | 1152.8 |
| 2008 | 40.6 | 69.4 | 94.8 | 146.4 | 116 | 147.6 | 224 | 145.2 | 54.8 | 72.4 | 39 | 85.4 | 1235.6 |
| 2009 | 40.6 | 190.2 | 130.3 | 57.4 | 71.4 | 171.2 | 145.4 | 96.6 | 93.2 | 152.4 | 11.8 | 72.2 | 1232.7 |
| 2010 | 178.2 | 10 | 16.8 | 26.6 | 254.2 | 201.5 | 51.8 | 274.4 | 139.5 | 23.4 | 35.8 | 113.2 | 1325.4 |
| 2011 | 347.2 | 9.2 | 156.4 | 225 | 173.2 | 160.8 | 94.4 | 71.4 | 37.2 | 134.1 | 13.2 | 275.8 | 1697.9 |
| 2012 | 62 | 77.6 | 157.6 | 47 | 114.2 | 36.2 | 327.6 | 148 | 68.3 | 57.6 | 26.8 | 79.3 | 1202.2 |
| 2013 | 4 | 30.8 | 20.2 | 284.2 | 118.8 | 140.2 | 61.4 | 69.8 | 93.2 | 15 | 65.2 | 149 | 1051.8 |
| 2014 | 50 | 64 | 43 | 224.8 | 28.4 | 229 | - | - | - | 37.8 | 35.4 | 145.2 | > 857.6 |
| 2015 | 8.4 | 43.8 | 77.4 | 116.2 | 95.4 | 35.2 | 91 | 150.8 | 92 | 27.8 | 88 | 18.2 | 844.2 |
| 2016 | 104.2 | 144.6 | 144.6 | 87.4 | 88.6 | - | 153.6 | 75.4 | 166.2 | 54.8 | 77.8 | 44.4 | > 1141.6 |
| 2017 | 36.4 | 154 | 275.2 | 293.4 | 153.8 | 66.4 | 124 | 159 | 184.6 | 162 | 49 | 28.8 | 1686.6 |
| 2018 | 136 | 153 | 85 | 119 | 70.8 | 195.8 | 93.4 | - | 33.4 | 78.8 | 112.8 | 278.2 | > 1356.2 |
| 2019 | 15.6 | 19 | 53.2 | 91.6 | 47.4 | 51.8 | 151.8 | 73.6 | 96.4 | 91 | 38.2 | 57.4 | 787 |
| 2020 | - | 11.2 | 41 | 16.4 | 57 | 262.4 | 85 | - | 28 | 23.8 | 106 | 18.8 | > 649.6 |
| 2021 | 17.4 | 63.4 | 35 | 45.2 | 112.8 | 135.8 | 122 | 42.2 | 109.8 | 125.6 | - | 116.2 | > 925.4 |
| 2022 | 26.2 | 82.7 | 163 | 97 | 151.4 | 256.3 | - | 91.4 | - | 134.7 | 182.2 | 137.2 | > 1332.1 |

[1]Average monthly rainfall (past 23 years).

[2]Red cells indicate above average rainfall, yellow cells indicate more than double the average rainfall.

[3]Cells with (-) represent months where there was either no rainfall or an error with the data.

**Table 6.2: Monthly rainfall totals since March 2008 (Ila Place Station)**

| Year | Rainfall (mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | JAN 82.2[1] | FEB 147.6[1] | MAR 118.8[1] | APR 133.7[1] | MAY 117.5[1] | JUN 160.9[1] | JUL 133.9[1] | AUG 129.7[1] | SEP 128.5[1] | OCT 95.0[1] | NOV 63.8[1] | DEC 108.8[1] | Total |
| 2008 | - | - | 97.4 | 215.6 | 74.6 | 176.6 | 246.6 | 154.6 | 69.6 | 65.8 | 37.8 | 99.8 | 1238.4 |
| 2009 | 48.0 | 147.6 | 194.6 | 57.8 | 82.4 | 196.6 | 143.2 | 101.4 | 104.0 | 144.2 | 17.8 | 63.6 | 1301.2 |
| 2010 | 165.2 | 17.4 | 21.4 | 25.4 | 233.8 | 179.2 | 69.6 | 364.6 | 324.8 | 42.4 | 30.4 | 62.4 | 1536.6 |
| 2011 | 313.6 | 15.0 | 188.0 | 45.4 | 219.2 | 206.2 | 76.0 | 58.6 | 48.2 | 178.2 | 22.8 | 318.0 | 1689.2 |
| 2012 | 81.0 | 124.0 | 190.4 | 57.8 | 132.2 | 46.0 | 217.0 | 171.6 | 81.0 | 94.4 | 31.4 | 108.6 | 1335.4 |
| 2013 | 11.4 | 43.8 | 38.8 | 283.8 | 142.4 | 175.6 | 55.0 | 93.6 | 122.2 | 42.6 | 100.2 | 74.8 | 1184.2 |
| 2014 | 35.6 | 75.2 | 49.2 | 232.0 | 56.6 | 288.0 | 72.4 | 90.4 | 126.0 | 40.8 | 49.2 | 114.6 | 1230 |
| 2015 | 25.2 | 48.8 | 75.4 | 147.6 | 90.6 | 77.8 | 125.0 | 159.4 | 136.4 | 30.0 | 93.4 | 30.2 | 1039.8 |
| 2016 | 126.6 | 223.8 | 174.6 | 122.2 | 103.8 | 180.0 | 158.0 | 86.8 | 187.8 | 84.4 | 98.4 | 35.6 | 1582 |
| 2017 | 47.0 | 168.8 | 385.6 | 335.0 | 206.2 | 80.0 | 126.8 | 201.2 | 195.4 | 196.6 | 32.8 | 51.4 | 2026.8 |
| 2018 | 198.6 | 200.2 | 96.0 | 193.4 | 91.6 | 191.6 | 115.8 | 148.6 | 43.8 | 91.6 | 109.4 | 299.4 | 1780 |
| 2019 | 18.6 | 38.0 | 39.6 | 100.2 | 68.2 | 77.4 | 188.4 | 63.2 | 126.8 | 85.8 | 52.2 | 100.0 | 958.4 |
| 2020 | 15.2 | 9.4 | 56.8 | 47.2 | 64.0 | 275.2 | 48.8 | 86.4 | 30.2 | 31.0 | 56.8 | 19.0 | 740 |
| 2021 | 23.8 | 67.2 | 48.2 | 56.2 | 71.4 | 30.0 | 89.0 | 47.6 | 119.0 | 143.4 | 38.6 | 110.8 | 845.2 |
| 2022 | 40.4 | 72.4 | 125.6 | 85.8 | 126.0 | 233.4 | 276.2 | 117.0 | 212.8 | 154.2 | 185.4 | 144.0 | 1773.2 |
| 2023 | 385.4 | 141.4 | - | - | - | - | - | - | - | - | - | - | - |

[1]Average monthly rainfall (past 15 years).

[2]Red cells indicate above average rainfall, yellow cells indicate more than double the average rainfall.

[3]Cells with (-) represent months where there was either no rainfall or an error with the data.

Both of these rainfall datasets have been graphed to visually show successive months of above average rainfall and are shown in Figure B1 and Figure B2 in Appendix B.

# 7 Tauranga City Council stormwater management zones within Study Area

Tauranga City Council has categorised the Study Area into two stormwater management zone types. These are stormwater reticulation zones and stormwater specific design zones (Figure 7.1). These areas relate to how stormwater is disposed of within the Study Area, predominantly from residential properties. Descriptions of each of these management zones are as follows:

- **Stormwater reticulation area**: This stormwater management zone shows properties that have stormwater reticulation connections available. These properties have systems that were either developed during subdivision or provided by council at some point in time.
- **Stormwater specific design area**: This stormwater management zone allows private properties to discharge stormwater by ground soakage methods. Tauranga City Council Development Standard 5 (DS-5) outlines the requirements for ground soakage methods in this zone, in particular, the requirement for these methods to be designed by a Chartered Professional Engineer. Section 5.7.2 of DS-5 states that "*Disposal of stormwater by ground soakage or ground water recharge is only suitable in some areas of Tauranga (i.e., areas not located near relic slips or plateau edges) and most areas of Mount Maunganui and Papamoa*".

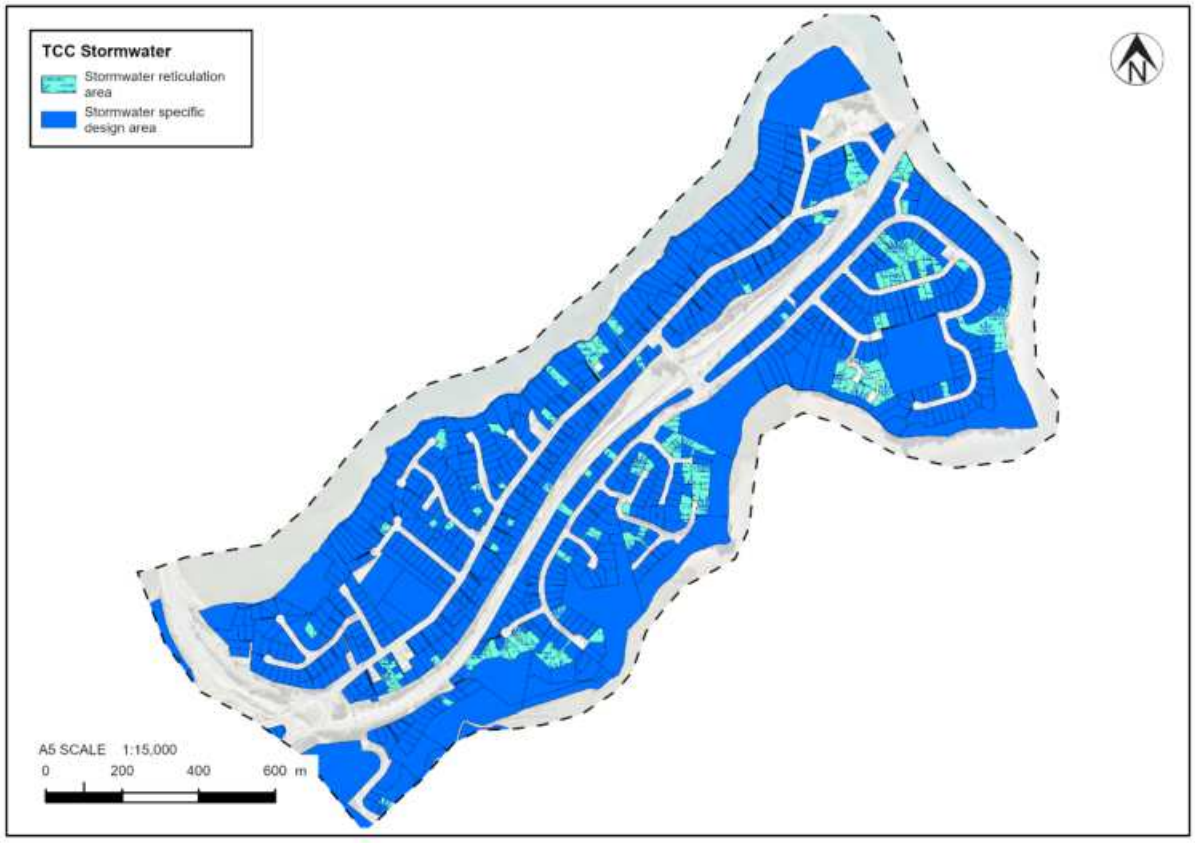



*Figure 7.1: Stormwater management zones within the Study Area (sourced from TCC MAPI).*

# 8 Discussion

Landslides across the Study Area have occurred throughout its history and will occur in the future. As suggested by T+T (1980), Bird (1981) and Oliver (1997), it appears that successive months of above average rainfall influence the frequency and timing of landslides within the Study Area. This is partially corroborated by figures B1 and B2 in Appendix B. For example, during 2017, there were 20 EQC claims and both the Tauranga Aero and Ila Place weather stations recorded seven months of above average rainfall. The highest total annual rainfall recorded across both weather stations was also in 2017.

An outlier to this trend occurred in 2005, when 65 EQC claims were recorded but, the majority of these claims were not preceded by several successive months of above average rainfall. The reason for the 2005 spike in claims was the extreme rainfall event that occurred on 18 May 2005 (267 mm of rainfall was recorded over 24 hours at the Airport weather station, i.e. more than twice the average total May rainfall). This followed a period of heavy rain earlier in the month. The 18 May 2005 event resulted in significant landsliding across the Tauranga area. As outlined in Section 3 of this report, Hegan and Wesley (2005) suggested that it was not the single extreme rainfall event that caused the landslides across the Tauranga area rather a combination of previously elevated rainfall conditions followed by the extreme rainfall event (554.8 mm of rainfall was recorded between 1 May and 18 May 2005 at the Tauranga Airport weather station, approximately five times the average rainfall for the month). Figure 8.1 presents a graph showing the daily rainfall totals for April and May 2005 from the Tauranga Aero Aws weather station (for reference to the May 2005 extreme weather event).

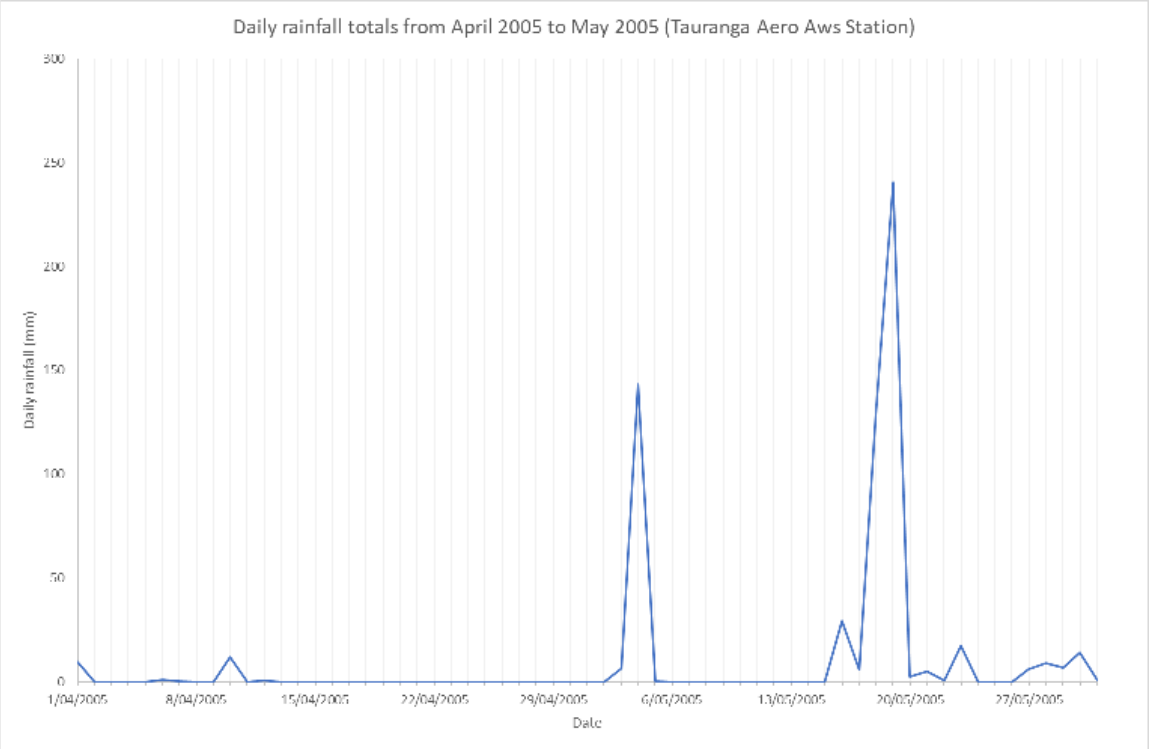



*Figure 8.1: Graph showing daily rainfall amounts from April to May 2005 (sourced from Tauranga Aero AWS weather station).*

We are aware of 12 EQC claims within the Study Area that relate to landslide events that occurred between January 2023 and March 2023 (there may be more EQC claims than noted that have been assessed by other consultancies). Furthermore, as discussed in Section 3, a number of reports have

been issued to TCC addressing several landslides that have occurred within the Study Area during the same time period (some of these landslides will be associated with the 12 EQC claims for 2023).

The 2023 landslide events followed four months of above average rainfall. As shown on Figure 8.2, January 2023 experienced approximately four times the average rainfall which included three days throughout the month which exceeded daily rainfall totals of 50 mm (56.8 mm on 5/01/2023, 73.4 mm on 27/01/2023 and 103.2 mm on 28/01/2023). The combination of both the above average rainfall conditions and high daily rainfall events meet the conditions described by T+T (1980), Bird (1981), Oliver (1997), and Hegan and Wesley (2005) that generate landslides within the Study Area.

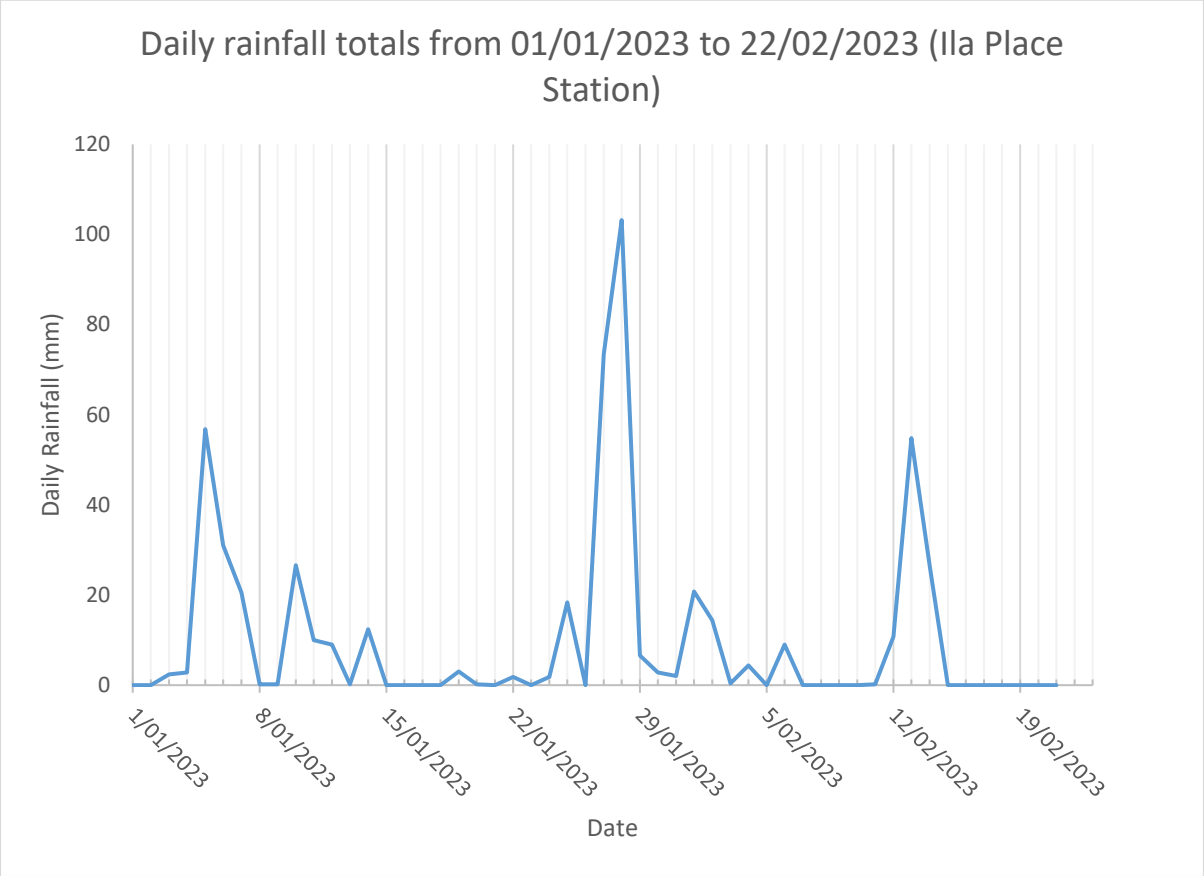



*Figure 8.2: Graph showing daily rainfall amounts from January 01 to February 19 2023 (sourced from Ila Place weather station).*

The spatial density of the EQC claims show some trends, noting that these claims do not represent all of the landslides that have occurred within the Study Area over the past 22 years. One of the most evident trends is the concentration of EQC claims along the western and north-eastern edges of the Study Area (refer to Figure 5.1). Many factors influence slope stability including:

- Morphology (slope height and gradient)
- Geology
- Weathering
- Vegetation type and cover
- Groundwater regime (including buried topography)
- Overland flow regime
- Concentration of rainfall
- Seismicity
- Erosion regime
- Human activities

A number of these factors are difficult to assess, however, T+T (2006) found that slopes steeper than 25° and higher than 5 m were generally more vulnerable to instability than other areas in Ōtūmoetai. Figure 1.4 is a colour coded map of slope gradients around Maungatapu Peninsula. It shows that the north-western and north-eastern slopes of the peninsula tend to be steeper than at other locations and this likely makes them more prone to instability. The highest concentrations of EQC 'landslip' claims are also coincident with these steeper north-western and north-eastern slopes.

The reasons that the overall slope gradients are steeper in north-western and north-eastern areas of the Study Area has not been determined, but they may include slope aspect and the location of harbour channels. There are limited tidal flats on the north-western and north-eastern sides of the peninsula and harbour channels flow in closer proximity to the peninsula slopes in these areas than elsewhere. The locations of the channels in these areas may have had the effect of keeping the peninsula slopes in these areas generally steeper than in other areas. The currents associated with the channels may also have eroded debris more quickly at these locations compared to other areas.

In addition to the above, storms that appear to cause the greatest effect in Tauranga (in terms of rainfall and slope instability) seem to predominantly come from a northern direction (NIWA, 2013). Although toe erosion is not considered to be a major control of instability observed in north-western and north-eastern areas of the Study Area, wave action associated with these storms may also have contributed to the steepness of slopes during their development.

Groundwater dynamics and flows paths are also likely to be important factors in relation to the spatial variability of landsliding across the Study Area. For example, a comment from a resident detailed in the Ice Geo & Civil report "*Maungatapu Road Slips: The present status of the slips below 310, 312A, 320, 326 and 330*" provides evidence to suggest that groundwater flowpaths within the peninsula can change following landslides occurring (as discussed in Section 3). The reason for this is unclear however, landslides may remove low permeability colluvium from the coastal slopes opening new paths and creating preferential flow towards areas of recent instability. Undulations and lateral variations in soil layers may also create preferential groundwater flow paths.

There is also some uncertainty about the relationship between stormwater disposal methods and groundwater dynamics across the Study Area. As suggested by Oliver (1997), the disposal of stormwater via soakage may be increasing the frequency of landslides occurring within the Study Area. However, the report published by T+T in 2006 following the 18 May 2005 storm event noted that that the primary contributor to instability in Ōtūmoetai during the storm was overland stormwater flow and that soak-holes were considered secondary. The report stated that soak-holes still had a detrimental effect on slope stability. There are likely to be many soak-holes across the Maungatapu Peninsula that could be affecting groundwater dynamics and in-turn, landslide frequency. However, further information will need to be gathered to provide a greater understanding about the influence of these soak-holes on groundwater dynamics.

To further understand landsliding across the Study Area it will be important to develop a greater understanding about the underlying geology and groundwater dynamics. Currently, there are very few deep geotechnical investigations (mainly machine drilled boreholes) in the majority of the Study Area. There are numerous geotechnical investigations in the southern extent of the Study Area however, these are primarily associated with the Hairini Link project and it would be prudent to obtain a greater spread of information. In addition, we are unaware of any long-term groundwater level monitoring stations across the Study Area. Developing a greater understanding of groundwater levels and their response following rainfall would be beneficial in understanding their relationship to landsliding here.

# 9 Further work recommendations

Factors controlling slope stability can be complex, however TCC may want to consider undertaking the following actions to develop a greater understanding about the ground beneath the Study Area:

1 Complete several deep cored machine drilled boreholes across the Study Area, particularly in the central and northern extents to better understand the spatial variability of the upper Matua Subgroup sediments. The boreholes should be logged by a suitably qualified geotechnical engineer or engineering geologist. Cone penetration testing could also be undertaken to augment the drilling.

2 Install piezometers with continuous groundwater monitoring equipment across the Study Area within the machine drilled boreholes. This will allow groundwater trends to be observed across the Study Area following significant rainfall events. Ideally, these piezometers would be nested (multi-level) and located in contrasting locations across the Study Area. For example, it would be beneficial to have piezometers in densely and sparsely populated areas to see if the groundwater is influenced by soakage and other stormwater disposal activities.

3 Assessment of stormwater disposal methods. Gathering data on disposal via soakage and via TCC reticulation would be useful to correlate with Item 2. This would require input from private property owners or an extensive review of council owned property files.

# 10 Applicability

This report has been prepared for the exclusive use of our client Tauranga City Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

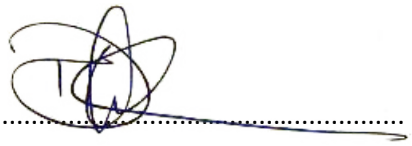
Report prepared by:
by:



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Jesse Beetham
Engineering Geologist

Reviewed by and authorised for Tonkin & Taylor Ltd



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David Milner
Senior Engineering Geologist

20-Sep-23
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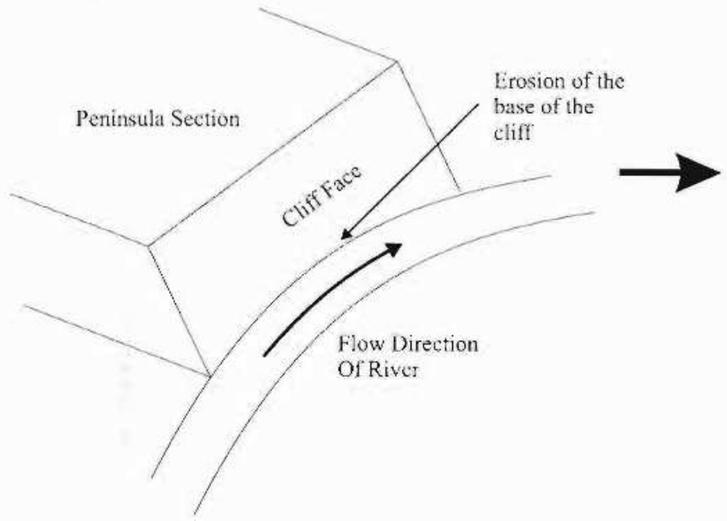
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# Appendix A Schematic representations of failure types

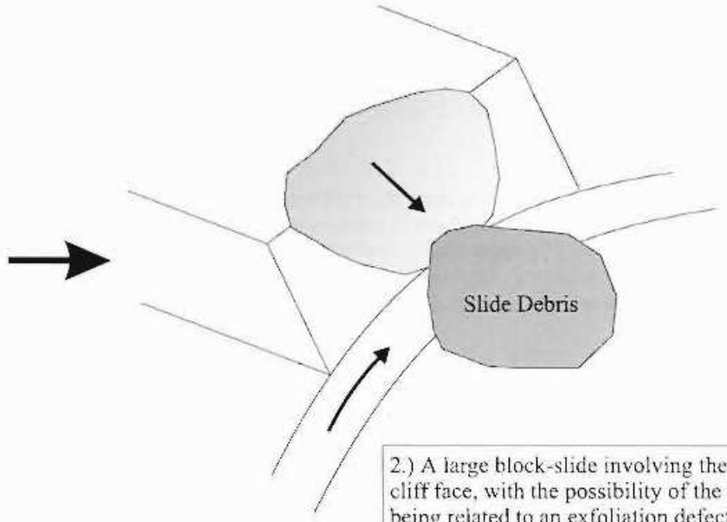
- **Figure 1 – Large scale block failure**
- **Figure 2 – Piping triggered block failure**
- **Figure 3 – Wave erosion triggered block failure**
- **Figure 4 – Colluvium/topsoil failure**

**Figure A1: Large scale block failure (Oliver, 1997)**

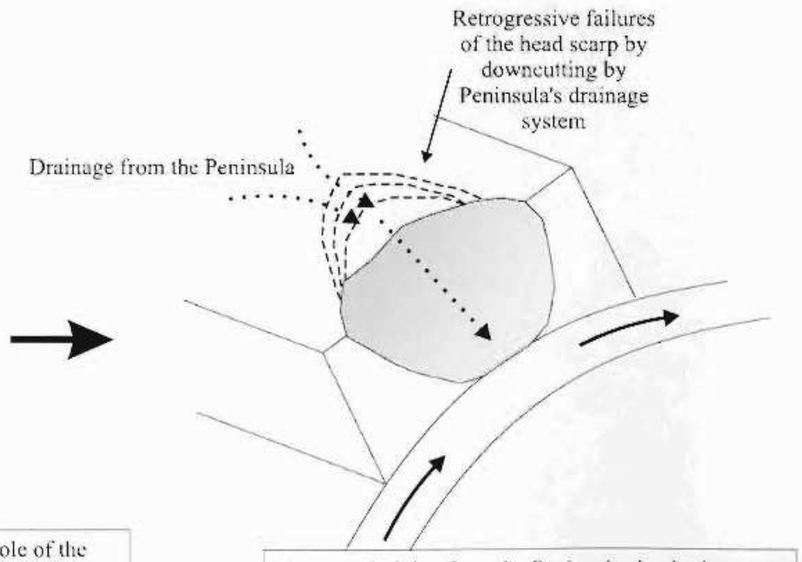


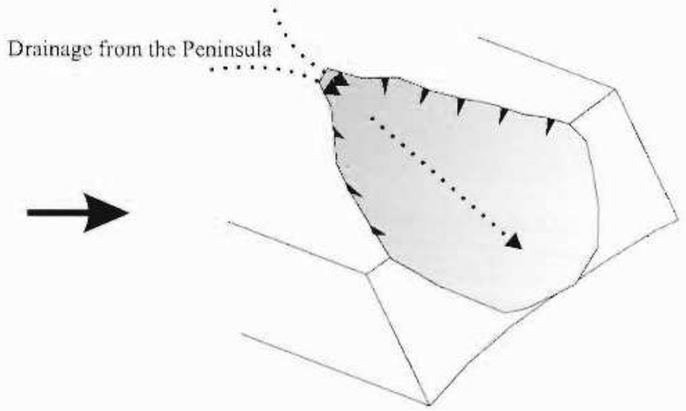

1.) Erosion of the toe of the cliff by the river results in a decrease in the stability of the cliff face.




2.) A large block-slide involving the whole of the cliff face, with the possibility of the releasing surface being related to an exfoliation defect.

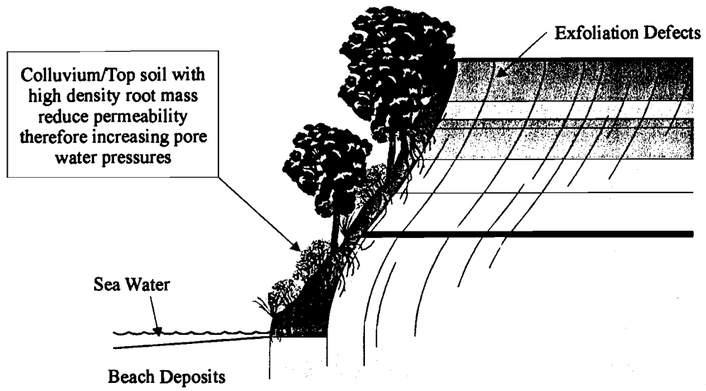



3.) Water draining from the Peninsula slowly downcuts through the soils producing shallow colluvium/topsoil failures that result in expanding the landslide area.

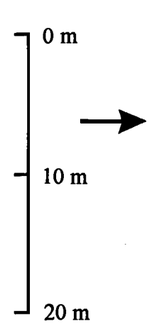


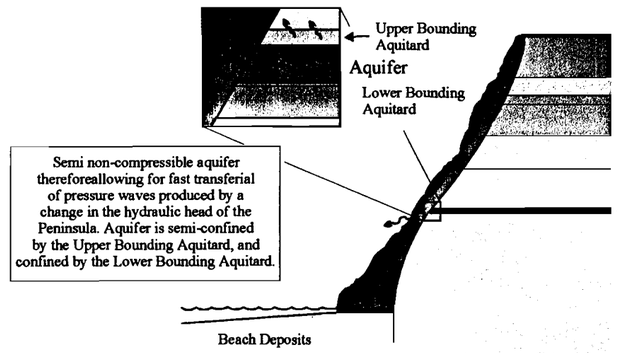

4.) Downcutting by the Peninsula's drainage system produces the geomorphological features seen at Fantail Drive and Egret Avenue.

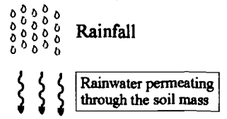
Figure 2.7 Developmental stages of the "probable larger scale landslides" seen around the Maungatapu Peninsula with an example located at Fantail Drive and Egret Avenue (grid reference 704350 274850).



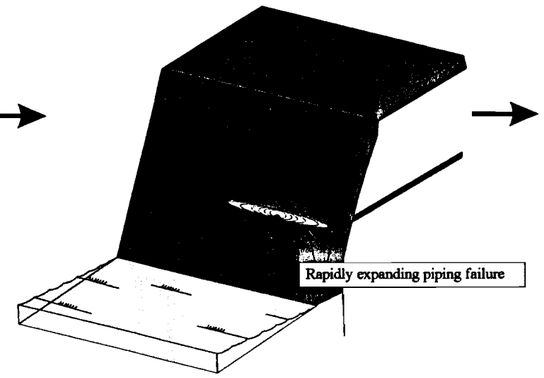

1.) A cliff section showing generalised geology, and vegetation with roots penetrating the colluvium/Top soil. Exfoliation defects which follow the cliff geometry provide possible releasing surfaces for block failure, and are picked up by rootlets near the cliff face.



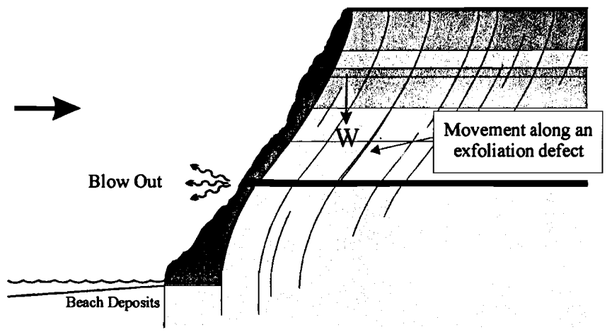



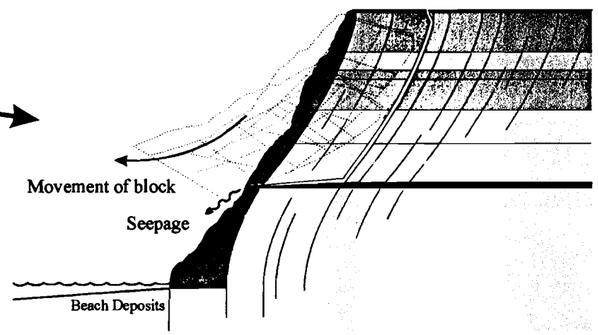

2.) Subsequent to a prolonged period of rainfall the water permeates through the soil mass from the surrounding foot hills and peninsula. Water enters an aquifer ($k=10^{-4}$ m/sec, thickness 15-20 cm) approximately 14 m below the Peninsula surface which is partially confined by two aquitards. Water exits into the colluvium/Top soil of the cliff face where the high density root mass prevents free drainage producing high pore water pressures.




3.) High pore water pressures act on an area of weak Colluvium/Top soil producing a piping failure, which very rapidly expands eroding material.



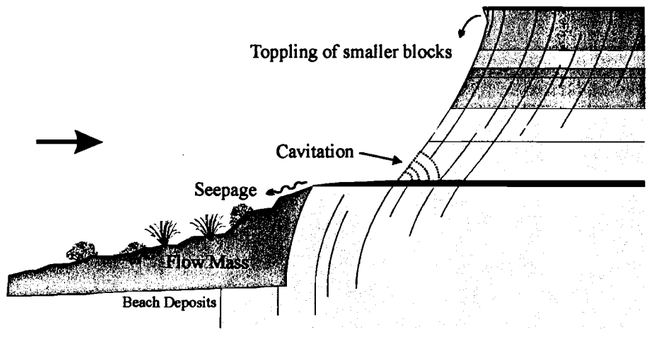

4.) The zone of weakness created by the expulsion of soil via a piping failure allows the weight of the soil mass above to dilate along an exfoliation defect.




5.) The block slides out under its own weight breaking up along exfoliation defects.




6.) Internal mixing of the slide mass occurs due to inherent water content of the lower sections of the block. This, in conjunction with the possibility that the slide enters the water of the harbour produces a flow. The vegetation that was perviously on the cliff face moves down and out with the slide-flow generally still standing when the flow halts.




7.) Toppling occurs in overhanging section of cliff top along sub-vertical exfoliation defects. In addition water seeping out of the slope produces minor cavitation particulary around the areas of seepage.

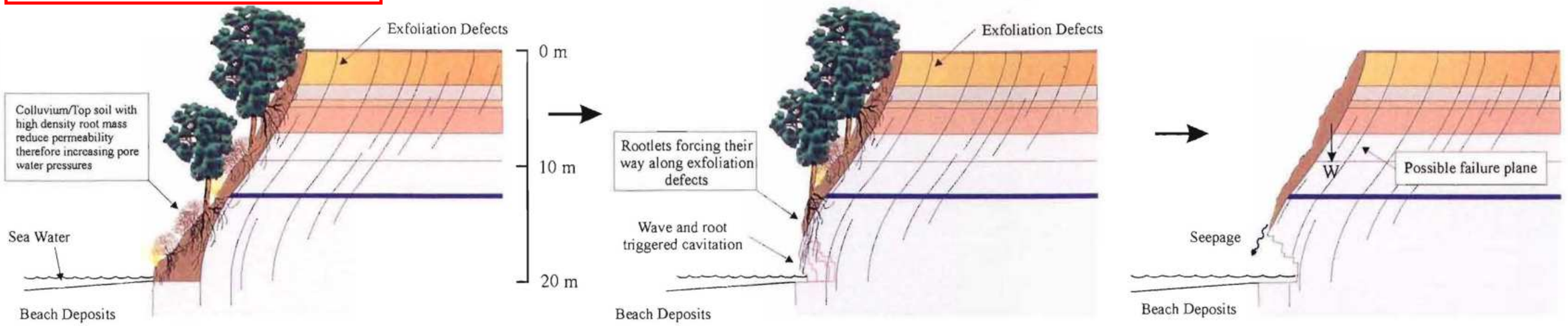
KEY

- Colluvium/Top soil
- Post-Rotoehu Ash Tephras
- Rotoehu Ash
- Palaeosol
- Hamilton Ash
- Upper Matua Group Sediments
- Aquifer

**Figure A2: Piping triggered block failure (Oliver, 1997)**

Figure 2.8 Schematic representation of a piping triggered block failure.

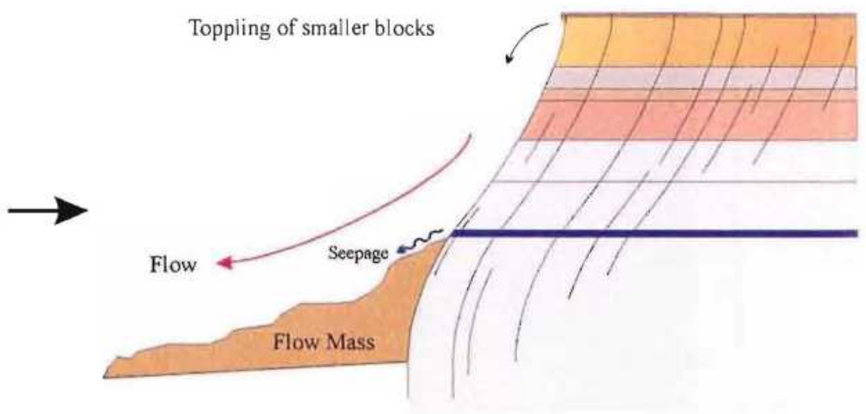
# Figure A3: Wave erosion triggered block failure (Oliver, 1997)




1.) A cliff section showing generalised geology, and vegetation with roots penetrating the colluvium/Top soil. Exfoliation defects which follow the cliff geometry provide possible releasing surfaces for block failure, and are picked up by rootlets near the cliff face.

2.) Toe erosion cause initially by a small Colluvium top soil failure at the base of the cliff, producing a fresh surface. Cavitation is caused by a combination of toe erosion by wave action during storm events, and failure along exfoliation fefects by the above vegetation's root mass.

3.)The weight of the above soil mass becomes to great and slides away from the cliff along an exfoliation defect.




4.) As the block fails internal defects help to break it up as it hits the cliff bottom. With high water content as in aquifer triggered failures or on entering sea water will produce a flow instead of a slide as in the second phase of movement.





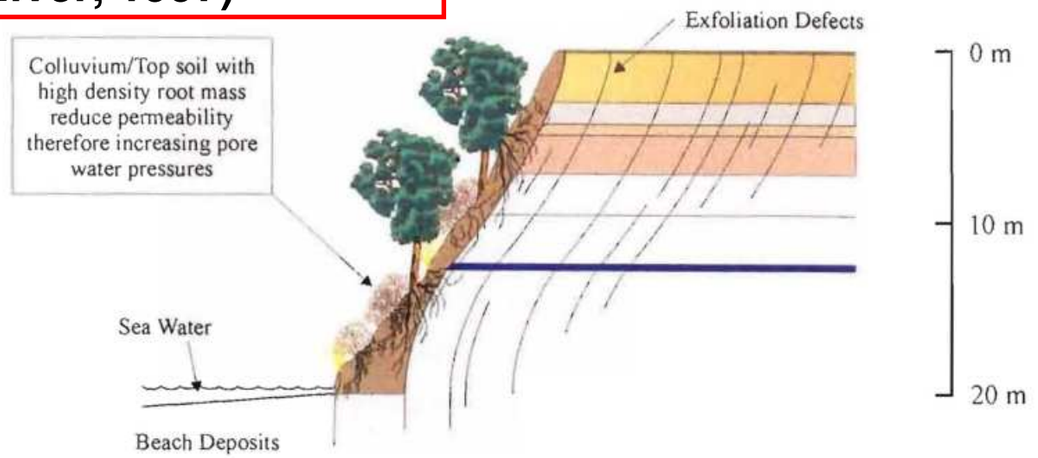


Figure 2.9 Schematic representation for a wave erosion triggered block failure. Failure occurs where the toe of the cliff has been removed by erosion producing either a colluvium/top soil failure or a larger block failure. The later stages of failure can be dramatically influences by water content of the soil mass. From Cruden and Varnes (1996) terminology the failure can be defined as a "Retrogressive, complex; very slow-extremely slow, dry-moist, debris, fall; very rapid-extremely rapid, moist-very wet, debris, slide-flow".

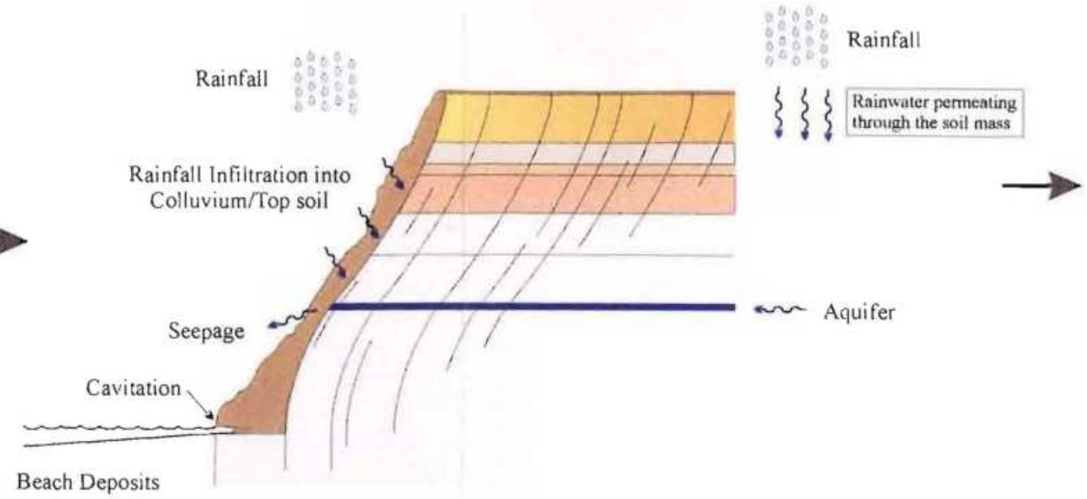
The Photograph depicts how the root mass from vegetation above pushes its way through the soil mass along exfoliation defects creating a root mat. This provides a surface on which the soil can fail after it has been undercut by wave action. Failure in this case tends to occur more as falls with debris easily seen accumulated at the bottom of the cliff.

# Figure A4: Colluvium/ topsoil failure (Oliver, 1997)

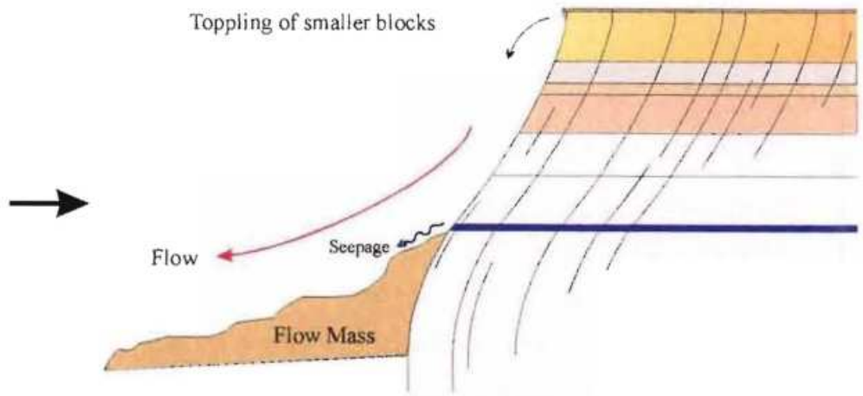





1.) A cliff section showing generalised geology, and vegetation with roots penetrating the Colluvium/Top soil. Exfoliation defects which follows the cliff geometry provide possible releasing surfaces for block failure, and are picked up by rootlets near the cliff face.




2.) Rainfall entering the soil mass from the surrounding hinterland and Peninsula is transferred to the aquifer which exits at the cliff face. In Addition, rainfall can help to saturate the Colluvium/Top soil mass adding extra weight and increasing pore water pressures. Also erosion by wave action at the base of the cliff can increase the possibility that failure will occur.







3.) The boundary between the Colluvium/Top soil and underlying geologic units can provide a surface on which a top soil failure may occur. As the top soil slides internal mixing of the soil mass due to the high water content produces a flow. If the flow enters sea water this will increase the effects of the internal mixing and how far the flow will travel. Most of the vegetation tends to survive the failure remaining in a semi-vertical position as on the cliff face.

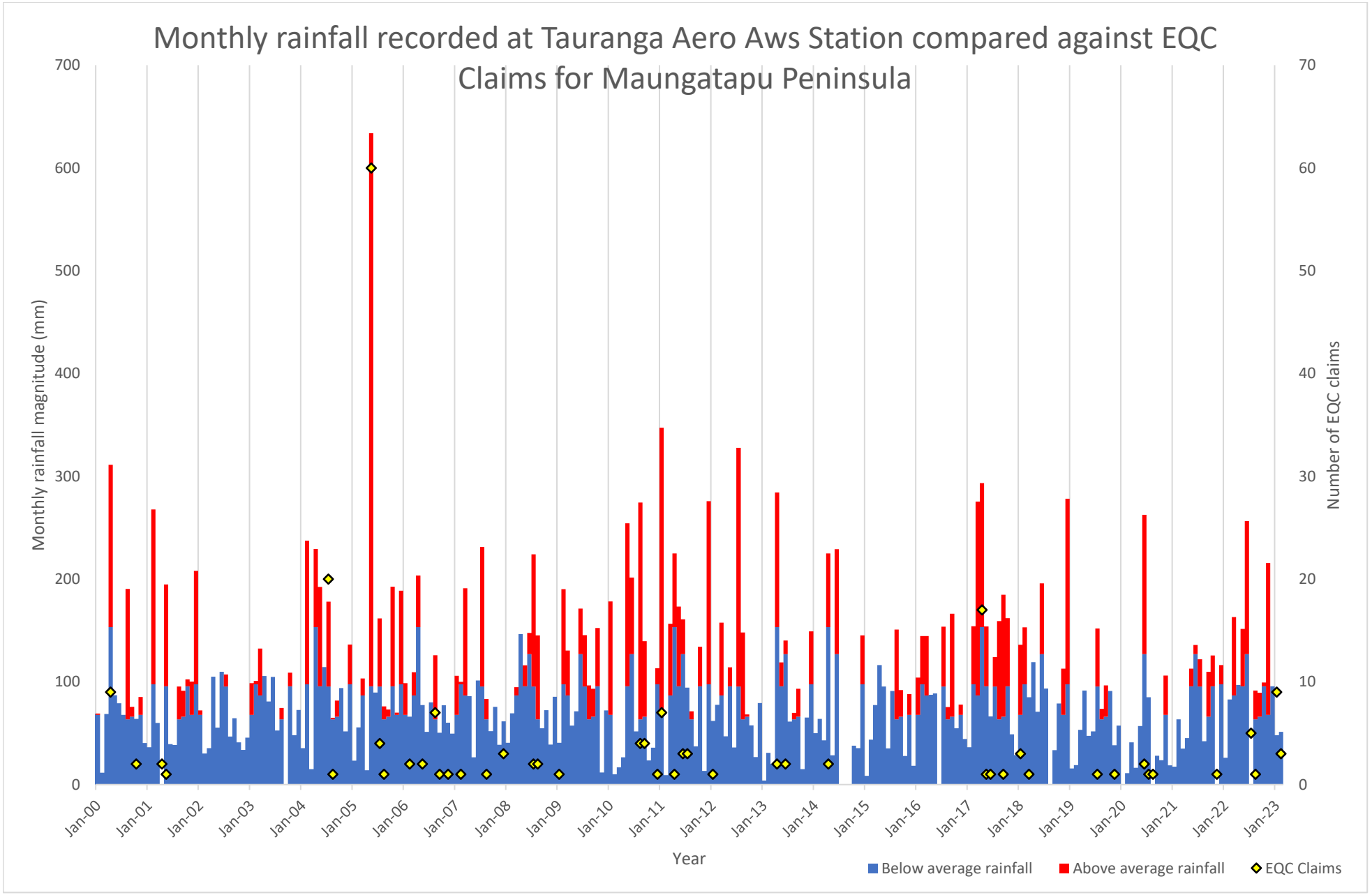


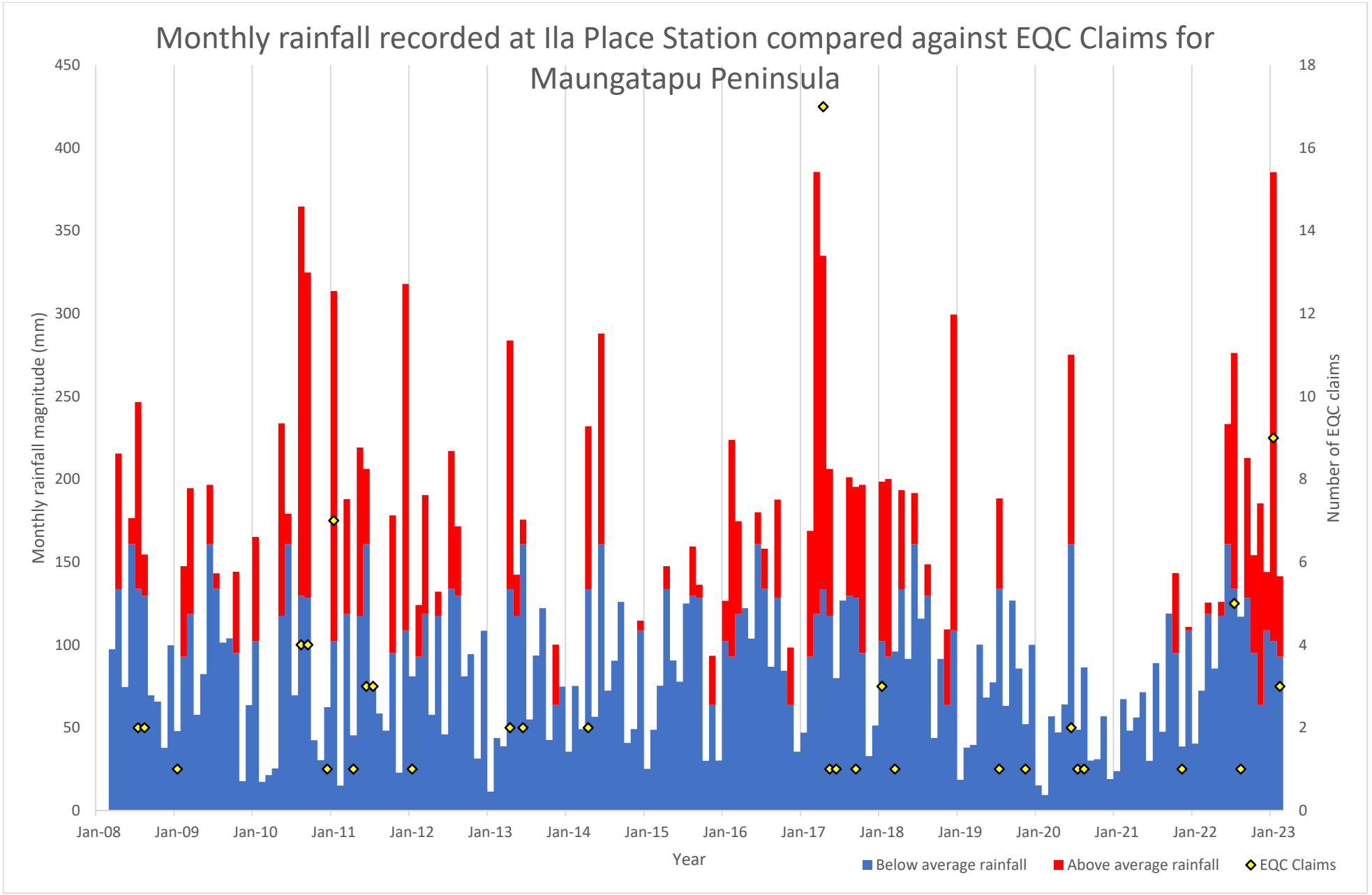
The Photograph show vegetation root mass in conjunction with Colluvium/ Top soil produces a surface on which failure may occur. Vegetation weight especially larger trees results in a torque placed on the soil mass aiding in production of instability. Sliding has occurred along the interface between the vegetation root mass-Colluvium/Top soil and a shallow exfoliation defect. The debris has subsequently been eroded away by wave action.

Figure 2.10 Schematic representation of a Colluvium/Top soil failure. From Cruden and Varnes (1996) terminology the failure can be identified as a "Retrogressive, complex, very slow-very rapid, dry-wet, debris, slide-flow".

# Appendix B Rainfall events in relation to EQC claims

- **Figure B1: Graph showing rainfall events from Tauranga Aero Aws weather station compared with EQC claims within the Study Area.**
- **Figure B2: Graph showing rainfall events from Ila Place weather station compared with EQC claims within the Study Area.**


Monthly rainfall recorded at Tauranga Aero Aws Station compared against EQC Claims for Maungatapu Peninsula
Monthly rainfall magnitude (mm)
Number of EQC claims
Year
Below average rainfall
Above average rainfall
EQC Claims
0
100
200
300
400
500
600
700
10
20
30
40
50
60
70
Jan-00
Jan-01
Jan-02
Jan-03
Jan-04
Jan-05
Jan-06
Jan-07
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23


Monthly rainfall recorded at Ila Place Station compared against EQC Claims for Maungatapu Peninsula
Monthly rainfall magnitude (mm)
Number of EQC claims
Year
Jan-08
Jan-09
Jan-10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
Jan-17
Jan-18
Jan-19
Jan-20
Jan-21
Jan-22
Jan-23
0
50
100
150
200
250
300
350
400
450
0
2
4
6
8
10
12
14
16
18
Below average rainfall
Above average rainfall
EQC Claims

www.tonkintaylor.co.nz

2 October 2023

Hayden Edward Reeves
18 EBBTIDE WAY
MAUNGATAPU
TAURANGA 3112

Dear Sir/Madam

**Update on Slope Hazards in Tauranga**

We live in a city affected by natural hazards, and it's important that we plan ahead to help us respond as best we can. As part of this work, we continually review data we hold about natural hazards to ensure we have the latest information available for our community. We have recently updated our slope hazard maps for the city.

Our updated information shows that your property at 18 EBBTIDE WAY has an area subject to a slope hazard. Please note, this latest update will supersede any slope hazard data from 2002 that may be on your property record.

You can view your property on our electronic mapping system MAPI at tauranga.govt.nz/maps - Select "*Natural hazards"* and "S*lopes and Relic slips 1:10,000"* to show how the updated information relates to your property.

Answers to commonly asked questions are on the back of this letter and on our website. If you have further questions about this information, please contact us:

- **Information sessions: Come along any time during these sessions** and chat with our team, there will be no set presentation so just come when it suits you best.
  - **Wednesday 1 November 4-7pm** – Welcome Bay Community Centre, 242 Welcome Bay Rd
  - **Thursday 2 November 4-7pm** – The Kollective, 145 17th Ave
  - **Monday 6 November 4-7pm** – Maungatapu School Hall, 164 Maungatapu Rd
  - **Thursday 9 November 4-7pm** – Pyes Pa Settlers Hall, 742 Pyes Pa Rd
- Phone: 07 577 7000.
- Email: naturalhazards@tauranga.govt.nz.
- Website: www.tauranga.govt.nz/land-instability to view the report that accompanies the data. Please note, a report and data on landslide susceptibility, which impacts on all properties in Tauranga is being released at the same time.

Yours sincerely

Natalie Rooseboom
Manager: Asset Services
Infrastructure
Tauranga City Council

# Frequently asked questions

**What is a slope hazard map?**

A slope hazard map identifies areas of either existing or potential slope instability. Slope instability, which includes landslides, is the movement of a mass of rock, debris or soil down a slope. The rate of movement can be very slow (in the order of a few cm per year) to very rapid (in the order of several metres per second). Slope instability can be triggered by natural processes (e.g. rainfall events or earthquakes) or activities such as land development and earthworks.

**How was the assessment undertaken?**

The characteristics of landslides have been studied in the Bay of Plenty for over 40 years, and following storm events in the early 2000's slope hazard maps were developed that are commonly used by council, provided in MAPI, referred to in the Infrastructure Development Code (IDC), and included in LIM reports. A lot has happened since the early 2000's and this dataset required a review and update. A review of landslide characteristics was undertaken based on new landslide data and geomorphological mapping (study of landforms and the processes that form them). The review was undertaken to make sure the earlier defined zones were still valid for Tauranga. Higher-resolution elevation data has also been collected which allowed for better models of the topography to be generated. Using geomorphic mapping of slope crests and toes and high-resolution elevation data, the zones were defined and mapped over the whole city.

**What do the different slope hazard zones mean?**

There are three slope hazard zones:

1. Failure zone (previously called 2:1): this is the area where landslides typically begin, generally on moderately steep to steep slopes.
2. Regression zone (previously called 3:1): this is the area typically upslope of a failure zone where if landslides are not identified and/or remediated, land in this zone may become more vulnerable to landslides over time.
3. Runout zone (previously called 4:1): this is the land downslope of the failure zone which can be inundated with debris when a landslide occurs.

**Why have these maps been produced?**

The avoidance or mitigation of natural hazards is one of the key functions of a council in giving effect to the Resource Management Act 1991 (RMA). A similar requirement also exists for local councils under the Building Act, Local Government Act and Civil Defence Emergency Management Act. As a result, we are required to have a good understanding of the areas potentially at risk from natural hazards to support appropriate land-use planning and development decisions. Mapping is the most accepted method to identify hazard-prone areas and provide the greatest level of certainty to the public.

**Will this information go onto property files and LIM reports?**

Yes, we have an obligation to make hazard information we hold available to the public under the Local Government Official Information and Meetings Act 1987. This includes adding the information on each property's LIM report.

**Will this information affect my property value or insurance?**

We are required to make information, such as the technical assessments relevant to hazards, available upon request. We cannot advise about any effect this information may have on property value or insurance. It is recommended that professional advice is sought from a property valuation or insurance expert about any concerns you may have regarding these matters.

**What other natural hazards updates should I be aware of that might impact my property?**

We continually review data we hold about natural hazards to ensure we have the latest information available for our community, this includes natural hazards such as flooding, tsunami and coastal erosion. More information can be found at: www.tauranga.govt.nz/naturalhazards.

**For more FAQ's refer to our webpage [www.tauranga.govt.nz/land-instability](www.tauranga.govt.nz/land-instability)**

## What is coastal and harbour inundation?

Inundation happens when an increase in sea level enables seawater to flood normally dry low-lying land.

This is typically driven by storms, where low air pressure and strong winds combine to create a storm surge. This can be worsened by high or spring/king tides.

Climate-induced sea level rise will increase the extent and frequency of flooding, eventually leading to sunny day flooding where flooding occurs with no storm.

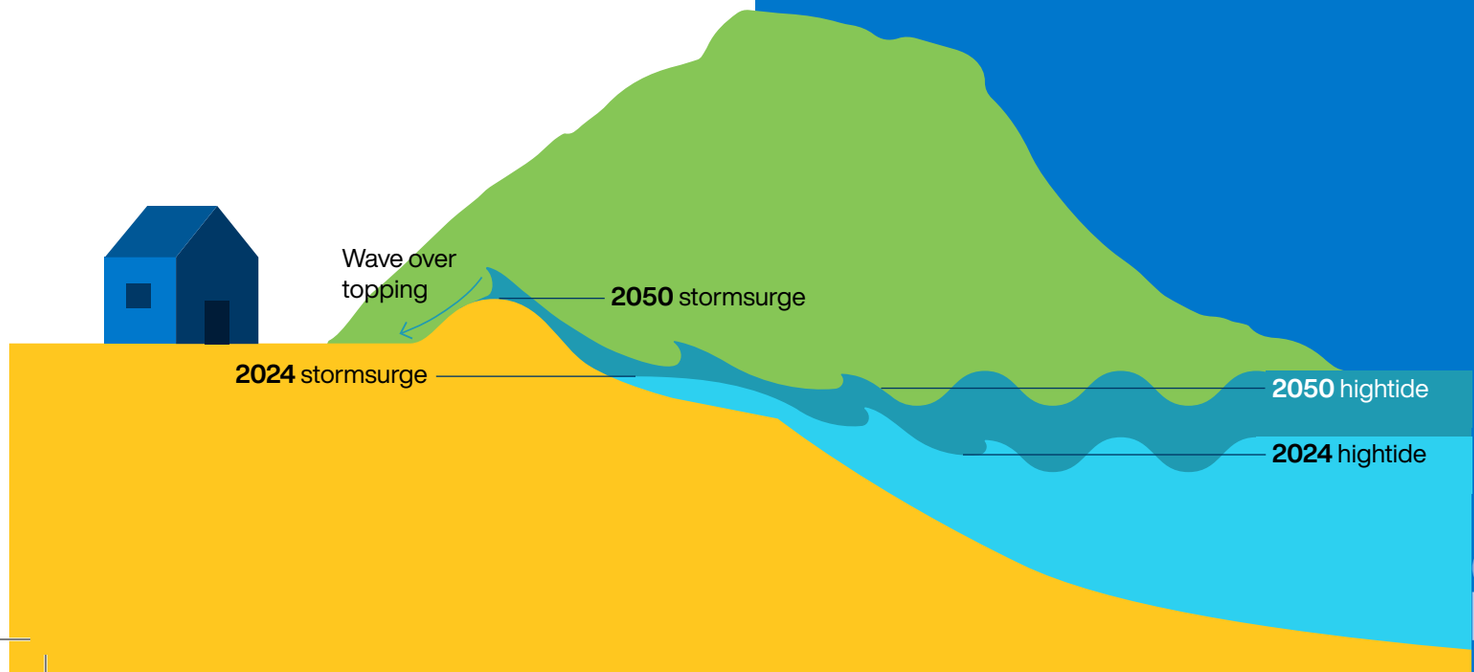
Other terms for coastal and harbour inundation include ‘ocean inundation’, ‘storm tide flooding’ and ‘flooding from the sea’.

## How does coastal and harbour inundation differ from flooding from rainfall and coastal erosion?

Properties at risk from coastal and harbour inundation may also be at risk from flooding from intense rainfall and coastal erosion.

Flooding from rainfall is typically caused by extreme rainfall events beyond the capacity of the city’s drainage system.

Coastal erosion is the loss of land due to coastal processes such as waves and tidal currents wearing away that land suddenly or over time.




Tauranga City

# Coastal and harbour inundation (flooding) in Tauranga

**Low-lying areas around Tauranga are vulnerable during storm events.**

Recent modelling by the Bay of Plenty Regional Council shows that some properties in Tauranga are located in areas that may be affected by coastal and harbour inundation.

Maps for a range of sea level rise scenarios and storm events can be viewed online **tauranga.govt.nz/inundation**

# What are the impacts of coastal and harbour inundation?

- Increased sea level and waves overtopping coastal structures causes flooding of low-lying coastal and estuarine areas.
- Strong onshore winds cause the ocean to pile up on the coast, preventing rivers from draining and leading to flooding inland.
- Large storm-driven waves can cause beach erosion, hazardous driving conditions, and structural damage.
- Flooding can overwhelm stormwater and drainage networks on the coast.



*The sea flooding on to normally dry land at Memorial Park during a low-pressure storm in January 2018.*

# Why have these maps been produced?

The coastal and harbour inundation maps identify land that is potentially impacted by flooding from the sea, especially during storms, both with and without sea level rise.

Councils are required to manage natural hazard risk through planning processes for future development. Maps are considered the most acceptable method to identify areas susceptible to different hazards and provide the greatest level of certainty to the public.

The requirements for councils to manage natural hazards are set out under several different pieces of legislation including the Resource Management Act 2002, New Zealand Coastal Policy Statement, Building Act 2004, Local Government Act 2002, and Civil Defence Emergency Management Act 2002 as well as the Regional Policy Statement.

# Got questions?

**tauranga.govt.nz/inundation**

**07 577 7000**

**info@tauranga.govt.nz**

Check out a video explaining coastal flooding at **boprc.govt.nz/coastal-flooding**

# How can coastal and harbour inundation be managed?

## Avoid:

Prevent people living and building assets in high-risk locations.

## Accommodate:

Stay in place and improve the resilience of buildings and infrastructure.

## Protect:

Stay in place and manage the hazard by defending the shoreline.

## Relocate:

Permanent removal or relocation of existing habitation, assets, and services in a planned, staged, and managed way.

## What can I do?

See the maps, and find more information about the actions you can take at: **tauranga.govt.nz/inundation**

18 March 2026

Hayden Edward Reeves

18 EBBTIDE WAY

MAUNGATAPU

TAURANGA 3112

Dear Property Owner

**Coastal and harbour inundation in Tauranga**

We live in a city affected by natural hazards, and it's essential that we plan to strengthen our readiness and resilience. As part of this work, we continually review the data we hold about natural hazards to ensure our community has access to the most up-to-date information.

We've recently received new coastal and updated harbour inundation modelling from Bay of Plenty Regional Council. This updated information shows that your property at **18 EBBTIDE WAY** is within an area that could be affected by coastal or harbour inundation. The modelling, prepared by Earth Sciences NZ on behalf of the Regional Council, replaces the 2019 harbour inundation maps previously held by Tauranga City Council. This modelling is subject to change as new data becomes available.

**How does this impact you?**

Coastal and harbour inundation is included on any Land Information Memoranda (LIM) requested for your property. LIMs are prepared from information held by Council at a specific point in time; consequently, this information may differ from that contained in previously issued LIMs. This letter will also be added to your property file.

**Coastal and harbour inundation maps**

The effect of coastal and harbour inundation varies property to property. To see how coastal and harbour inundation may affect your property, please visit our inundation viewer at https://gis.tauranga.govt.nz/coastalinundation/. The viewer lets you explore different sea level rise and storm event scenarios for your property. Simply click on the magnifying glass icon at the top right to search for your property. If you have concerns about some of these matters, you are welcome to contact us (details are provided below) or you may find it helpful to seek professional advice which could include a property valuer or insurance expert.

For answers to frequently asked questions, please refer to the flyer included with this letter. You can also find more information, including FAQs, links to reports, maps and a video explaining what coastal and harbour inundation is, at www.tauranga.govt.nz/inundation.

**Information Drop-In Sessions**

If you have questions or would like to discuss how this information applies to your property, we encourage you to attend one of our drop-in sessions. Feel free to come at any time during the session that works best for you.

- **Monday 20 April**: 3:45 to 5:45pm at Pāpāmoa Community Centre, 15 Gravatt Rd.
- **Wednesday 22 April**: 4:00 to 6:00pm at Club Mount Maunganui, 45-47 Kawaka St.
- **Thursday 23 April**: 4:00 to 6:00pm at Golden Sands Baptist Church, 42 Piata St.
- **Monday 4 May:** 5:00 to 6:15pm at Matua Community Hall, 110 Levers Rd.

**Contact Us**

- If you have questions or concerns about the data or maps, please contact Bay of Plenty Regional Council on 0800 884 880 or info@boprc.govt.nz.
- For any other enquiries, please contact naturalhazards@tauranga.govt.nz.

Yours sincerely



Christine Jones

**General Manager: Strategy, Partnerships & Growth**
**Tauranga City Council**