Tauranga City

LIM

Land Information Memorandum

Land Information Memorandum

This LIM has been prepared for:

Applicant	**Toni Craig**
Property Address	**6 Philomel Crest** **Tauranga**
Legal Description	**LOT 134 DPS 41633**
Application Date	**19 June 2025**

This Land Information Memorandum has been prepared for the purposes of Section 44A of the Local Government Official Information and Meetings Act 1987 and, in addition to the information provided for under section 44, may contain such other information concerning the land that Council considers, at its discretion, to be relevant. It is based on a search of Council records only. There may be other information relating to the land which is unknown to Council. The Council has not undertaken any inspection of the land or any building on it for the purpose of preparing this Land Information Memorandum. The applicant is solely responsible for ensuring that the land is suitable for a particular purpose.

It is recommended that the Certificate/Record of Title, which is not held by Council, be searched by the purchaser.

Contents

Services Information

Land information which is likely to be relevant includes information on private and public stormwater, water and sewer details. Please refer to the appropriate authorities for further information about network utility services.

Service Record

Copy of Deposited Plan Attached	**Yes**
Service Print Attached	**Yes**
Method of Sewer Disposal	**To Public Sewer**
Existing Method of Stormwater Disposal	**To Connection**
Drinking Water Supplied to the Land	**Yes**
Drinking Water Supplier Is:	
(I) Owner of the Land; or	**No Information Available**
(ii) Tauranga City Council [Water Supply Authority Unit (WSA)]; or	**Yes**
(iii) Another Networked Supplier	**No Information Available**
Any Information Notified under Section 206(1) Water Services Act 2021	**No Information Available**

Note:

1. Please note that the existence of a watermain along a property frontage does not necessarily mean that a connection is available. This may need to be provided at the applicant's expense.
2. If the land is supplied with drinking water by Tauranga City Council as a Water Supply Authority, any conditions (generally set out in Tauranga City Council's Supply of Water Bylaw 2019 applicable to that supply are included in this Land Information Memorandum.
3. If the land is supplied with drinking water by a networked supplier other than the WSA, any conditions that are applicable to that supply are included in this Land Information Memorandum.
4. If the land is supplied with drinking water by the owner of the land, any information Council has about the supply is included in this Land Information Memorandum.
5. Any information notified to the territorial authority by a drinking-water supplier under Section 206(1) Water Services Act 2021 is included in this Land Information Memorandum.

Rating and Valuation Details

Tauranga City Council rates are billed twice a year on the last business day of August and February. Unpaid rates for each instalment will incur a 10% penalty.

The valuation details below are based on a revision date of 1 May 2023. This has been used to assess the rates for Council's financial year beginning 1 July 2025.

Further information on property valuations can be found on Council's website at the following link: Property valuations - Tauranga City Council.

Valuation Details

Valuation Reference	**06677 069 00**
Capital Value	**$755,000**
Land Value	**$330,000**
Improvement Value	**$425,000**

Rating Details

Current Annual Rates	**$3,462.54**
Balance Owing	**$2,194.50**

Water Meter Details

Water Meter On Property	**Yes**
Meter Type	**Individual Meter**
Water Rates Owing	**$664.89**

A separate account is issued for water metered properties. Residential meters are read every three months. Commercial / Industrial meters vary depending on use.

Note:

Council's Water Supply Bylaw requires a final water meter reading to be undertaken when a property is sold.

Infrastructure Funding and Financing (IFF) Levy Details

The IFF levy (under the Infrastructure Funding and Financing (Western Bay of Plenty Transport System Plan Levy) Order 2022) is payable for a period of 30 years from 1 July 2024 to 30 June 2054. The method for assessing the liability for an IFF levy on the property is set out in the 2022 Order. The annual levy (as calculated under the 2022 Order) is allocated across the levy area with 50% of the overall levy coming from commercial and industrial properties and 50% coming from residential properties and with the IFF levy on the property being based on the capital value of the property. Further information on the levy is available at the following link: Infrastructure Levy - Tauranga City Council.

IFF Levy Details

Current Annual IFF Levy	**$68.76**
Balance Owing	**$67.27**

Building Information

This information is sourced from Council records and may not reflect the situation on site if work has been undertaken without consent. It is recommended that the property file is viewed together with this LIM to satisfy any due diligence requirements. The property file may be ordered at the following link: Order a LIM or Property File

Building Permits: For Building Permits issued prior to 1993 a copy of the inspection records, if these are held by Council, are available in the property file.

Building Consents: For Building Consents issued after 1 January 1993 a Code Compliance Certificate (CCC) will be issued where the building work for which the building consent relates has been completed in accordance with the NZ Building Code.

Solid Fuel Heaters: It is important that any solid fuel heater has been legally installed, either as part of the original dwelling or by way of a separate permit/consent.

Permits and Consents

Building Permits

Date Issued	Description of Work
24/05/91	Erect Retaining Wall
24/05/91	Erect Dwelling

Building Consents

Date Issued	Description of Work	BC Number	CCC Issued
28/03/17	Install Freestanding Enviro Evolution EF5 Solid Fuel Heating on Ground Floor of Dwelling	58247	Yes

Compliance Schedule **N/A**

Requisitions **None**

Third Party Reports submitted to Council's Property File:

See attached report by Bay Building Certifiers Ltd dated 15 October 1998.

Third Party Reports are prepared by independent building surveyors on behalf of building owners. They have no status under the Building Act 2004, therefore the Council does not accept liability for the content of these reports or any representations made in these reports. The inclusion of any such report in a LIM is not an endorsement, acceptance or otherwise by the Council of the contents of or recommendations made in the report.

City Planning

The Operative Tauranga City Plan

The Tauranga City Plan provides the rules for how people can build or develop the land they own in our city. This can be land that is residential, commercial or industrial. The City Plan covers all subdivision, land use and development, how and where the city grows, how infrastructure is located and how natural and physical resources are managed. It is the blueprint by which any development in Tauranga is managed. It also includes rules on other things that are covered by the Resource Management Act - including hazards, signage, reserves, noise, heritage, etc.

There are specific rules within the City Plan that cover, amongst other matters, building height, earthworks, tree protection, bulk and scale of buildings, setbacks from coastal and harbour margins, and specific residential, commercial and industrial uses depending on location within the City.

Specific rules for each suburb and property can vary depending on the underlying zone of the area and the location of a specific property within that zone.

The majority of the City Plan became 'operative in part' on 9 August 2013. The remaining parts of the City Plan subsequently became operative on 5 July 2014.

A table showing a complete list of variations and plan changes to the operative City Plan can be found in the Table of Plan Change Dates.

It is advised that prospective purchasers of property review and consider all relevant planning rules for the specific property this Land Information Memorandum applies to prior to purchase.

To view the Operative Tauranga City Plan please click here.

If you have any specific queries on any rules or any existing or proposed use of a property, please contact the Tauranga City Council's Duty Planner (07 577 7000) for further information.

Development Contributions

Council operates a development contributions policy under the Local Government Act 2002, and also has financial contributions provisions in its City Plan. The broad purpose of these policies is to fund infrastructure costs that relate to the city's growth from those parties that undertake subdivision, building or development. These contributions are required on building consents, resource consents, service connection authorisations and certificates of acceptance. Contributions may remain payable on any property in circumstances where subdivision, building and development projects have not been completed, and in rare occasions where the Council has agreed to defer payment. In addition, further subdivision, building or development of a property may trigger the requirement to pay further development and/or financial contributions.

Council's development contributions team can advise further on these matters in relation to the application of development and financial contributions to the property in question.

Transportation Strategy & Planning and Reserve Management Plans

As part of Tauranga City Council's Transport strategy and planning activities and Reserves Management Plans, properties neighbouring Council-owned or administered land may be subject to transport network development such as walkways and cycleways or other development, activities or use of the land. The Tauranga Reserves Management Plan is available online at the following link: Reserve Management Plans.

Relevant Planning Information

Relevant Planning information for this property is available online through the **City ePlan.**

Zone: Operative Tauranga City Plan	**Medium Density Residential**
Identified Plan Areas	**Medium Density Residential**
Utilities / Designations	**None**
Protected Heritage/Notable or Groups of Trees, or Protected Buildings	**None Known**
Archaeological or Heritage Sites	**Refer plan of archaeological sites as attached. Further enquiries on these sites should be directed to Heritage New Zealand, Level 1, 26 Wharf Street, Tauranga phone (07) 577 4530 quoting reference U14/233.**
Council Consents, Certificates, Notices, Orders or Bonds Affecting the Land:	**No**

Land Features

This information relates to city-wide studies and may not reflect the on-site situation or natural hazard investigations and mitigation done on a property level.

The Tauranga City Council does not act as agent for network utility operators.

The landform and geology within Tauranga City have some features which demand particular attention. These features, which may or may not be relevant to the property in question, are outlined in "General Description of Land Form within Tauranga District" as attached.

Microzoning for Earthquake Hazards

The Council has received reports and results that have assessed Tauranga City's vulnerability to liquefaction when considering a range of earthquake events. These reports and results, and a summary of them, are available by accessing the following link: Earthquakes and Liquefaction.

The reports and **results** reflect the most up-to-date vulnerability to liquefaction from an earthquake event.

It is important to note that different properties are exposed to different levels of probability that land damage from liquefaction and lateral spread will in fact occur. The reports and results are undertaken at a City-wide scale and may be superseded by detailed, site specific assessments undertaken by qualified and experienced practitioners using improved or higher resolution data than presented in these reports.

The **vulnerability and land damage** maps are prepared based on an assessment of natural ground conditions and therefore do not consider the influence of recent human activities that may influence liquefaction response (i.e., earthworks, ground improvement, foundation design), unless specifically stated within the technical reports. As such, the degree of land damage may be less than predicted for a given property where liquefaction risk was addressed during landform or building foundation design.

The presence of liquefaction and lateral spread information on a property may have implications for the use and development of that property including, but not limited to, the requirements for and assessments of building consent applications under the Building Act 2004 and Building Code (refer to the NZ Standard AS/NZ 1170 and design standard outlined in Chapter 10.10.6 Liquefaction of Tauranga City Council's Infrastructure Development Code), subdivision consent applications under the Resource Management Act, and infrastructure design.

The assessed hazard applicable to the area this property has been assessed within, is available by accessing the web-viewer available through the following link: Earthquakes and Liquefaction.

Landslide Susceptibility

Council has received an assessment of Tauranga City's susceptibility to landslides. Two maps have been prepared, one showing areas susceptible to land sliding triggered by rainfall, and the other by earthquakes. A report detailing the assessment and maps are available by accessing the following link: Landslide Susceptibility.

Land Features (cont.)

Natural Hazard Information from Bay of Plenty Regional Council

Our region is exposed to a range of natural hazards including tsunami, flooding, coastal erosion, coastal inundation, landslide, liquefaction, active faults and volcanic hazards.

These natural hazards can have major consequences on people, property and infrastructure. Regional Council is working to improve our understanding and management of these risks to support safe and resilient communities.

Further information regarding natural hazards held by the Bay of Plenty Regional Council that may be relevant to this property can be found at the below links:

Bay of Plenty Regional Council – Natural Hazards

BayHazards - Bay of Plenty Natural Hazards Viewer

Additionally, if your property is in a low-lying area, coastal area or near a river, stream or floodplain you may request a flood level report at the following link: Flood Level Report.

Special Land Features Relevant to the Subject Property

Information about Land Features and Natural Hazards may be identified on Council's mapping website, Mapi.

Comments:

1. Refer Geotechnical Report by Tonkin & Taylor Ltd dated May 2006 reference T.T.7183 S.L.5800.

2. Refer Site Inspection Report by Shrimpton & Lipinski Ltd dated 30 April 1991 reference 10311.

3. **Slopes**
   This site is subject to a slope hazard zone. Any further development may need to be supported by a report from a Category 1 Accredited Geo-professional and subject to Stormwater Specific Design. Please see the slope hazard zones plan attached and refer to our website for more information.

Additional Information

Licences

Licences Affecting the Land or Buildings **No**

Signed for and on behalf of the Council:

Shane

Position held: LIM & Property Files Officer

Date: 9 July 2025

Tauranga City

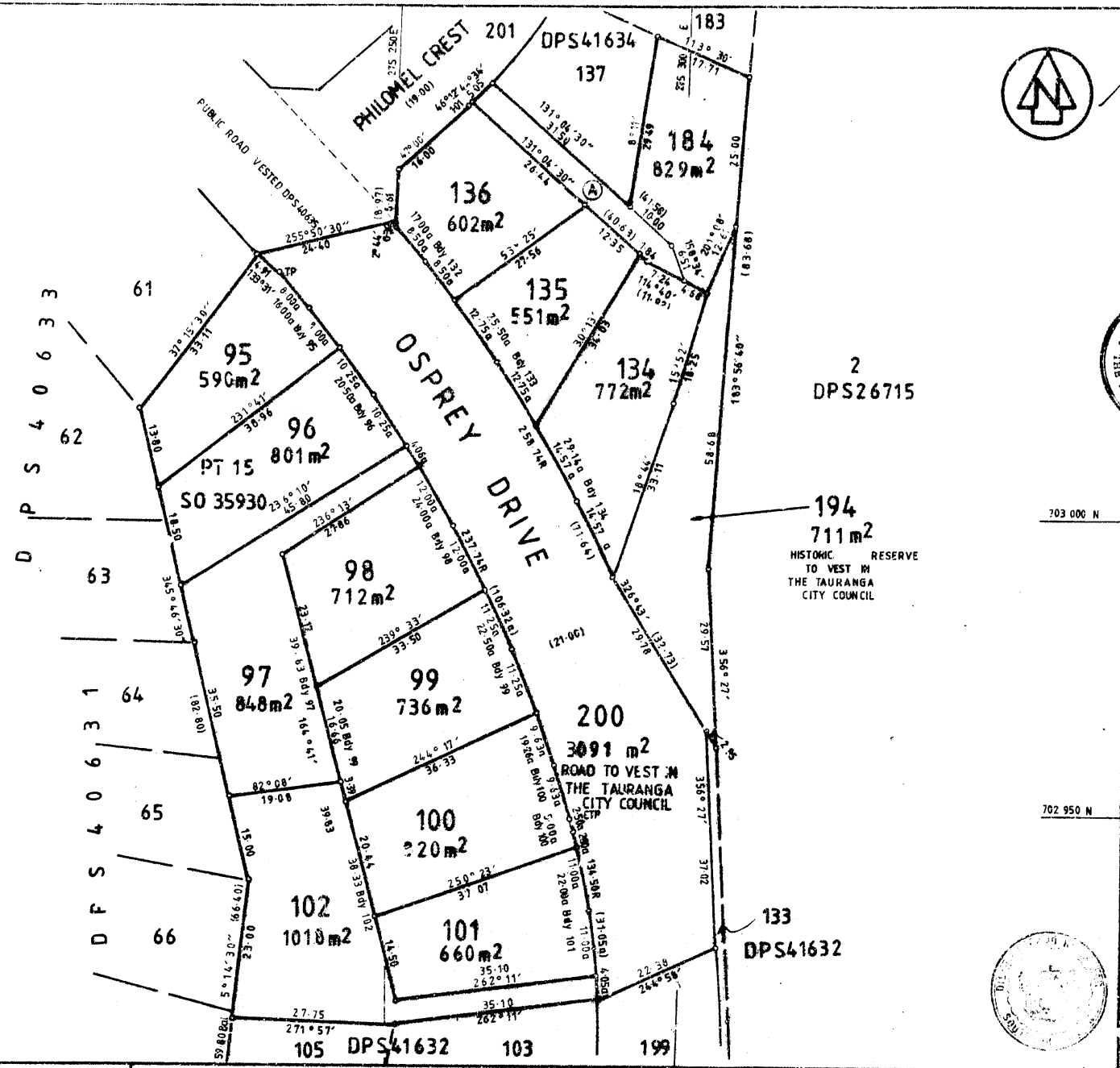
Deposited Plan

Tauranga City

15/9/1986

Lot	C.T.
95	37A/298
96	299
97	300
98	301
99	302
100	303
101	304
102	305
134	306
135	307
136	308
184	309

194 LPRes.(Hist.)
200 Gravel



Approved

APPROVED

REGISTERED OWNERS

Pursuant to a resolution of the Tauranga City Council passed on the 12 day of DEC 1983 approving pursuant to Section 305 of the Local Government Act 1974 this plan of subdivision conditional upon the granting or reserving of the easements shown in the memorandum endorsed hereon and certifying that the plan is in accordance with the requirements and provisions of the operative district scheme the common seal of the Tauranga City Council was affixed hereto in the presence of-

THE COMMON SEAL OF THE TAURANGA CITY COUNCIL

Mayor

Chief Executive Officer

MEMORANDUM OF EASEMENTS

Purpose	Shown	Servient Tenement	Dominant Tenement
Right of Way	A	Pt Lot 184	Lot 134

DPS41631 to DPS41636 ARE CONCURRENT

Total Area 1.2741ha

Comprised in CT 26A/1192 (Pt)

I, WALLACE GRAHAM HOLMES OF TAURANGA

Registered Surveyor and holder of an annual practising certificate or who may act as a registered surveyor pursuant to the proviso to section 53(2) of the Surveyors Act 1908 hereby certify that this plan has been made from surveys executed by me or under my directions, that both plan and survey are correct and have been made in accordance with the Survey Regulations 1972.

Dated at TAURANGA this 1ST day of MAY 1986 Signature

Field Book ..... p. ..... Traverse Book ..... p. .....

Reference Plans .....

Examined ..... Correct .....

Approved as to Survey

18.8.1986

Chief Surveyor

Deposited this 4th day of September 1986

Assistant District Land Registrar

File

Received 2-5-86

Instruments

DPS 41633

LAND DISTRICT SOUTH AUCKLAND	LOTS 95-102, 134-136, 184, 194 & 200 BEING SUBDIVISION OF PART SECTION 15 BLOCK XV TAURANGA SURVEY DISTRICT	TERRITORIAL AUTHORITY TAURANGA CITY
SURVEY BLK. & DIST. XV TAURANGA		Surveyed by SHRIMPTON & LIPINSKI 5800
NZMS 261 SHT ..... RECORD MAP No		Scale 1:500 Date FEBRUARY 1986

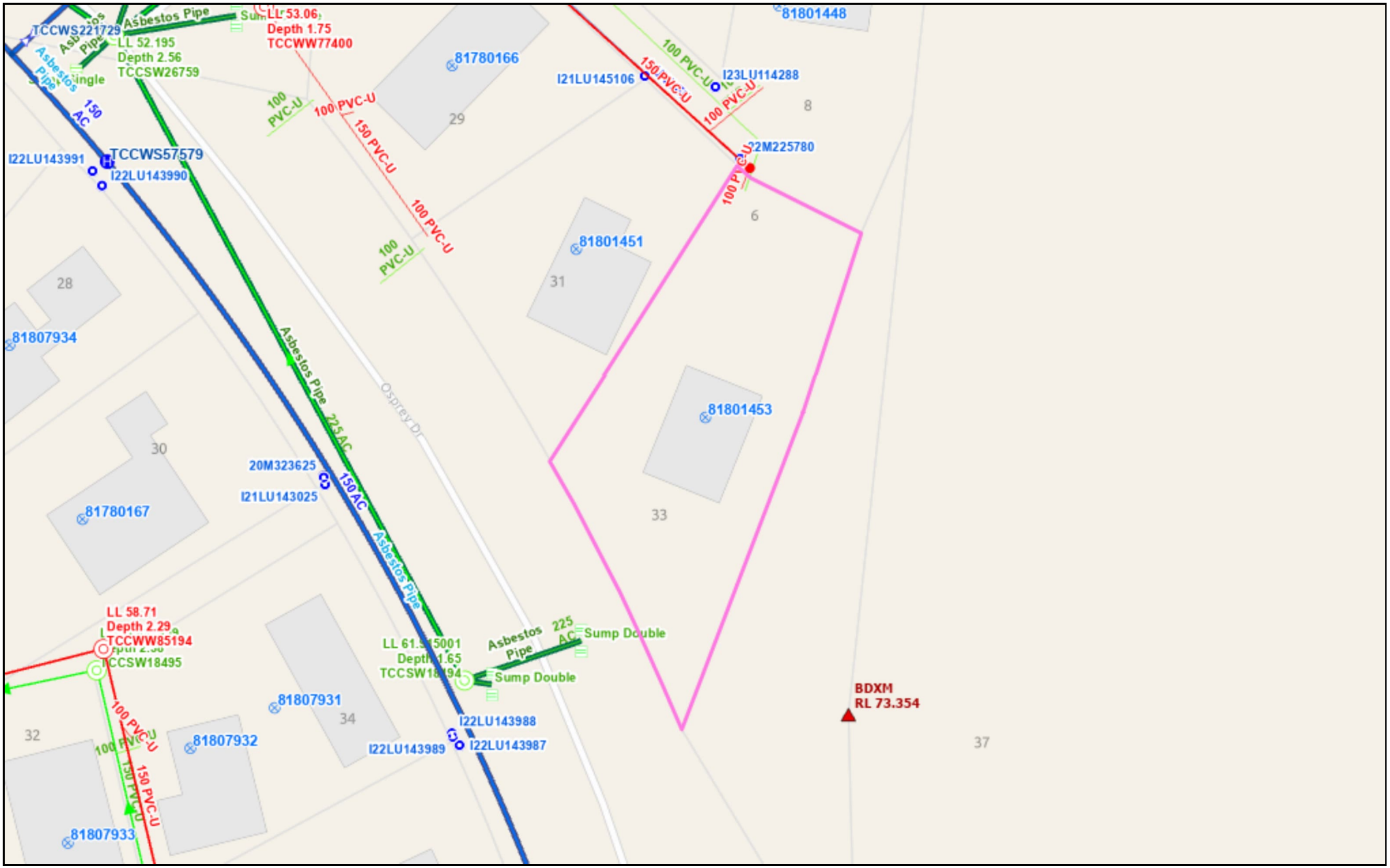
Printed by Lithgow Wellington, New Zealand

Tauranga 35

W.N. HAWKEY, SURVEYOR GENERAL, DEPARTMENT OF LANDS AND SURVEY WELLINGTON NEW ZEALAND

Services Plan

Tauranga City



Produced by - Tauranga City Council

Printed 09/07/2025

Cadastral Information sourced from LINZ. Crown Copyright Reserved

Services Plan

0 5 10 m

Meters

Scale 1: 500 @A4

N

Information shown on this plan is indicative only. The Council accepts no liability for its accuracy and it is your responsibility to ensure that the data contained herein is appropiate and applicable to the end use intended.

Tauranga City

Services Key

Water

- Water Service Line
- Water Meter
- Rider Main
- Reticulation Main
- Trunk Water Main
- Asbestos Pipe (Abandoned)
- Asbestos Pipe (Operational)
- Hydrant
- Valve
- Water Reservoir
- Backflow - Double Check
- RPZ
- Valve
- Private Water Bore

Stormwater

- Service Line
- Rising Main
- Gravity Main
- Stormwater Drain
- Subsoil Drain
- Stormwater Overland Flow Path
- Culvert
- Inlet
- Outlet
- Stormwater Manhole
- Stormwater Sump
- Stormwater Rodding Eye
- Large Sump
- Storage Pond

Wastewater

- Service Line
- Rising Main
- Gravity Main
- Asbestos Pipe (Abandoned)
- Asbestos Pipe (Operational)
- Node
- Rodding Eye (Inspection Point)
- Manhole
- Valve
- Chamber
- Pump Station

Other

- Abandoned assets and lines
- Private assets and lines
- Geotech Utility Buffer

More symbols may appear on the Services Plan than are shown here. For a full key please contact the Tauranga City Council LIM Office.

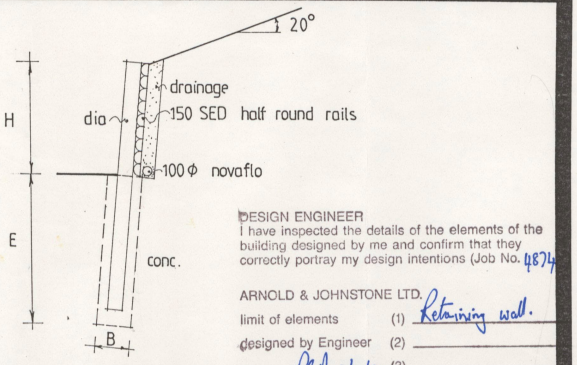
Tauranga City

Building Information

Tauranga City

H	post dia.	E embed	B dia.	pole crs.
1.2 - 2.00 m.	200 SED	2.60m.	450	1.50m.
0 - 1.20 m.	150 SED	1.70 m.	300	1.20m.
* 1.2 - 1.5 m	200 SED	1.90m	450	1.5m.

RAH 2/5/91.



RETAINING WALL DETAIL RAH 3/5/91

DESIGN ENGINEER
I have inspected the details of the elements of the building designed by me and confirm that they correctly portray my design intentions (Job No. 4874)

ARNOLD & JOHNSTONE LTD.
limit of elements (1) Retaining wall.
designed by Engineer (2)
(3)
(4)

STRUCTURAL Date 1/5/91

Nth.

LOT 134
DPS 41634
AREA 772 m²

OSPREY DRIVE

Ret Wall Area 7m²

Min Distance Rock Wall to Retaining Wall 2.750m

14.57 A.

5.30

14.57 A.

18.80

34.03

1.20

Post & Rail Retaining Wall 1.5m High Max to Above Details *

Proposed Future Wall to 1.2m High

1.84

S SW

sewer, stormwater connection

R.O.W.

7.24

4.68

18.25

33.11

5.00

3.50

DP 2925 3325

DP 2425 2575

garage under

deck

1475 1935 2145

PROPOSED DWELLING
(TIM BLAKE)

500 (cut 300) 500 500 875

DP GT TV 500 500 GT DP

deck

TAURANGA DISTRICT COUNCIL APPROVED PERMIT PLANS

PLANS APPROVED
as to compliance with the planning requirements of the Tauranga District Council
Authorised Officer 2/5/91 Date

TCC648985

TAURANGA DISTRICT COUNCIL
Plans and specifications approved subject to all work being carried out in accordance with the District Council Bylaws and Planning Ordinances.
Building Officer
13-5-91 Date
IMPORTANT — 12 HOURS NOTICE MUST BE GIVEN TO THE PLANNING & ENVIRONMENT RECEPTION OFFICE BEFORE POURING CONCRETE FOUNDATIONS - BOND BEAMS - SUSPENDED TERRACE SLABS - CONCRETE FLOORS INSULATION - PRELINE - COMPLETION.

Jennian TIMBERCRAFT HOMES

REGISTERED MASTER BUILDER

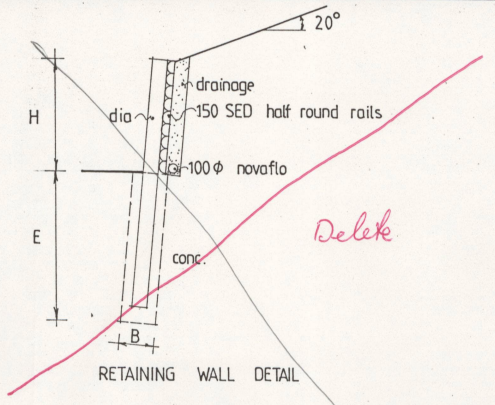
JENNIAN TIMBERCRAFT HOMES
Cnr of Spring St. & Cameron Rd.
P.O. Box 847, Tauranga.
Telephone 85-099
A Division of Jennian Homes Ltd.

House Type: SPECIAL

Client: PROPOSED DWELLING FOR TIM - AILEEN BLAKE
PHILOMEL CREST WELCOME BAY

Designed:	Drawn:	Checked:	Sheet:
	Lia		1
Scale: 1:100	Date: 19/2/91	Job No: 1063	
Errors & Omissions Excepted			Of:

H	post dia.	E embed	B dia.	pole crs.
1.2 – 2.00 m.	200 SED	2.60m.	450	1.50m.
0 – 1.20 m.	150 SED	1.70 m.	300	1.20m.



RETAINING WALL DETAIL

TAURANGA DISTRICT COUNCIL
Plans and specifications approved subject to all work being carried out in accordance with the District Council Bylaws and Planning Ordinances.
Building Officer
2-5-91
Date
IMPORTANT — 12 HOURS NOTICE MUST BE GIVEN TO THE PLANNING & ENVIRONMENT RECEPTION OFFICE BEFORE POURING CONCRETE FOUNDATIONS - BOND BEAMS - SUSPENDED TERRACE SLABS - CONCRETE FLOORS INSULATION - PRELINE - COMPLETION.

PLANS APPROVED
as to compliance with the planning requirements of the Tauranga District Council
16/4/91
Authorised Officer — Date

TCC648986

TAURANGA DISTRICT COUNCIL
PLUMBING AND DRAINAGE APPROVAL
Plans and Specifications approved subject to all work being carried out in accordance with the Drainage & Plumbing Regulations 1978, and Codes of Practice or Standards adopted by the Tauranga District Council.
Plumbing & Drainage Officer
17-4-91
Date Approved
Important — A minimum of 6 hours notice must be given on booking inspections. Inspections required: underfloor, pre-line, Final (before occupation of building), and all drainage works before backfilling. Verify sewer depth before commencement of building to ensure correct gradient may be obtained. All requirements must be complied with, and any alterations

DESIGN ENGINEER
I have inspected the details of the elements of the building designed by me and confirm that they correctly portray my design intentions (Job No. 4839)
ARNOLD & JOHNSTONE LTD.
limit of elements (1) Retaining Wall
designed by Engineer (2)
(3)
10/4/91 (4)

Jennian TIMBERCRAFT HOMES

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	KC		1
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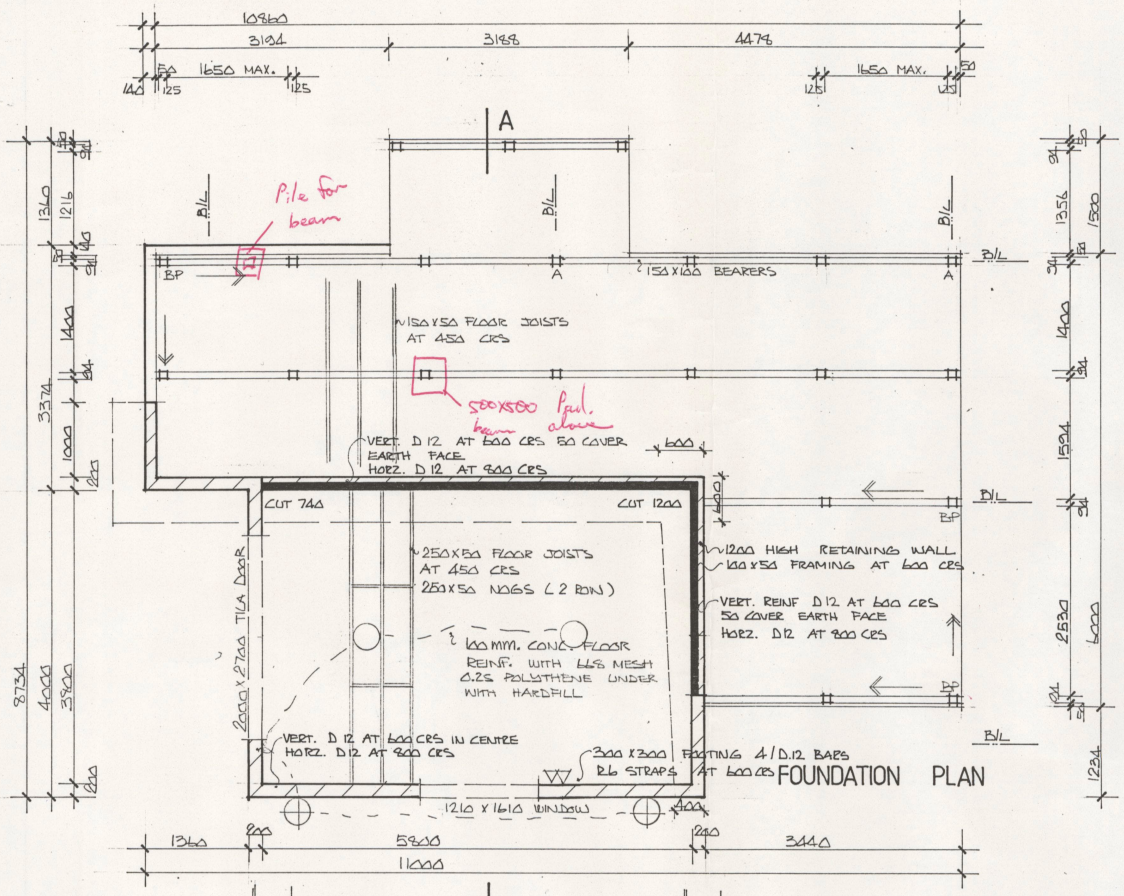
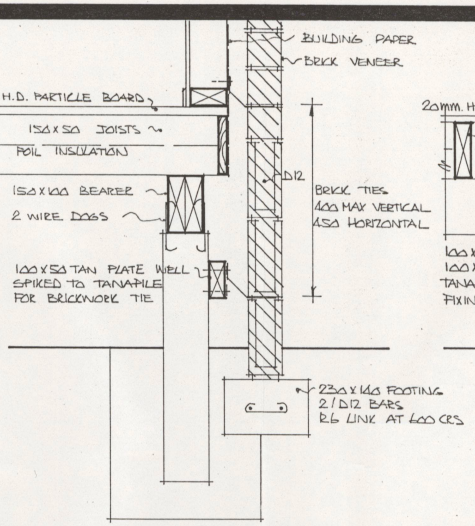
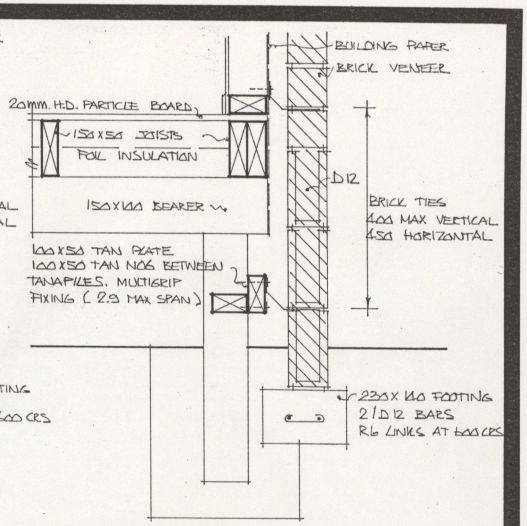
Errors & Omissions Excepted			Of:



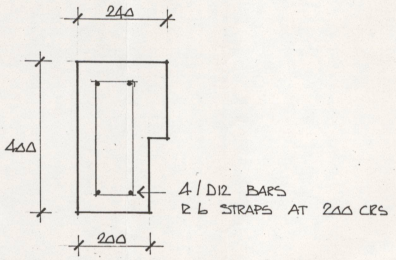
FOUNDATION PLAN



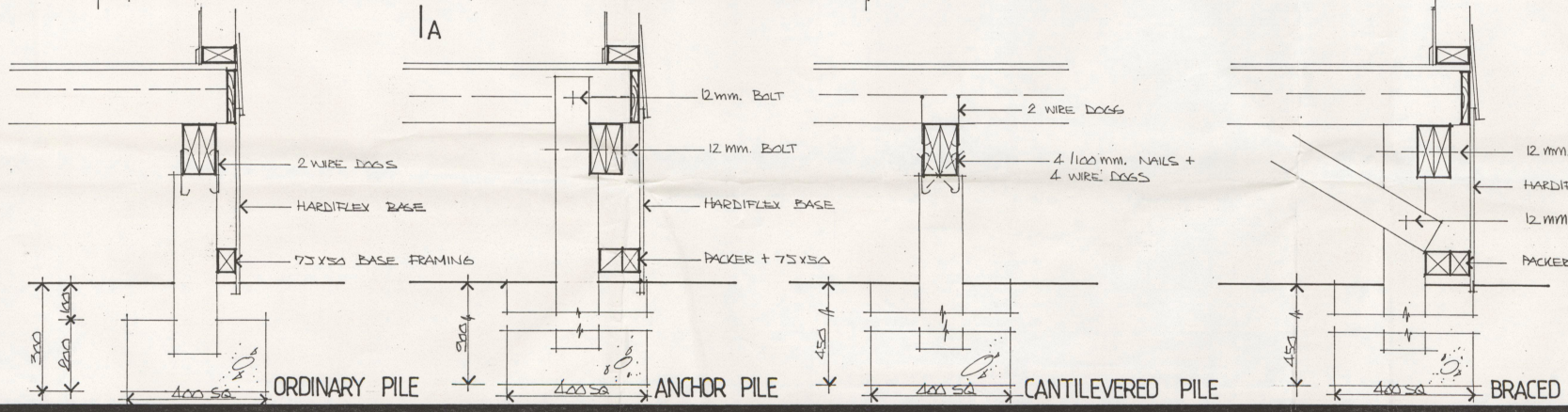
BASE DETAIL BRICK VENEER



GABLE END BASE DETAIL BRICK VENEER



GARAGE DOOR / WINDOW LINTEL



ORDINARY PILE ANCHOR PILE CANTILEVERED PILE BRACED PILE

DESIGN ENGINEER

I have inspected the framing of the elements of the building designed by me and confirm that they correctly portray my design intentions (Job No. 4839)

ARNOLD & JOHNSTONE LTD.

limit of elements (1) Retaining Walls

designed by Engineer (2) _____

(3) _____ 10/4/91

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REGISTERED MASTER BUILDER

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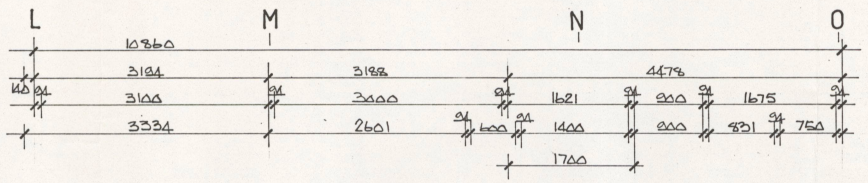
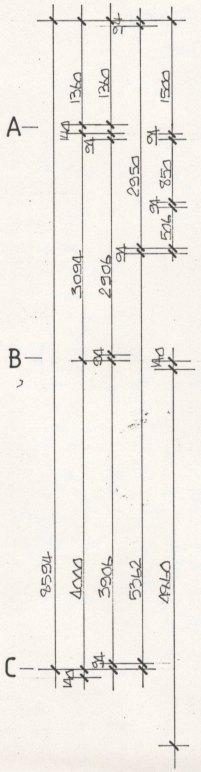
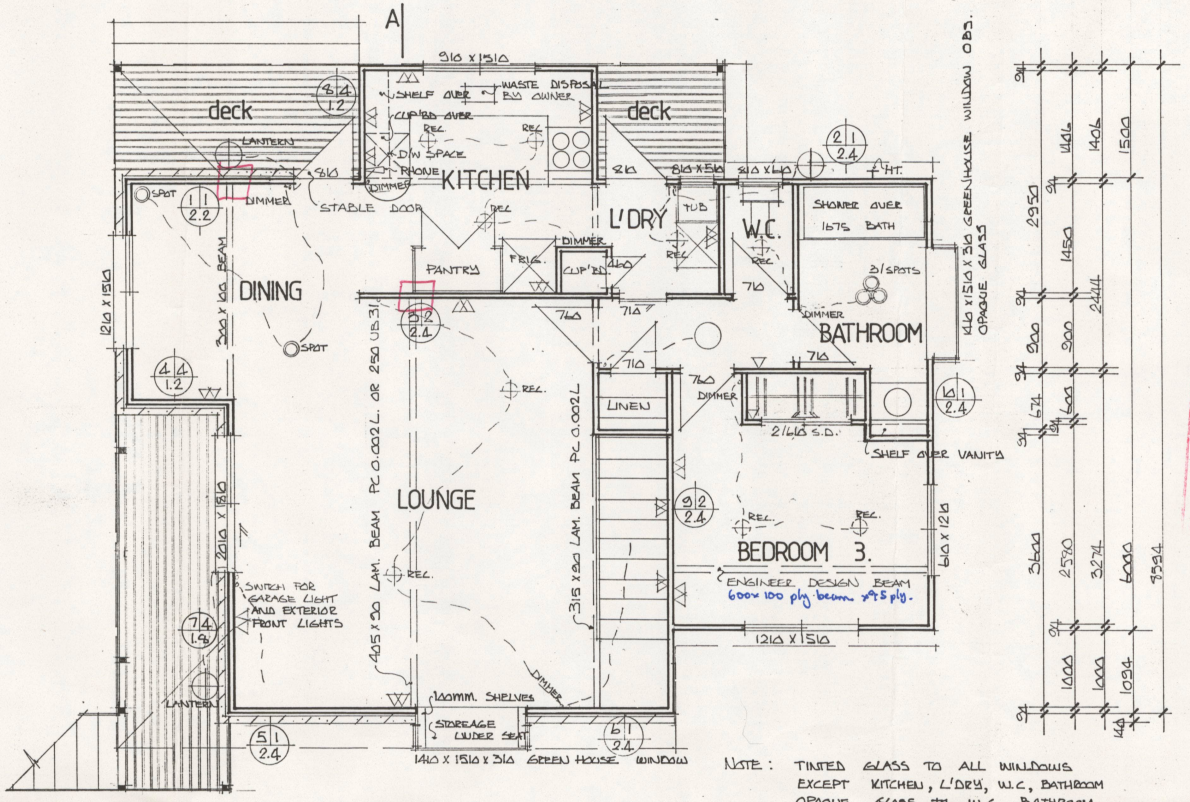
PHILOMEL CREST WELCOME BAY

Designed:	Drawn:	Checked:	Sheet:
	Kio		4
Scale: 1:50,1:10	Date: 19/2/91	Job No.: 1063	Of:

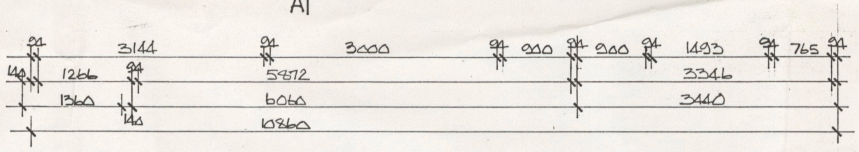
Errors & Omissions Excepted







NOTE : TINTED GLASS TO ALL WINDOWS EXCEPT KITCHEN, L'DRY, W.C., BATHROOM OPAQUE GLASS TO W.C., BATHROOM



GROUND FLOOR : 72.44 m²

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Plumbing & Drainage Officer
17-4-91
Date Approved
Important — A minimum of 8 hours notice must be given on booking inspections. Inspections required: under floor, pre-line, Final (before occupation of building), and all drainage works before backfilling. Verify sewer depth before commencement of building to ensure correct gradient may be obtained on all drainage. All endorsements must be complied with, and any alterations to these plans must meet with Council prior approval.

TAURANGA DISTRICT COUNCIL APPROVED PERMIT PLANS

TCC648987

C D B A

ELEVATIONS

DESIGN ENGINEER
I have inspected the details of the elements of the building designed by me and confirm that they correctly portray my design intentions (Job No. 4839)

ARNOLD & JOHNSTONE LTD.
limit of elements (1) 1am timber beams
designed by Engineer (2) ply beam
(3)

Jennian TIMBERCRAFT HOMES

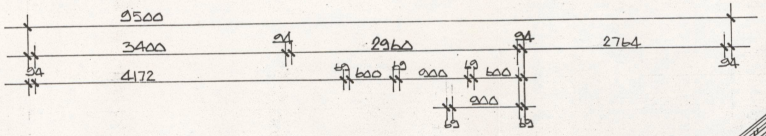
REGISTERED MASTER BUILDER

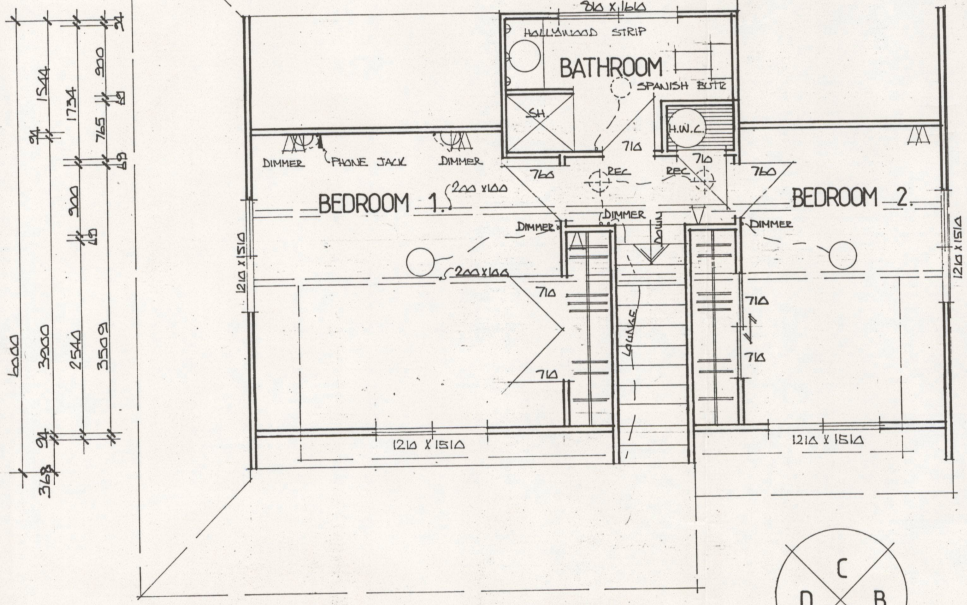
JENNIAN TIMBERCRAFT HOMES
Cnr of Spring St. & Cameron Rd.
P.O. Box 847, Tauranga.
Telephone 85-099
A Division of Jennian Homes Ltd.

House Type: SPECIAL

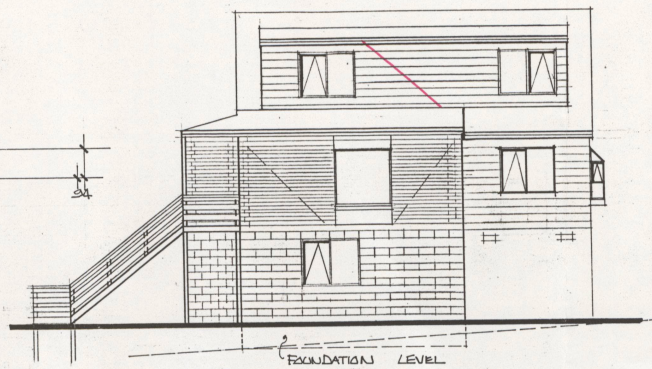
Client: PROPOSED DWELLING FOR TIM - AILEEN BLAKE
PHILOMEL CREST WELCOME BAY

Designed:	Drawn:	Checked:	Sheet:
	Kia		2
Scale: 1:50	Date: 18/2/91	Job No: 1063	
Errors & Omissions Excepted			Of:

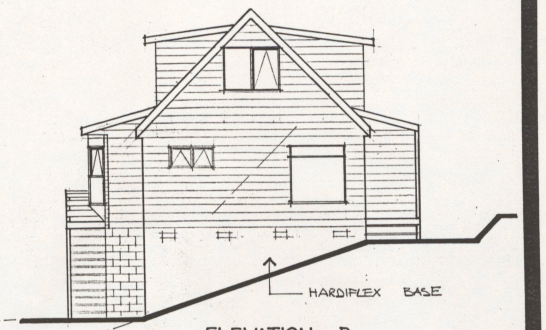




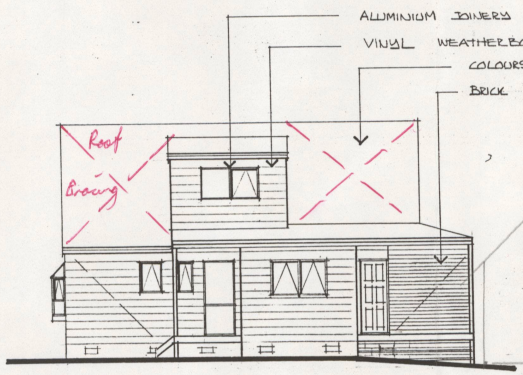
FIRST FLOOR PLAN : 41.41 m²



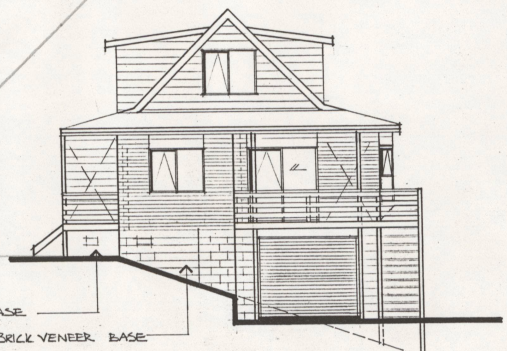
ELEVATION A.



ELEVATION B.



ELEVATION C.



ELEVATION D.

ELEVATIONS

PLANS APPROVED
as to compliance with
the planning requirements
of the Tauranga District Council
K.F. 16/4/91
Authorised Officer Date

TAURANGA DISTRICT COUNCIL
PLUMBING AND DRAINAGE APPROVAL
Plans and Specifications approved subject to all work being carried out in accordance with the Drainage & Plumbing Regulations 1978, and Codes of Practice or Standards adopted by the Tauranga District Council.
B Hughes Plumbing & Drainage Officer
17-4-91 Date Approved
Important — A minimum of 6 hours notice must be given on booking inspections. Inspections required: underfloor, pre-line, Final (before occupation) ... ing), and all drainage works before backfilling. Verify sewer depth ... re connection of building to ensure correct gradient may be obtained ... all drainage installations must be completed with, and any alterations ... ding must meet with Council prior approval.

TCC648988

TAURANGA DISTRICT COUNCIL APPROVED PERMIT PLANS

DESIGN ENGINEER
I have inspected the details of the elements of the building designed by me and confirm that they correctly portray my design intentions (Job No.)
ARNOLD & JOHNSTONE LTD.
Limit of elements (1) 4839
Designed by Engineer (2) Roof beams.
RGA 10/4/91 (3)
(4)

Jennian TIMBERCRAFT HOMES

REGISTERED MASTER BUILDERS FEDERATION — REGISTERED MASTER BUILDER

JENNIAN TIMBERCRAFT HOMES
Cnr of Spring St. & Cameron Rd.
P.O. Box 847, Tauranga.
Telephone 85-099
A Division of Jennian Homes Ltd.

House Type: SPECIAL

Client: PROPOSED DWELLING FOR TIM - AILEEN BLAKE

PHILOMEL CREST WELCOME BAY

Designed:	Drawn:	Checked:	Sheet:
	Kia		3
Scale:	Date:	Job No:	Of:
1:50,1:100	14/2/90	1063	

Errors & Omissions Excepted

As Built Drainage Plan

Property File: P5140-6-1

Drainage plan for:

Street No. 6

Street PHILOMEL CRES

Suburb .....

Owner Blake

Type of Building J.ENNIAN

Drainlayer W. H. KELLY

Lot 134 D.P. 41633

Address .....

.....

Date of Inspection 18/7/91

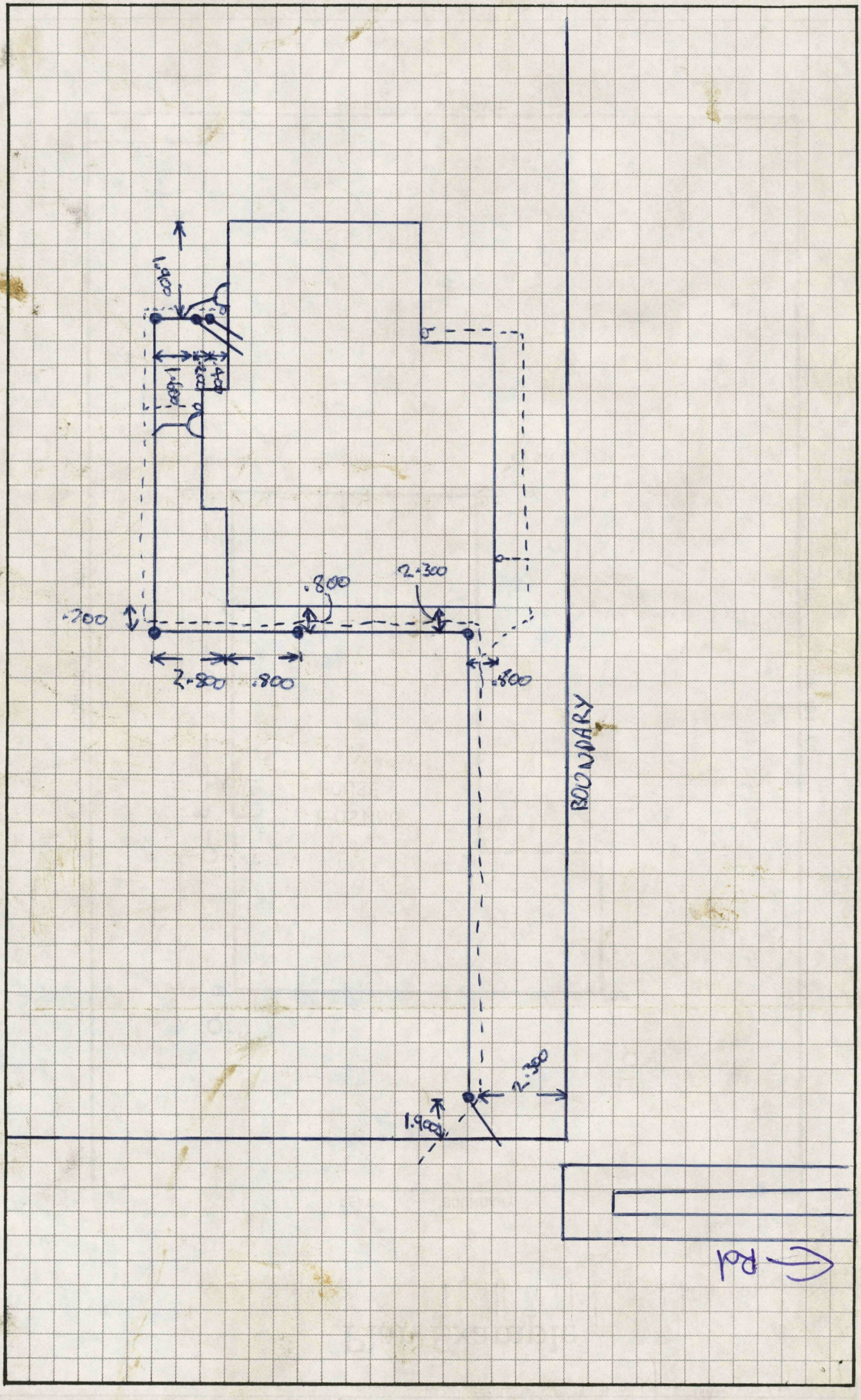
Inspector .....

Drainage Permit No. .....

NOTE: Plan to be drawn in black ballpoint on graph opposite.

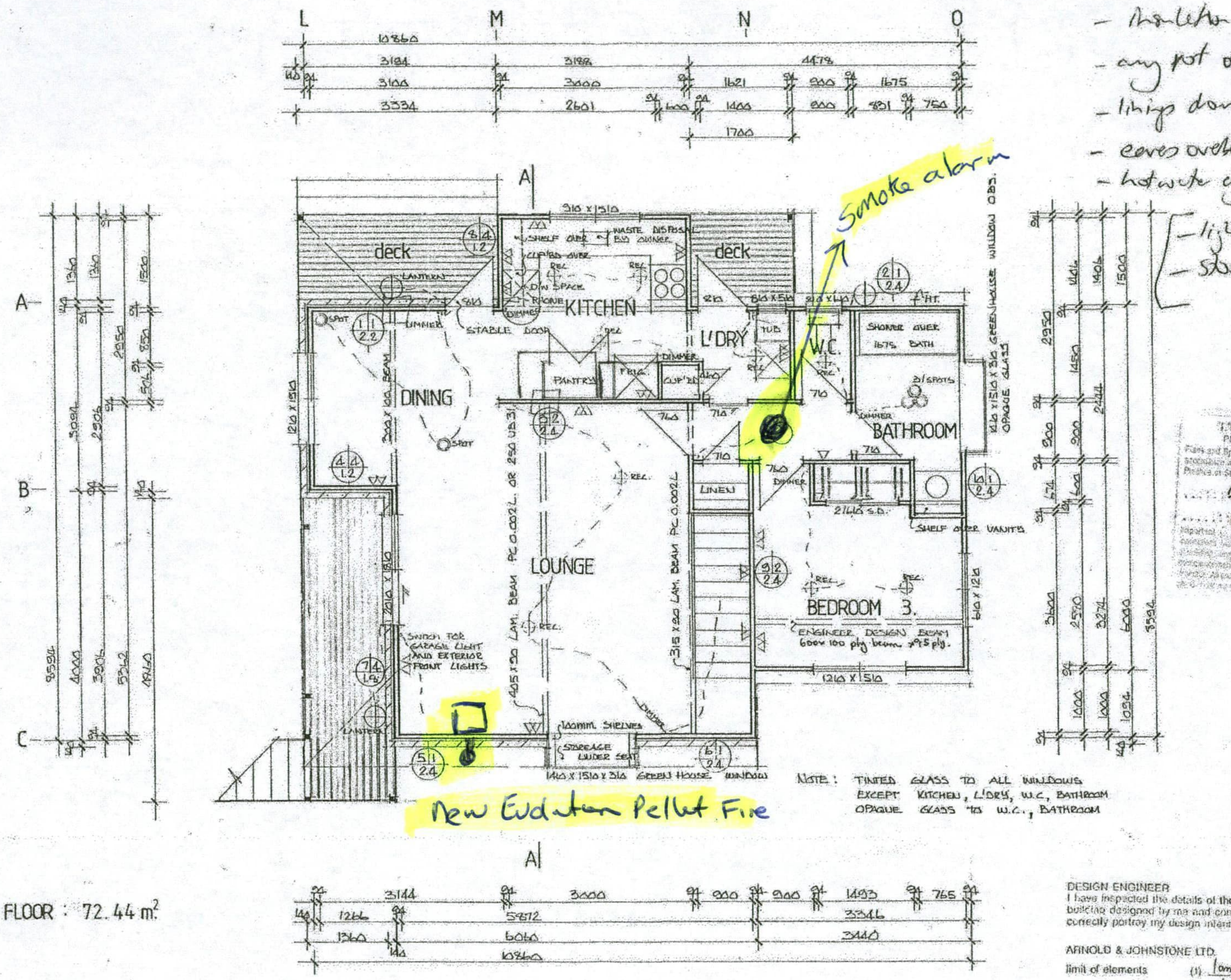
Plan to include:

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.


1.900
1.600
.400
.200
.800
2.300
.200
2.800
.800
.800
BOUNDARY
2.300
1.900
Rd

-window reveals.
- bottom of deck above garage
- insulation under house
- any part of bottom plates.
- linings down onto sash.
- eaves overhang.
- hot water cylinder - look in kitchen.
- light fittings?
- stove?

dated 10/3/17



GROUND FLOOR : 72.44 m²

DESIGN ENGINEER
I have inspected the details of the elements of the building designed by me and confirm that they correctly portray my design intentions (Job No. 4839)

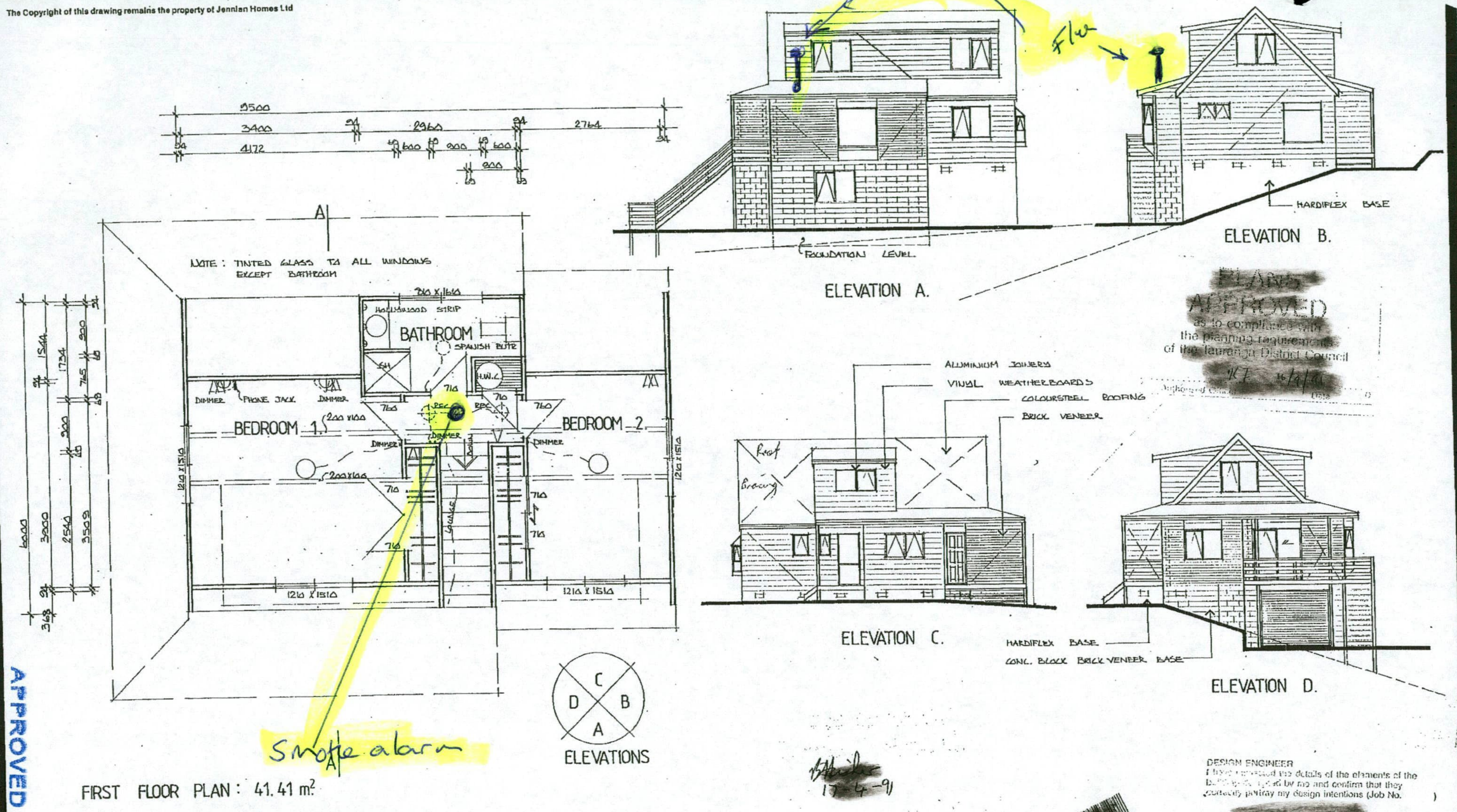
ARNOLD & JOHNSTONE LTD.
limit of elements designed by Engineer: (1) lam timber beams (2) ply beam (3)

Jennian TIMBERCRAFT HOMES

JENNIAN TIMBERCRAFT HOMES
Cnr of Spring St. & Cameron Rd.
P.O. Box 847, Tauranga.
Telephone 85-099
A Division of Jennian Homes Ltd.

House Type:	Client:	Designed:	Drawn:	Checked:	Sheet:
SPECIAL	PROPOSED DWELLING FOR TIM - AILEEN BLAKE PHILOMEL CREST WELCOME BAY		KO		2
		Scale: 1:50	Date: 18/2/91	Job No: 1063	Of:

Errors & Omissions Excepted



[redacted] APPROVED as to compliance with the planning requirements of the Tauranga District Council [redacted]

[redacted] 17-4-91

DESIGN ENGINEER
I have checked the details of the elements of the building designed by me and confirm that they correctly portray my design intentions (Job No.)
[redacted]
(1) Limit of elements [redacted]
(2) designed by Engineer [redacted]
(3)
(4)
RG 10/4/91

TCC048888

Jennian TIMBERCRAFT HOMES

JENNIAN TIMBERCRAFT HOMES
Cnr of Spring St. & Cameron Rd.
P.O. Box 847, Tauranga.
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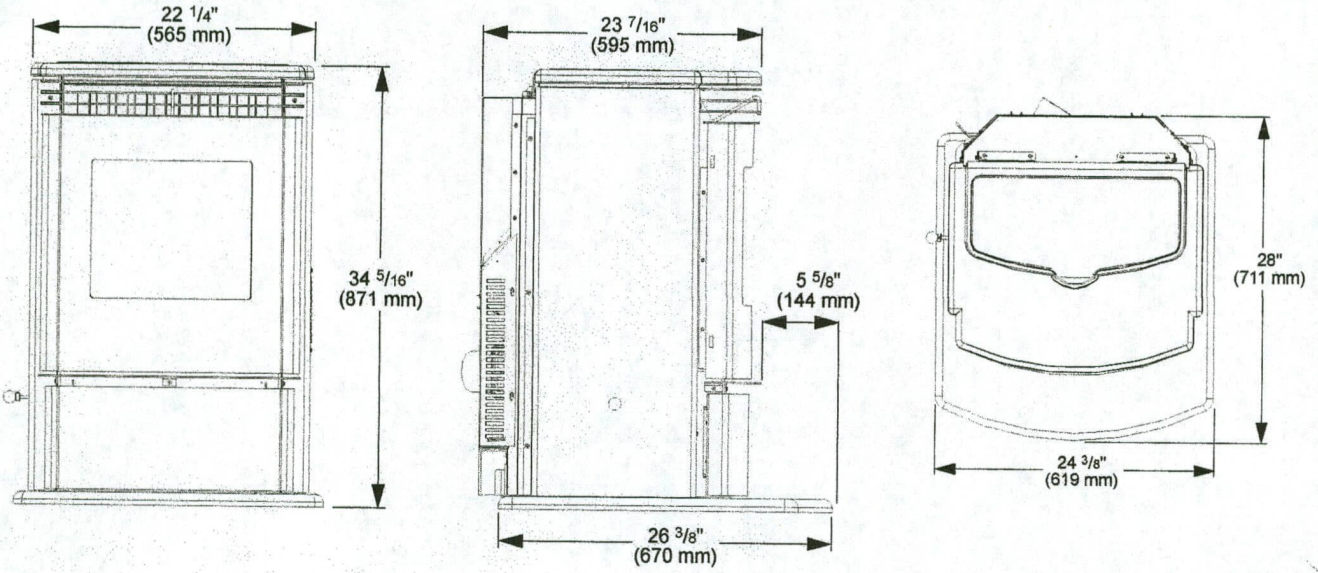
House Type:	Client:	Designed:	Drawn:	Checked:	Sheet:
SPECIAL	PROPOSED DWELLING FOR TIM - AILEEN BLAKE PHILOMEL CREST WELCOME BAY		Kia		3
		Scale: 1:50, 1:100	Date: 14/2/90	Job No: 1063	Of:

Errors & Omissions Excepted

Installation

Dimensions – Evolution EF5 Freestanding



Installation Clearances & Specifications

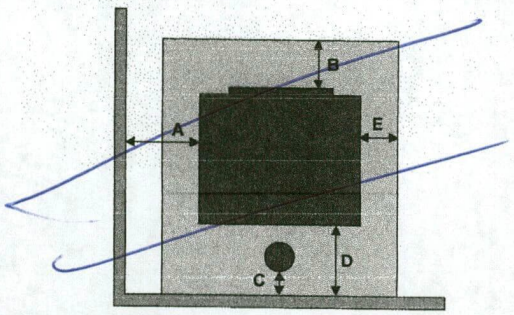
Minimum clearances shown are in millimetres. All Enviro fires are tested to AS/NZS 2918:2001. Specifications were correct at time of printing but may alter and those detailed below should be used as a guide only. Refer to the Installation and Operation Manual supplied with every Enviro Pellet Fire or if in doubt, consult your Retailer. Refer to Safety Test 09/1981 for all clearances to combustibles.

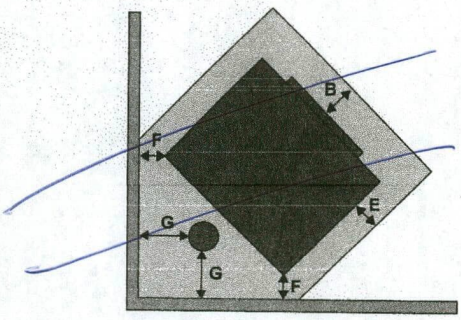
Clearances to Combustibles

Enviro Evolution EF5 Pellet Fire

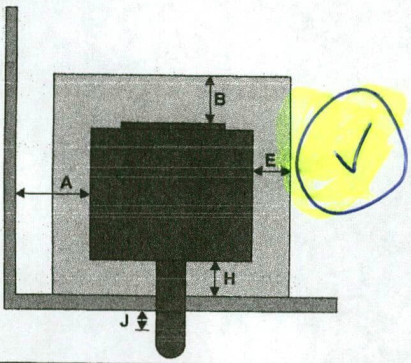
Clearance to Combustibles

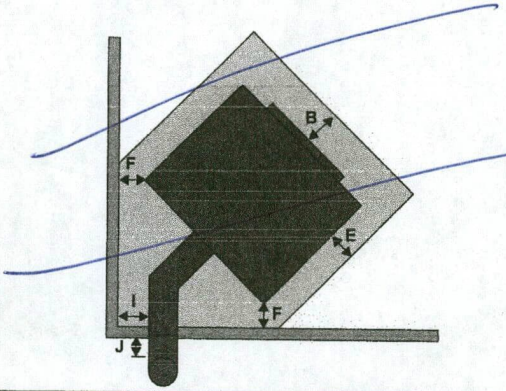
Internal Flue





External Flue





Freestanding Clearances

Location	Dimension (mm)
A	200
B	150
C*	50
D	N/A
E	N/A
F	100
G*	50
H	100
I*	50
J*	25

* from shielded flue
* 75mm to unlined flue

Note: AS/NZS 2918:2001 requires a minimum of 100mm clearance for any side requiring access.

Note: These are minimum clearances to combustibles. Actual installation distances may be greater.

Form 7
Code compliance certificate

Section 95, Building Act 2004

The building

Street address of building:	6 PHILOMEL CREST WELCOME BAY
Legal description of land where building is located:	LOT 134 DPS41633
Building name:	N/A
Location of building within site/block number:	6 PHILOMEL CREST WELCOME BAY Tauranga
Level/unit number:	N/A
Current, lawfully established, use:	2.0 Housing: 2.0.2 Detached Dwelling
Year first constructed:	1991

The owner

Name of owner:	CRAIG, TONI
Customer number:	414390
Contact person:	CRAIG, TONI
Mailing address:	6 PHILOMEL CREST WELCOME BAY TAURANGA 3112
Street address/registered office:	6 PHILOMEL CREST WELCOME BAY TAURANGA 3112
Phone number:	Landline: N/A Mobile: 0274 902211
Daytime:	Landline: N/A Mobile: 0274 902211
After hours:	Landline: N/A Mobile: 0274 902211
Facsimile number:	07 5712072
Email address:	N/A

First point of contact for communications with the council/building consent authority:
FIRE FLY HEATING LTD; Mailing Address: C/O ANDY EUSTACE 566 PYES PA ROAD RD 3 TAURANGA 3173 3173

Building work

Building consent number:	ES58247
Description:	INSTALL FREESTANDING ENVIRO EVOLUTION EF5 SOLID FUEL HEATER ON GROUND FLOOR OF DWELLING
Issued by:	Tauranga City Council

Code compliance

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

- the building work complies with the building consent.

No Compliance Schedule

Signature: Lex Plato
Position: Team Manager: Building Inspections
On behalf of: Tauranga City Council
Date: 21 March 2019

Bay Building Certifiers Ltd

The Construction Compliance Certifiers

20 Park Street
P O Box 2230, Tauranga
Facsimile: 07 578 5395
Telephone: **07 578 3427**

15 October 1998

PS140/6/1

C Kinsella
6 Philomel Crest
WELCOME BAY

Dear Madam,

ASSESSMENT OF BUILDING WORK AT 6 PHILOMEL CREST, WELCOME BAY

You have instructed us to assess and report on building work at the above address, namely to carry out a final inspection of retaining wall erected pursuant to a building permit and completed but for which no foundations inspections were called.

On 14 October 1998 one of our assessors, Bryan Wakelin, visited the address.

Bryan reports that the walls were constructed in 1991. One wall is 3.9 metres from the dwelling and is 1.5metres high. A second wall has been constructed 1.9 metres from the first and rises to 1.8 metres.

Brian noted that neither wall shows sings of movement and both are still plumb, as designed. There is a small area of settlement of back fill in the vicinity of a path but this should not affect the structure.

Bryan is satisfied that the walls appear to have stood the test of time and feels that it is reasonable to assume that the foundations have been properly built. The walls are of sturdy construction and do not appear to be dangerous.

I will forward a copy of this letter to the Tauranga District Council on your behalf.

Yours faithfully,

Roger Bruce
OPERATIONS MANAGER

Planning Information

Tauranga City

Produced by - Tauranga City Council

Printed 09/07/2025

Cadastral Information sourced from LINZ. Crown Copyright Reserved

Archaeological Site Plan

0 10 20 m

Meters

Scale 1: 1000 @A4

N

Information shown on this plan is indicative only. The Council accepts no liability for its accuracy and it is your responsibility to ensure that the data contained herein is appropiate and applicable to the end use intended.

Tauranga City

Archaeological Sites Key

Archaeology

Archaeological Sites

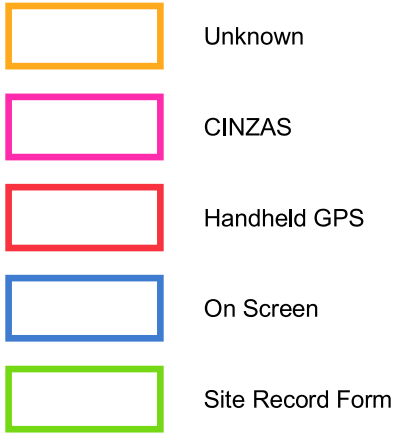
Destroyed Archaeological Sites

NZAA Archaeological Points

Heritage NZ Sites

Moturiki/Mauao Archaeological Sites

NZAA Archaeological Sites



Unknown

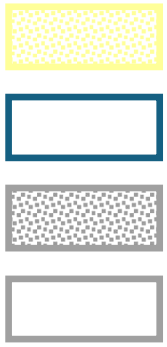
CINZAS

Handheld GPS

On Screen

Site Record Form

Archaeological Extent



Site Buffer

Site Extent

Site Buffer (Destroyed)

Site Extent (Destroyed)

Tauranga City

Land Features and Natural Hazards

Tauranga City

General Description of Land Form within Tauranga District

The land form and geology within Tauranga District have some features which demand particular attention.

(a) Minimum Building Platform Levels

Significant areas of Tauranga District are at risk of flooding through sea level rise, tidal surges within the harbour, storm-wave runup on the ocean coastline and the flooding of streams, sewer drains, ponding areas and overland flow paths in extreme climatic conditions. Council has some "broadbrush" information on many possibly flood prone areas. More detailed investigations by appropriately qualified people may be required to be submitted in support of Resource and Building consents. Building Platforms should be constructed with adequate freeboard above flood levels. Council has adopted a minimum floor level policy. This level is available from Council on request from Council's Development Engineer. However due to the dynamic nature of the environment and the ongoing investigative work these levels may be reviewed at any time. For the purposes of this clause, a "building platform" is defined as the area of ground within a line 1.0m outside the perimeter of the building proper.

(b) Low-lying Land

There are many areas of low-lying land (often adjacent to the harbour) which comprise soft or very soft foundation conditions. These conditions are characterised by normally consolidated fine grained alluvial sediments (silts and clays) which have been deposited in marine or estuarine environments. In many areas they have been subject to random and non-engineered fillings. The materials are prone to settlement caused by consolidation under even minor loadings. These areas require particular care and appropriate geotechnical investigation and advice prior to development concepts being prepared. Whilst most of the Mount Maunganui/Papamoa area has an underlying sand formation, pockets of peat and "black sand" occur which exhibit poor foundation support qualities. These should be removed from building platforms and roading subgrades.

(c) Sloping Ground

The foundation conditions of the low-lying areas in the District have been described in (b) above. The near surface geology of the higher ground within the District comprises a series of weathered fine grained rhyothic ashes known locally as the Older Ashes. The Older Ashes consist of the Pahoia Tuffs overlain by the Hamilton Ash (the top of which is known locally as the "chocolate" layer).

Overlying the Older Ashes is a series of coarse friable silts, sands and pumice lapilli which tends to mantle the topography formed within the Older Ashes and are known locally as the Younger Ashes.

On some sloping ground, particularly the present and relic slips adjacent to the harbour, the ashes often have marginal stability and there are numerous examples of past and recent instability. Deep seated failures are generally confined to the steep banks which are or have in their history been subjected to active toe erosion. Development must be set back from the top of such steep banks, with the set back distance being determined by appropriate geotechnical investigations carried out by a Person who has pre-qualified with Council as a Specialist Geotechnical Advisor.

The majority of other failures on modest to steeply sloping ground are shallow failures (involving the top 1m to 3m of soil), but are nonetheless of serious consequence to any building development. Such failures are usually initiated by extreme climatic conditions. Any sloping ground greater than 15 degree gradient should be subject to appropriate geotechnical investigations to determine whether the ground is adequately stable for development.

TONKIN & TAYLOR LTD

CONSULTING ENGINEERS
REGISTERED SURVEYORS AND TOWN PLANNERS
47 George Street, Newmarket, P.O. Box 5271 Auckland 1, New Zealand.
Telephone: 771-865 Telex: NZ 21594 Cable: TONTAY

Our Ref:

[redacted]

WELCOME BAY, TAURANGA

GEOTECHNICAL REPORT

* Return to Env. Engineers. *

REF : T.T.7183
S.L.5800

MAY 1986

Prepared for :

Tauranga Charitable Trust
PO Box 878
TAURANGA

Distribution :

Tauranga Charitable Trust	1 copy
Tauranga City Council	1 copy
Tonkin and Taylor Ltd	2 copies (file)

SELWYN RIDGE REPORT

INDEX

DRAWINGS

5800/H1	Subdivision and Test Position Location Plan
5800/H2	Plan Showing Areas of Cut and Fill
5800/H3	Cross Section through Lots 181, 182
5800/H4	Cross Section through Lot 173
5800/H5	Cross Section through Lots 167-169

Bore and Test Pit Logs

REPORT

1.0 INTRODUCTION

Tonkin and Taylor Ltd were instructed by their subsidiary company, Shrimpton and Lipinski Ltd on behalf of the Tauranga Charitable Trust to submit a report on geotechnical aspects of the construction of the Trust's subdivision at Welcome Bay, Tauranga. The subdivision is known locally as the Selwyn Ridge Subdivision. The report was requested as one of the conditions of subdivision approval (clause (a)(v)) imposed by the Tauranga City Council in their approval notice, reference F.1396 Stage VI dated 20 December 1983.

The subdivision has been constructed to create 182 residential lots, a large reserve area that is to be vested in the Tauranga City Council and to be developed by them for active recreational purposes and a school site to be developed at a later stage by the Hamilton Education Board.

The subdivision site as shown on the attached drawing S.L.5800/H1 was formerly pastoral land bounded to the north west and west by the existing residential developments of Victory, Holmburn and Langstone Streets. The original site before construction was bounded along the eastern margin by a ridge. The ground sloped westwards at angles up to 18 degrees to two substantial gullies that bisected the property. The major gully in length ran on the centreline of what is now Meander Drive while the major gully on width and depth is the recreational area now known as Selwyn Park. Three prominances along the ridge of the eastern margin were present. The southern most and central prominances have been left intact, the central one being the Te Auhi Pa Site. The northernmost prominance has been reduced to form Philomel Crest.

The primary school site has been formed by the reduction of a former Maori historical site situated at the ends of Langstone and Holmburn Streets. Langstone Street has been extended as part of the Selwyn Ridge Subdivision.

Along the western margin of the subdivision and bounded by Victory Street, the ground rose eastwards to a ridge along the eastern side of the former gully now Selwyn Park and to the prominance mentioned above and reduced in height to form Philomel Crest. The major access road into the subdivision, Osprey Drive, enters the subdivision from Victory Street through a cutting along the western margin and around the northern end of Selwyn Park.

This report summarises site investigation work prior to construction of the subdivision and construction controls on cutting and filling during construction. Specific areas addressed in this report include :-

- pre construction site investigation
- subsurface drainage
- cut and fill controls
- slope stability of house lots
- cut slope maintenance
- subdivision development and maintenance

2.0 PRECONSTRUCTION SITE INVESTIGATIONS

2.1 Procedures

During development of the subdivision scheme plan an extensive subsurface investigation was undertaken to :-

(a) Identify the source of materials for filling of the gullies. This work was concentrated around the ridges to be reduced specifically on the school site and at Pelorus Street and Philomel Crest.

(b) Identify the type of materials over which filling was to be placed specifically in the gullies filled to form Meander Drive and Selwyn Park.

(c) Identify soil types and relative strengths on sloping ground specifically to the east of Meander Drive and Philomel Crest and north of Osprey Drive from which slope stability assessments can be made.

Various types of investigation techniques were used, namely :-

(i) A 400mm diameter power driven auger to depths of up to 10 metres.

(ii) Pits dug with a mechanical digger to depths up to 4.5 metres.

(iii) 38 mm handauger holes to depths of up to 6 metres.

(iv) Boreholes drilled with a truck mounted rotary rig

The strengths of the soils encountered were measured with a Pilcon shear vane and relative densities by a Raymond sampler (SPT) operated on the rotary drilling rig.

Logs of the boreholes and test pits are appended to this report while the test positions are shown on attached drawing S.L.5800/H1.

2.2 Geology

All soil types typical of the Tauranga area were found in the subsurface exporations within the subdivision. These were :-

(a) Ignimbrites

Found as outcrops at two locations on the school site and as a basement in a number of boreholes. The ignimbrite found was in a highly weathered form (soft rock) typically stiff to hard slightly cemented silts and pumiceous gravels. Groundwater and surface swampy areas encountered in the gullies of Meander Drive and Selwyn Park were perched above the weathered ignimbrite (refer to test pits 15 and 17).

The ignimbrites are overlain by a cover sequence comprising :-

(b) Tauranga Formation

These soils were largely absent on the subdivision being mainly found to any depth in area within Tauranga at lower altitudes than at Selwyn Ridge. Where found in shallow formation they are a sequence of terrestrial and estuarine sediments and are typically highly variable reworked or weathered volcanic ashes (clays) and coarse alluvial sediments of pumiceous silts and sands.

(c) Older Ashes

These soils are a sequence of partly eroded and highly weathered airfall volcanic ashes which are usually found as clayey silts and clays.

Some of the older ashes in the Tauranga district have been found to be highly sensitive and much of the landsliding around the coastline has been attributable to the presence of these older ashes.

Our boreholes and test pits showed the older ashes to be present on the side slopes below the ridges of the eastern margin, Portland Street, Philomel Crest and the school site but largely absent between the more recent ashes and the underlying weathered ignimbrite on the ridges. Where found on the slopes the older ashes were of relatively high shear strength. In all instances, where the older ashes were recovered sensitivity was not noted and ground water was not encountered although there was some evidence of local softening and increase in moisture content where soils overlaid less permeable and drier soils within the older ash classification.

(d) Rotoehu and Younger Ashes

A sequence of young (recent) unweathered rhyolitic ashes, the most prominant of which is the Rotoehu ash found immediately overlaying the older ashes and is typically bands of pumiceous silty sands and sands. The Rotoehu ash is usually very moist being the most permeable of the younger ashes, while at the same time overlaying the less permeable older ashes.

Younger ashes are highly permeable with the upper layers being generally coarse friable silts. Where exposed in cut faces they can stand in near vertical batters but are highly susceptible to erosion from wind and rain.

The younger ashes were found in all boreholes with deeper layers being found on the slopes away from the ridges. Generally depths range from 34 metres and most filling was done with the younger ashes. Measured undrained shear strengths in the silts of the younger ashes were high (greater than 100 kPa).

Noted in most pits and boreholes was a stratum of loose orange pumiceous sandy and gravelly silt known locally as "rotten pumice". Shear strengths were found to be low in this material and it is unlikely that this stratum would be of sufficient strength to support building foundations (refer to Section 5.4). The average thickness of this stratum was found to vary between 0.5 and 1.0 metres.

2.3 Other Observations

As well as the initial subsurface investigations notice was taken of the type and relative strengths of the subsoils exposed in road cuttings (Osprey Drive and Langstone Street) and trenches for services (trenches east and west of Philomel Crest).

2.4 Testing

Apart from insitu shear vane and SPT testing selected disturbed samples were tested in our Auckland laboratory to determine whether our proposed compaction specification for filling (refer to Section 4.0) was applicable to the soil types present. Laboratory compaction tests proved that the calculation of air voids percentage to specify compaction density and the use of a shear vane or Scala Penetrometer to specific strength requirements were appropriate.

Undisturbed tube samples were taken in the alluvial subsoils underlying the filling in Meander Drive and Selwyn Park for oedometer testing to determine parameters from which the degree of settlement and time taken for settlement to take place could be determined during and after the fill was placed (refer to Section 4.9).

3.0 SUBSURFACE DRAINAGE

Groundwater movement was noted during preconstruction site inspections entering the gullies which were infilled to form Meander Drive and Selwyn Park. Water entering these gullies appeared to enter through the pinkish and whitish grey sands which overlay the weathered ignimbrite. These sands were in turn overlaid with clays and silts being weathered ashes that had been washed down from the slopes above. These clays and a cover of marsh grasses and organic topsoils masked the volumes of groundwater flowing down the gullies either on the ground surface or through the permeable sand strata underneath.

In order to prevent groundwater from rising in the fill as well as serving to drain and dry the soft alluvial deposits (the organic cover having already been removed) subsurface drains were installed to details shown on as built drawings S.L.5800/B3, B3A and B4 already submitted to Council for their files.

The subsurface drains were constructed within the Meander Drive gully in the following manner :

(i) Benches were cut along the toe of the slopes leading into the gullies and the underlying pervious strata exposed. These benches allowed the excavator to work on a solid platform.

(ii) Excavation of trenches determined the depth at which the groundwater flows were intercepted. The trench inverts were cut to the base of the seepage layers.

(iii) The trench was lined with Polyweave 'F' filter fabric and infilled with 20-6 mm quarry gravel. Inserted in the centre of the stone medium was a 100 diameter Novaflo pipe.

(iv) The drains were capped with a sheet of polythene to prevent contamination by filling later.

When sufficient drying of the gully bed was achieved by the elimination of lateral inflows unsuitable organic material was removed from the gully floor and filling commenced. At the lower ends of the Meander Drive gully a third central drain was installed to reticulate groundwater that was flowing in the sands overlying the rock longitudinally through the gully.

As required laterals were provided to reticulate groundwater seepage from springs higher in the gully sides. These laterals are shown on the as built drawings.

In the Selwyn Park gully the inflow of groundwater was less than for the Meander Drive gully. As shown on the as built plans one central drain was found to be sufficient with short laterals installed where required at the head of the gully.

Subsurface drains were reticulated to manholes within the subdivision stormwater disposal system.

4.0 CUT AND FILL CONTROLS

4.1 Scope

The formation of the subdivision involved the bulk earthmoving of 210500m3 of cut to fill in areas shown on the enclosed plan S.L.5800/H2. Major areas of cut were :

(a) The primary school site with depths of cut up to 4.0 metres near the formation at the end of Portland Street.

(b) Osprey Drive from below and west of the Pa site through to the south eastern boundary with a maximum depth of cut of 4.94 metres in the rise uphill from Victory Street.

(c) North west of Pelorus Street on Lots 110-123 inclusive, average depth of cut 1.60 metres.

(d) Portland Street on the ridge between Selwyn Park and the gully filled along the Meander Drive alignment, maximum depth of cut 4.38 metres.

(e) The lower end of Langstone Street, maximum cut depth 3.21 metres.

(f) Philomel Crest and the ridge extending westwards towards the northern end of Selwyn Park, cut depths ranging from 1.93 to 5.63 metres.

Major areas of filling were :

(a) Meander Drive in two sections, from lots 53 to 59 and from the Langstone Street intersection northwards to lots 37 and 72. The maximum depth of filling placed was 4.52 metres.

(b) Selwyn Park from the Victory Street filled road embankments to Osprey Drive including lots 54 and 55 on Meander Drive with a maximum fill depth of 9.0 metres.

(c) The intersection of Meander Drive, Philomel Crest and Osprey Drive with a maximum fill depth of 2.80 metres.

The residential lots influenced by the filling work are as shown on the attached plan S.L.5800/H2 and the as built plans prepared by Shrimpton & Lipinski Ltd and currently on the City Council files.

4.2 Standards

Fill material comprised mixed volcanic ash material identified from the areas of cut in our pre construction subsurface investigation.

The standard of ground preparation and compaction adopted on the subdivision was as described in NZS 4431:1978 "Code of Practice for Earthfill for Residential Development." The method of compaction control in the code was modified as permitted in Section 7.4.2.3. according to our in house standard as follows :-

(i) Air voids percentage (as described in NZS 4402:Part 1:1980)

- General fill (to house sites and reserve areas)

  Average value less than 10% (any 10 tests)

  Maximum single value 12%

- Road subgrade (upper 500 mm)

  Average value less tha 8%

  Maximum single value 10%

(ii) Undrained shear strength (measured with an insitu vane)

- General fill (as defined above)

  Average value not less than 150 kPa

  Minimum single value 110 kPa

- Road subgrade (upper 500 mm)

  Average value not less than 170 mPa

  Minimum single value 140 mPa

4.3 Compaction Control

Compaction control was part of the contractors obligations that were observed by our resident site supervisor. Tests were undertaken by a method approved by us by a representative of a local TELARC registered soils testing laboratory. The incidence, position and depth of tests were approved by us. Tests were generally carried out to correspond to every 2000 m3 of filling placed.

The filling was placed to the finished levels and grades as shown on the original drawings approved by Council with modification where required to those details shown on the as built plans.

Surfaces prior to filling over were prepared by the removal of topsoil to expose the insitu inorganic ash soils under. In the case of the gullies under Selwyn Park and Meander Drive, soft or organic compressible soils were excavated to waste before filling was placed. Initially this filling was end tipped up to 500 mm deep in these locations to form a working platform for subsequent ease of movement of earthmoving and compaction equipment. Prior to filling, subsurface drains were installed (refer to Section 3.0) and filling delayed until the effectiveness of the drains in drying the insitu ground under the fill was confirmed.

4.4 Settlements

The site investigation work before commencement of the earthworks (refer to Section 2.0) in the Meander Drive and Selwyn Park areas showed the presence of peaty and swampy deposits overlaying soft alluvial soils which in turn overlaid weathered ignimbrite rock (refer to test pits 15 and 17). Total settlements were predicted in these alluvial deposits from laboratory consolidation tests on undisturbed tube samples taken in these test pits.

The degree of settlements predicted due to the filling are :-

Meander Drive (maximum fill depth 4.5 metres)

Settlement of insitu alluvial soils	=	30 mm
Settlement of compacted fill	=	15 mm
Total settlement predicted	=	45 mm
Time for 90% of total settlement to occur	=	30 days

Therefore at least 90% of the predicted total settlement should have occurred during the three month earthworks contract period.

Selwyn Park (maximum fill depth 9.0 metres)

Settlement of insitu alluvial soils	=	135 mm
Settlement of compacted fill	=	60 mm
Total settlement predicted	=	195 mm

Time for 90% of total settlements to occur -

Insitu soils	=	30 days
Compacted fill	=	180 days

Therefore settlement of the compacted filling in Selwyn Park is expected to continue for at least 3 months after the earthworks contract has concluded.

As the filling elsewhere to roadways and residential lots is less extensive and shallower, than that assumed in the analysis of settlement to Meander Drive, we expect the degree of settlement within the fill and underlying subsoils to have virtually concluded (greater than 90% consolidation) by the time of completion of the earthworks and certainly by the time of construction of the first houses which would be later in 1986.

In order to monitor settlements, the survey benchmarks placed at regular intervals along the berms of Meander Drive as well as through Selwyn Park have been levelled to stable reference marks and Tauranga City Council datum away from the filled areas. It is envisaged that these benchmarks will be rechecked for level monthly for the first three months and then 6 monthly for a further nine months.

4.5 Certification

The filling to form roads, reserves and house sites within the zones shown on drawing S.L.5800/H2 and the as built plans, has been completed in accordance with NZS 4431. House lots are therefore suitable for the erection of dwellings in accordance with NZS 3604 and NZS 4229 where allowable ground bearing pressures of up to 100 kPa are applicable for foundations detailed to NZS 3604 and NZS 4229. Settlement of dwellings designed in accordance with these codes are expected to be within acceptable limits for buildings incorporating masonry and plastered finishes. However, normal foundation investigations and inspections should apply.

5.0 SLOPE STABILITY

5.1 General

The Selwyn Ridge subdivided land comprises a series of slight to moderate slopes (not greater than 18 degrees) extending from ridges running south to north to the two gullies now Meander Drive and Selwyn Park and to the recreational reserve to the south and Victory Street to the west.

An inspection of past stereoscopic aerial photography indicates that the land within the area of the subdivision has been stable over the past 20 years. Signs of past instability are evident however, to the east and below the Pa Site and Philomel Crest. Other surface depressions on the slopes are also apparent at the head and to the side of the major gullies.

Landslides within the Tauranga area are seldom attributable to a single cause but stem from changes, some gradual others often sudden, in the many factors controlling the stability of the sloping mass. An increase in the water content or water pressures within the soil/regolith/ geological system is apparently the most common trigger for mass movement. Seismic factors may also initiate movement. Other factors which may trigger movement at specific locations include undercutting, thereby removing toe or lateral support as in the case of road cuttings or excavations for flat house platforms, surcharging by filling on slopes or oversteepening. The presence of relatively weak or sensitive soils when influenced by changes in their present state could trigger instability.

Two types of slope failure are common to the Tauranga area :-

(a) Superficial failures, usually groundwater initiated in which soils became water saturated and failed at the contact with an underlying more coherent or less permeable zone. The depth of these failures is generally less than 2 metres. This type of failure is generally directly related to high intensity rainfalls when groundwater flows (and hence seepage pressures) and the degree of soil saturation are increased. Superficial failures may occur in either the younger or older ashes.

(b) Deep seated failures which result from a sudden catastrophic transformation of a soil layer into a liquid of highly sensitive material at some depth beneath the land surface. Such deep seated failures were experienced at Maungatapu and Omokoroa in 1979 and were probably caused by changes in groundwater level after exceptionally high rainfalls inducing high pore water pressures.

The geological features of inferred past landslides from old aerial photography suggest that the sites of these landslides remain constant and future instability may be reactivated by one or some of the factors outlined above. It is noted in recent geological reports that most of the slips that occurred during the March 1979 rainstorm in the City were sited on or near landslides recognised in past aerial photography.

5.2 Overview

An overall assessment of slope stability within the subdivision after test drilling and pits were undertaken and slopes measured has been made. Relevant factors considered in the assessment were :-

(a) Slopes on which house sites are proposed are not steeper than 18 degrees and therefore the risk of future slope instability should be low. Our experience in the Tauranga area would suggest that slopes greater than 20-25 degrees are possibly subject to at least minor surface fretting or creep.

(b) Subsoils encountered, apart from loosely compacted sands of the younger ashes, were of relatively high undrained shear strength. There were no signs of sensitive soils especially in the older ashes that may be considered unstable apart from a thin stratum in pit no.20.

(c) The subdivision area appears to be founded on ignimbrite rock domes with various depths of volcanic ashes covering the rock.

(d) Apart from swampy conditions in the two major gullies, now filled, the groundwater table was not intersected in the depths of any of our boreholes or test pits except for borehole 19.

(e) Aerial photography suggests that there has been little if any recent slope instability within the subdivision areas.

As an overall assessment of the stability of the land within the subdivision, we believe that it is feasible to develop all sloping ground by the erection of residential dwellings. We have not observed by our subsurface investigations, visual inspections or aerial photography study that weak subsoils do exist in configurations where the risk of slope failure is unacceptably high or that past slope instability has been recent. We do however, list in forthcoming sections of this report specific observations on various areas within the subdivision where future care with development should be observed.

5.3 Effect of Subdivision Development on Slope Stability

The construction of the subdivision has been carried out by cutting and filling operations. With regard to sloping ground cutting of ridges has served in some respects to remove overburden and surcharges while filling at the toe of the slopes as in the case of Meander Drive has served to provide lateral resistance to the sloping mass. In all cases of filling the fill material has been benched into the slopes and therefore the possibility of fill sliding over the original slope is unlikely. In most cases the degree of compaction and shear strength of the fill material is in excess of those properties for the insitu materials.

The overall development of the subdivision provides for impermeable road and footpath surfaces and reticulation of runoff to a stormwater reticulation system. With the development later of large areas of house roofs and paved driveways with all runoff reticulated to the stormwater system, the volume of water that used to seep to the potentially weaker subsoils should be reduced. Therefore the likelihood of slope instability being initiated by abnormal increases in groundwater quantity and flow is reduced accordingly.

Individual stormwater reticulation for each house lot has been provided to pass stormwater to the street reticulation system. Soakholes for local stormwater disposal are not required and should be discouraged where possible. Soakholes would not be effective, in any event, in areas of fill or where the weathered ignimbrite is close to the ground surface along the higher ground of the subdivision.

5.4 Development of Individual Lots

Sloping ground on individual lots apart from those discussed in Section 5.5 are suitable for the erection of dwellings in accordance with NZS 3604 & NZS 4229. However, it is likely that some modification to the sloping sites will be required to suit the individual requirements of the house builder and the type of house proposed. It is beyond the scope of this report to discuss all types of potential house construction, but it is likely that some form of flat house site will usually be required, necessitating further cut and fill operations. Depths of cut should rarely be greater than 2.4 metres to make room for house basements, but some attention should be given to the stabilising of cut slopes. Fully drained cuts up to 1.5 metres high (where no groundwater bearing strata are intersected in the cuts) and where there is no sloping ground behind should rarely require further investigation but cuts higher than 1.5 metres should be made at a safe batter angle not steeper than 1 on 1 or retained by some form of lateral retaining structure. Cuts higher than 2.0 metres should be subject to further study and the house builder,should take professional engineering advice. Such advice given should take into account the nature and strength of the subsoils exposed and the status of sloping ground above the cut.

It could be possible for example that the property owner above the site development in study has placed filling or carried out a development which may be put at risk if support is reduced downslope by truncation of the lower slope. In any situation some form of covering should be placed over any cut face to prevent erosion or fretting of the exposed soils, especially the Rotoehu ashes.

It is also possible that cuttings or excavations may expose local pockets of groundwater seepage. This may occur where the Rotoehu ashes have infilled an old gully and stormwater has accumulated within the gully before flowing down the old gully through the Rotoehu ashes. Seepage flows may cause tunnel erosion to the extent where internal collapse may occur. Should seepage be apparent, professional advice should be sought with the view to installing some form of buttress drain behind a retaining wall.

Excavated soil may be placed on the sloping ground of individual sections, but this work should also be undertaken with some caution. The principles of ground preparation and filling procedures as quoted in NZS 4431 should be adopted. We can generally foresee little trouble with the placement of up to 0.5 metres of fill provided that batters are flatter than 1 on 2 and are well compacted and that, should some erosion or minor slumping occur, structures supported by the fill or adjacent properties downslope are not affected. Filling greater than 0.5 metres deep or with batters steeper than 2 on 1 may require professional advice but this advice should be manditory for fill depths on sloping ground greater than 1 metre deep.

It is generally accepted that the insitu younger ashes in the Tauranga area are of sufficient strength that foundations detailed in NZS 3604 & NZS 4229 are suitable with respect to allowable ground bearing pressures (100 kPa). We have seen no evidence to suggest that reduced ground bearing pressures should generally be adopted but the nature of the subsoils exposed in footing excavations should be as described in these codes. It is possible that the "rotton pumice" described in Section 2.2(d) will be of lower bearing capacity and some further professional advice may be required by the house builder on allowable ground bearing pressures during construction at the time of inspection of the excavations for the foundations.

Test pits and auger holes put down during the site investigation work have been fixed and plotted as accurately as practicable on drawing S.L.5800/H1. Backfilling of these test holes has also been done under our supervision. It is possible however that the sites of these test positions may coincide with house foundations. At the time of foundation excavation or subsequent inspections due regard should be taken of the presence of test locations in certain properties. If these test locations are encountered in foundations and the formation integrity is compromised the matter should be referred back to us.

Special care may be required in the development of the following lots. This care should relate to any earthworks required to form the building platforms or access routes to the house sites where cutting and filling as previously described is required. Lots marked * have also been listed because cuts or fills along or close to boundaries may create a nuisance to adjacent property owners upslope or downslope from these lots if the cuts or fills are not made and stabilised as previously described.

Lots 13
14
32
33
34
70 *
71 *
74 *
106 *
111 *
112 *
117 *
118 *
120 *
134 *
135

5.5 Lots East of Philomel Crest

Specific testing was carried out on lots 176-178 and 181-182 to assess slope stability with respect to possible future development because of the steepness of the slopes below these house lots. There is some evidence of past instability on the lower sections of these slopes in the neighbouring property owned by Tikorangi Farms.

5.5.1 Development of the Lots

Philomel Crest was formed by the excavation of up to 4.65 metres on the road centreline adjacent to lot 178 and 3.29 metres adjacent to lot 182. Original ground slopes on lots 176-178 were about 20 degrees but these have been reduced by lowering the ground levela by up to 3.5 metres to flatten the ground slope to 11 degrees on the upper part of the property where a house would reasonably be built. The property steepens to 16 degrees towards the eastern boundary. Ground slopes further to the east of the property boundary and downslope are about 17-18 degrees. Original ground slopes on lots 181 and 182 were as high as 24 degrees near the eastern boundary. Along with the lowering of the ground levels to form the roadway and berms the average slope across lots 181 and 182 has been reduced to 10 degrees by the excavation of up to 3.5 metres from the centre of the lots.

5.5.2 Lots 181, 182, 183

Borehole 18 put down on lot 182 showed the presence of 1.6 metres of younger ashes (the major part of these ashes having been removed by earthworks) overlaying silty clays and clayey silts of the older ashes. Clays overlaying harder weathered ignimbrite were found at 6.0 metres with the bore terminating at 10 metres deep. The older ashes exhibited various zones of changing colour and moisture content. Zones of high moisture content were near the interface with the weathered ignimbrite which was also moist and soft being influenced by water perched above. The "soft rock" became increasingly harder with depth. Borehole 21 positioned 2.2 metres downslope was put down with a hand auger to 5.2 metres. Younger ashes were found to 3.8 metres with the Rotoehu ashes being very moist. The older ashes were also very moist and soft initially (influenced by water in the more permeable Rotoehu ashes above) becoming firmer with depth. Borehole 22 positioned 15 metres downslope from borehole 21 was also put down with a hand auger to 4.1 metres. Younger ashes were found to 2.8 metres overlaying the older ashes which were initially soft but becoming firmer as noted in borehole 21. Of interest was a possible void in a section of the Rotoehu ash (sand) at 2.2 metres deep. The auger fell under its own weight for about 300 mm. A careful inspection of the surrounding ground downslope did not reveal any sign of possible seepage which would suggest that the void had been formed by tunnel erosion in the sand layers due to localised groundwater movement.

The slopes are however marked by frequent rabbit burrows, one of which may have been intersected by the auger.

No groundwater was found in any of boreholes 18, 21 and 22.

A typical cross section through the lots is plotted on drawing S.L.5800/H3 appended to this report.

The soft rock (ignimbrite) found in boreholes 18 and 12 on Philomel Crest, but absent in borehole 20 appears to dip steeply from just below ground level on Philomel Crest to greater depths downslope to the east. Groundwater has increased natural water contents in the older ashes immediately below the Rotoehu ashes and in the highly weathered ignimbrite (clay) above the more impermeable less weathered rock found in borehole18. Shear strengths are reasonably high in the younger ashes (silts) but reduce where water contents are high in the older ashes and clays.

Ground slopes vary below lots 181 and 182 ranging from 10 to 26 degrees with the steep slopes (26°) occurring approximately 42 metres downslope of the eastern boundary of lot 182 in an area where some surface creep is evident.

The development of a flatter platform on which a house may be erected has served to reduce the risk of slope stability on the house site to an acceptable limit. There is some probability of further slope instability towards the lower part of the slope beyond the eastern boundary of lots 181 and 182 but this instability is likely to be in the form of minor surface creep which should not affect the two residential lots.

The possible forms of development on lots 181 and 182 are wide ranging but we would expect some form of excavation to be made for lower levels for garages etc. Building is also likely to be close to the eastern property boundaries where the ground slope increases (from 10 to 20 degrees). As an additional precaution, we recommend that Council insist on a geotechnical report to accompany any building permit application. Such a report should list any possible restrictions on cutting including safe slope angles and retaining walls, filling, house foundation types, vehicle access and disposal of stormwater. This reassessment should also pay particular attention to the stabilisation of cut slopes where perched groundwater may be intersected during excavation, either in the Rotoehu ashes or deeper within the weathered ignimbrite. We consider that shallow pad foundations for house piles as described in NZS 3604 and NZS 4229 are not applicable for developments on Lots 181-183.

5.5.3 Lots 176-178

Two boreholes were put down (19 and 20) on a cross section through lot 177. This cross section is plotted on drawing S.L.5800/H4. Borehole 19 was placed at the change in grade from 7 degrees that had been created in the bulk earthworks to form Philomel Crest to 17 degrees which was the natural ground slope before subdivision. Borehole 20 was placed near the eastern boundary of the lot. The underlying weathered ignimbrite rock was found in both boreholes and the profile of the top of this rock has been plotted in its assumed position while taking into account its depth found in boreholes on the Philomel Crest centreline (borehole 12). The weathered rock was overlaid by older and younger ashes. The ashes in borehole 19 were found to be soft, especially just above the Rotoehu ashes (at 1.4 metres deep) and immediately above the rock (at 2.1 metres). The thickness of the various ash layers was greater in borehole 20.

The aspects and positions of lots 176-178 would suggest that any building development would take place on the upper slopes (upslope of borehole 19). The type of appropriate foundations for any structure are likely however to be influenced by the soft layers found in borehole 19. While housing development on these lots is possible, specialist engineering advice should be sought whereby recommendations for appropriate foundations which may bypass the soft subsoils and possibly extend to the rock underneath should be researched. For the case of excavated basements further geotechnical studies should be made in the area that any building would occupy. The points expressed in Section 5.5.2 for lots 181 and 182 should also be addressed. The results and recommendations of such a report should be submitted at the time of building permit application.

5.6 Lots West of Philomel Crest

Test pits 19 and 20 dug on the sloping ground between Philomel Crest and the existing houses on Victory Street were dug.
The exposed subsoils in these pits along with exposures in the sewer and stormwater trenches and the subsoils in borehole 12 on Philomel Crest were compared. A typical cross section through lots 167, 168 and 169 and considered typical of all lots west of Philomel Crest is shown on S.L.5800/H5. The presence of a relatively flat ground slope (11 degrees) and subsoils of relatively high strength overlaying rock indicates that the risk of slope instability is remote provided that the site development criteria listed in Section 5.4 are observed.

6.0 STONE FACING

Roadside cut batters within the subdivision have been faced with grouted stone pitching in the following locations :

Osprey Drive	either side of the entry from Victory Street, maximum height of batter 4.0 metres.
Philomel Crest	below lots 137 and 183, maximum height of batter 2.0 metres.
Meander Drive	eastern side opposite Portland Street intersection, maximum height of batter 3.0 metres.
Osprey Drive	eastern side below the historical reserve. The stability of this work has been assessed by Tonkin & Taylor Ltd in their letter to the Tauranga city Council dated 28 May 1986.
Osprey Drive	eastern side opposite Pelorus Street, maximum height of batter 2.5 metres
Langstone Street	northern side of road west of the Meander Drive intersection, maximum height of batter 3.0 metres.

At all locations the excavated faces were formed with bulk earthmoving equipment and trimmed with a small digger to final shape. Before facing the exposed subsoils were checked for zones of soft or wet material. In all cases, except in those faces below the Pa Site, no groundwater seepage was noted.

The stone facing was placed in the following manner :

(a) the batters were trimmed to expose insitu ground at a slope of 4 on 1.

(b) a continuous reinforced concrete base was poured in an excavated trench. This base was keyed with reinforced concrete filled post hole bores at least 600mm long and at 900mm centres.

(c) selected uniform ignimbrite rock was bedded in 17.5 MPa concrete and erected parallel with the cut face. The gap between the stone and the face (200 mm) was also filled with rodded 17.5 MPa concrete. Nominal vertical and horizontal reinforcement was placed.

(d) Weep holes were formed at 1 metre centres vertically and hortizontally. The lowest line of holes was positioned not more than 100 mm above the top of the footing.

The stone facing was installed under supervision to our specified vertical and horizontal alignment. No filling was placed behind any of the stonework or grouting.

The purpose of the stone facing is to provide an adequate weather protection to the exposed erodible ashes (cut at 4 on 1) as is common practice in the Tauranga area. The batters were inspected before covering and found to be in a stable condition and should continue to remain that way provided that the following restrictions on development above the pitching and batters be observed :

(a) no building or vehicle accessway be sited closer than a horizontal distance from the top of the batter equal to the total vertical height of the batter including berms. This restriction should be noted when assessing building yard requirements.

(b) no overground stormwater discharge be allowed from paved or irrigated areas towards and over the face of the stonework.

(c) the use of soakholes or shallow field drains be prohibited on the properties above the facing.

(d) the roadside berms have been filled and grassed up to the first level of pitching. If for any reason excavations for services are made in the berms the backfill should be replaced to the original compaction standard up to the first course of pitching.

7.0 CONCLUSIONS

Our pre construction site investigations, monitoring of subsoil exposures during subdivision construction and studies of particular sloping land have determined that all the 182 lots subdivided for domestic use are suitable for housing development, but the following recommendations should be noted by the developer when considering building permit applications.

(a) Extensive cutting and filling has taken place as shown on the enclosed drawing S.L.5800/H2. Filling has been achieved in excess of the minimum standards stated in NZS 4431 "Code of Practice for Earthfill for Residential Development." Foundations detailed to NZS 3604 "Code of Practice for Light Timber Frame Buildings not requiring Specific Design" and NZS 4229 "Code of Practice for Masonry Buildings not requiring Specific Design", in which allowable ground bearing pressures of 100 kPa are assumed, are applicable. Foundation excavation should however still be subject to the standard inspection and testing procedures listed in those codes. Refer to Section 4.0.

(b) Stormwater runoff reticulation from roofs and hardstanding areas should be connected to the stormwater disposal system provided to each lot and not disposed of into soakholes.

(c) Cut slopes should be monitored during housing development. Minor cuts should remain stable under most circumstances although some form of weather protective facing is recommended. Cuts greater than 1.5 metres high should be cut not steeper than 1 on 1 or retained with an approved lateral retaining structure. Cuts greater than 2 metres high should only take place on receipt of professional engineering advice.. Such advice should assess the effect of the cut, especially before some form of slope stabilisation occurs such as the erection of a retaining wall, with respect to the possibility of removing support to upslope development or putting an adjacent structure such as a house at risk. Refer to Section 5.4.

(d) Excavations which expose groundwater seepage should be provided with some form of drainage under professional engineering guidance.

(e) Filling placed on properties should be undertaken according to the techniques and principles of NZS 4431 in which standards for ground preparation prior to filling and filling compaction are listed. Fills up to 1 metre deep and correctly placed should not cause existing slope instability by surcharging but fills greater than 1 metre deep should only be undertaken on receipt of professional engineering advice.. Such advice should assess the effect of the filling surcharge loads on any development on adjacent properties, downslope. Refer to Section 5.4.

(f) Most insitu soils should be capable of supporting foundations according to NZS 3604 and NZS 4229 with allowable ground bearing pressures of up to 100 kPa. It is likely that exposures in and under footings of orange pumiceous gravelly silts (rotten pumice) will exhibit lower ground bearing capacity. Refer to Section 5.4, page 15.

(g) Permits for house construction on lots 176-178 and 181-183 should be accompanied by a specific report prepared by a registered engineer with accepted expertise in geomechanics which should address the impact of the proposed development on the future stability of the lots. Specific points that should be considered are listed in Section 5.5.2.

(h) Property development above cut batters with stone pitched faces should proceed subject to the restrictions listed in Section 6.0 page 19.

(i) Special care may be required in the development of lots 13, 14, 32 - 34 inclusive, 70, 71, 74, 106, 111, 112, 117, 118, 120, 134, 135. This care relates to the observance of the recommendations in items (c), (d), (e), (f) above in the formation of building platforms and access routes on sloping ground. The formation of cuts and fills along or close to boundaries of adjacent lots upslope and downslope may create a nuisance to occupiers of these adjacent lots if the cuts and fills are not formed or stabilised in the recommended manner. Refer to Section 5.4.

8.0 LIMITATION

Recommendations and opinions contained in this report are based upon data from boreholes. Inferences about the nature and continuity of subsoils away from boreholes are made but cannot be guaranteed.

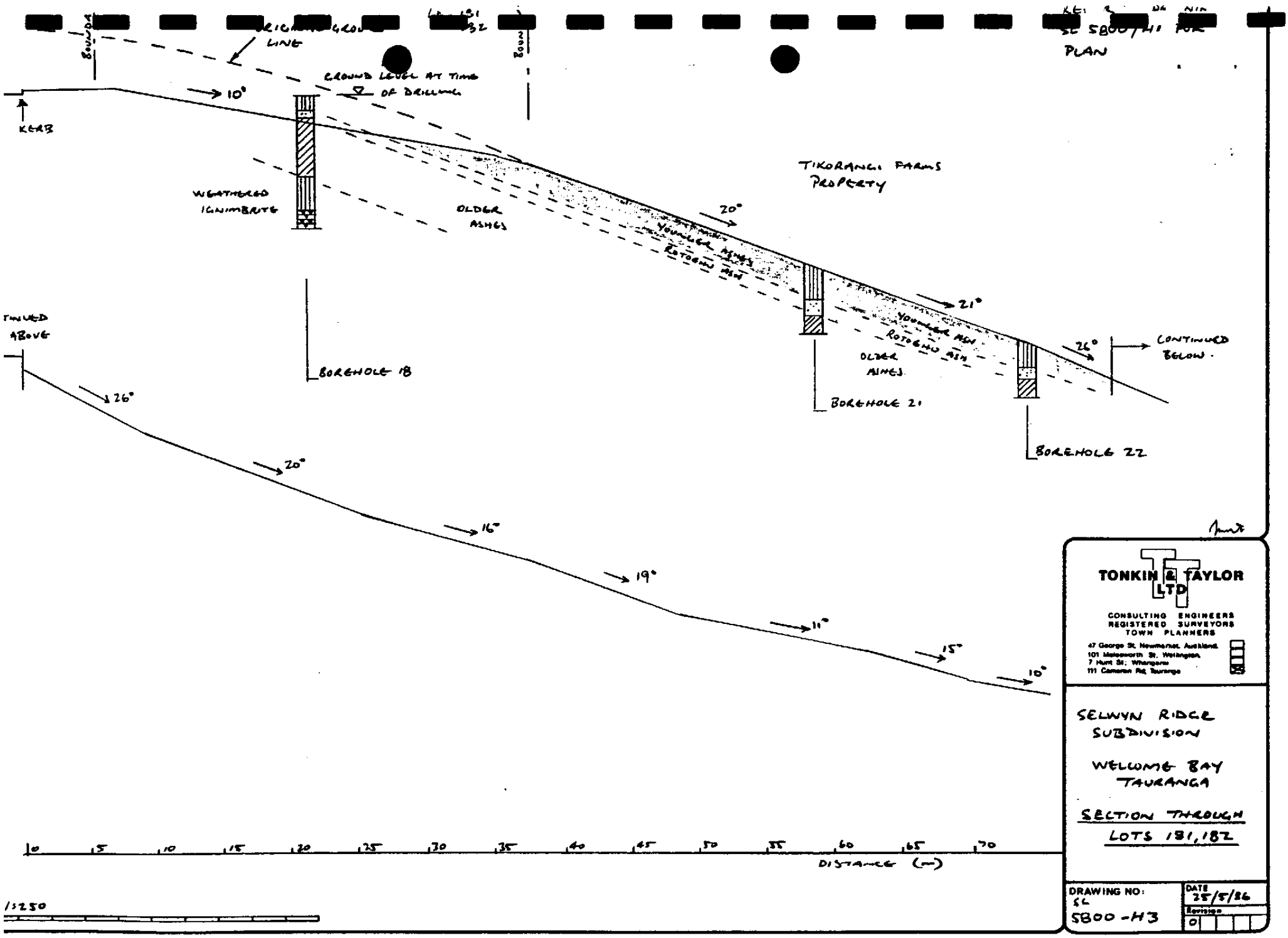
In all circumstances, if variations in the subsoils occur which differ from that described or assumed to exist then the matter should be referred back to us.

This report has been prepared for the particular project described in the brief to us and no responsibility is accepted for the use of any part of this report in other contexts or for any other purpose.

TONKIN & TAYLOR LTD

Consulting Engineers
Registered Surveyors
& Town Planners

M.W.H./N.W.R./J.W.



PLAN

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47 George St, Newmarket, Auckland
101 Molesworth St, Wellington
7 Hunt St, Whangarei
111 Cameron Rd, Tauranga

SELWYN RIDGE SUBDIVISION

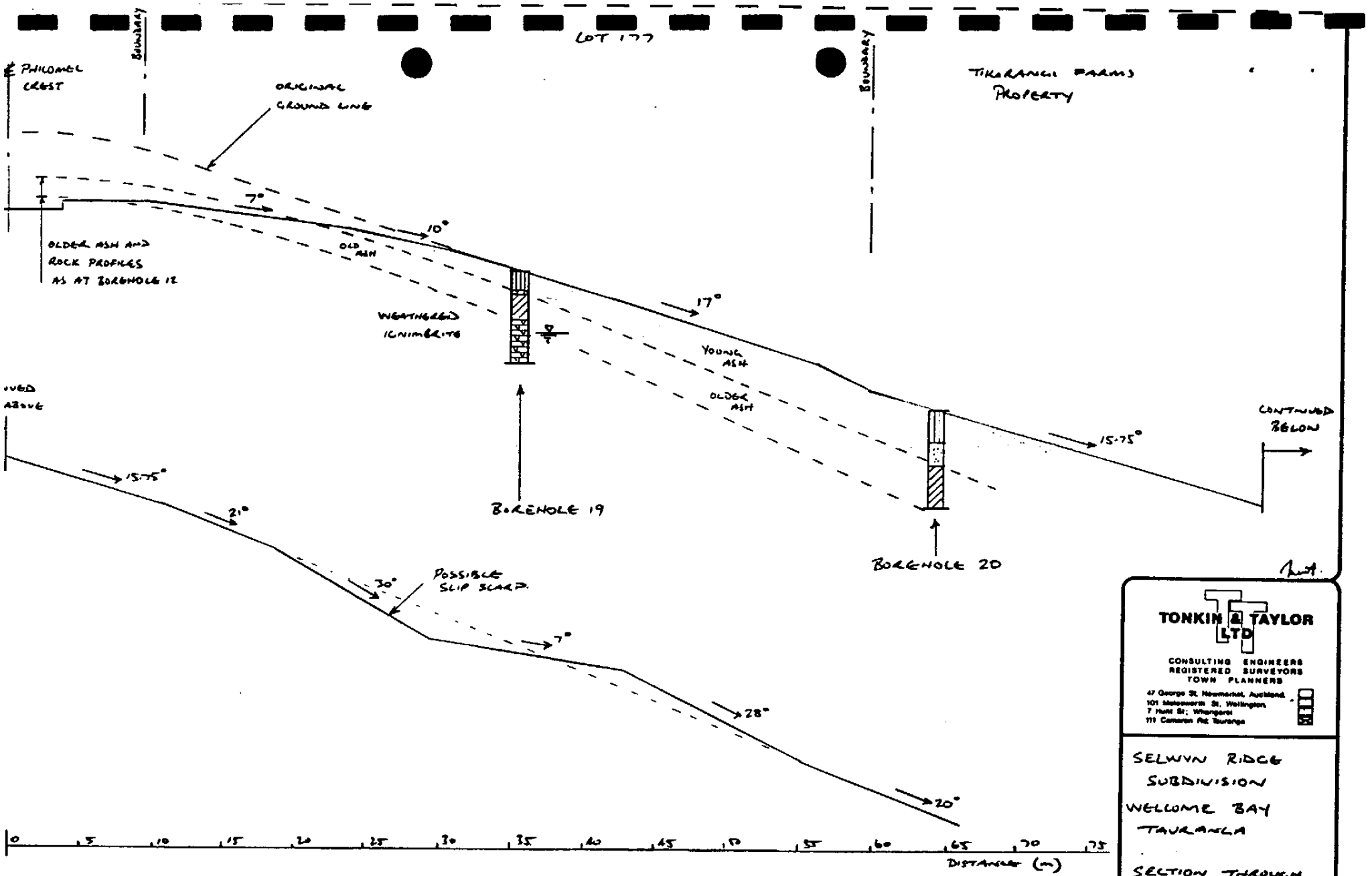
WELCOME BAY TAURANGA

SECTION THROUGH LOTS 181, 182

DRAWING NO: SL 5800-H3

DATE 25/5/86

Revision 0



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SELWYN RIDGE SUBDIVISION
WELCOME BAY
TAURANGA

SECTION THROUGH LOT 177

DRAWING NO: SL 5800-H4

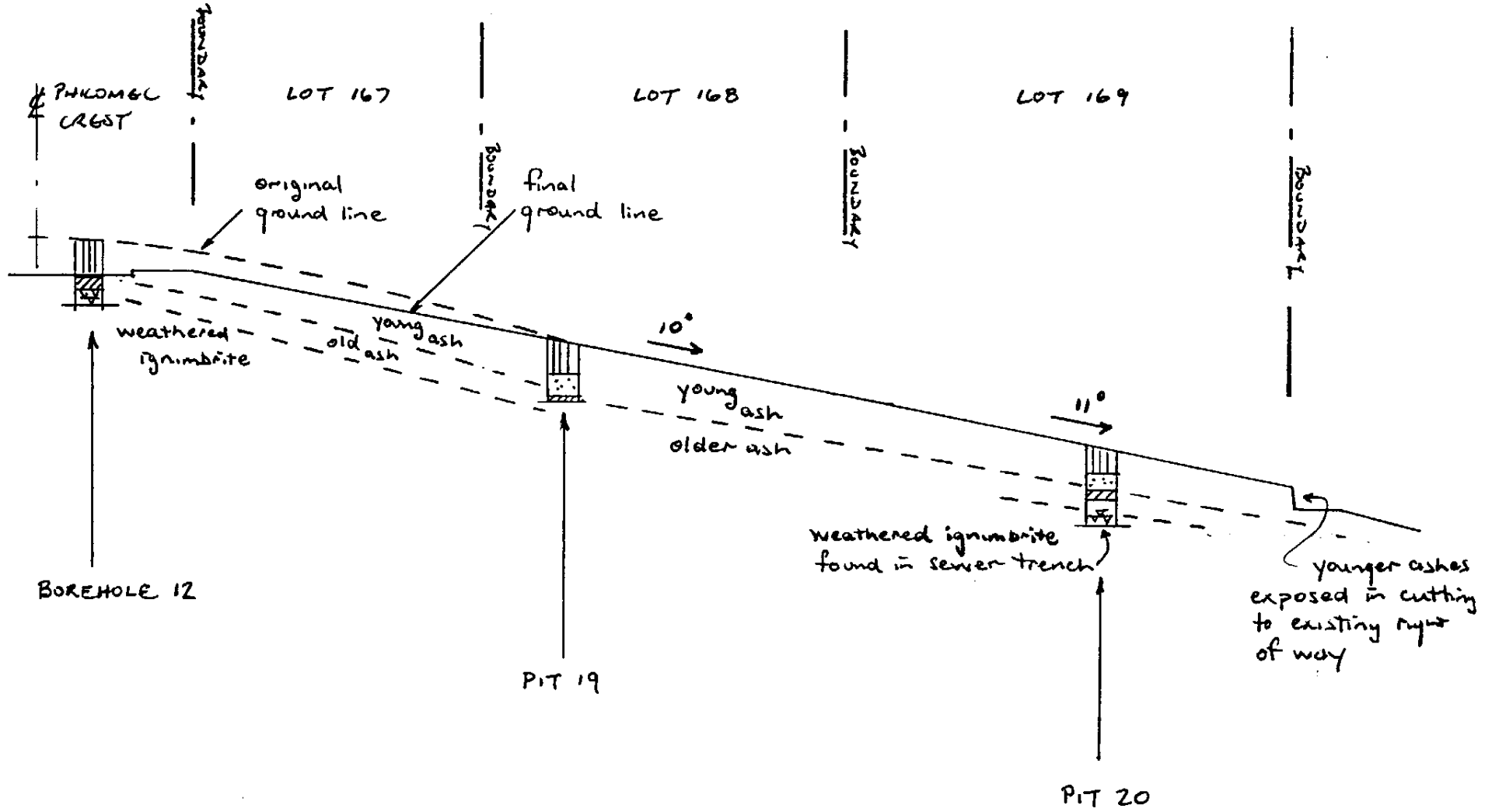
DATE 25/5/86

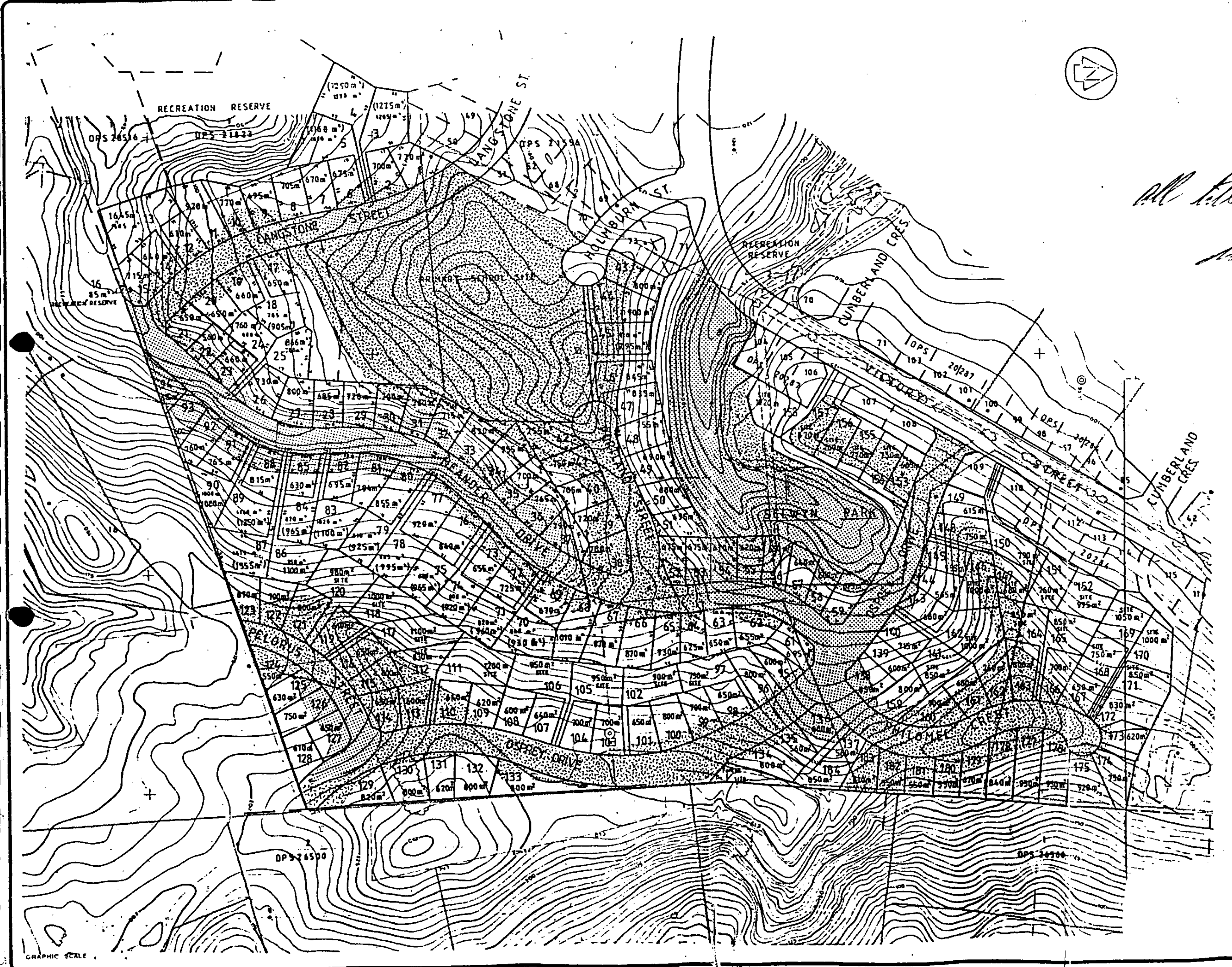
Revision 0

SELWYN RIDGE SUBDIVISION

TONKIN & TAYLOR LTD

Drawing No. SL





Key:
Extent of cut
Extent of fill

Note:
Ground contours shown are prior to bulk earthwor[ks] and subdivision development

all titles sighted
31/10/85

CKD	REVISION	
	NAME	DATE
Surveyed		
Designed		
Drawn		
Checked		
Approved		

REFERENCES

SHRIMPTON & LIPINSK[I]
In association with
TONKIN & TAYLOR LTD
REGISTERED SURVEYORS
CONSULTING ENGINEERS
TOWN PLANNERS
111 Cameron Road, Tauranga, New Zeal[and]
PO Box 231 PH 88021, 88131

TITLE
Selwyn Ridge Stage [...]
Subdivision Developme[nt]

Earthworks
Extent of Cut + Fil[l]

ORIGINAL SCALES 1:1200
DATE 5/80
DRAWING No 5800/H2

Key

- Test pit
- Rotary Test Rig
- Power Auger Bo
- Hand Auger Bo

Note

Ground contours sho
are prior to bulk earth
and subdivision develo

CKD	REVISION		
	NAME	DATE	FIEL
Surveyed	P M		
Designed			
Drawn			
Checked			
Approved			

REFERENCES

SHRIMPTON & LIPIN
In association with
TONKIN & TAYLOR LTD
REGISTERED SURVEYORS
CONSULTING ENGINEERS
TOWN PLANNERS
111 Cameron Road, Tauranga, New Z
P.O. Box 231 PH. 88021, 88131

TITLE

Selwyn Ridge Stag
Subdivisional Develo
Site Investigation

Location of
Exploratory holes

ORIGINAL SCALES	DATE
1:1200	5/

DRAWING No.
5800/H1

ORIGINAL SCALE

BOREHOLE LOGS AND TEST RESULTS
APPENDIX OF TERMS

SOIL DESCRIPTIONS

General: The descriptive system used is based mainly on grain size and comments on geological origin are supplementary

Soil Types and Symbols:

Symbol	Description
	limestone
	volcanic rock
	sandstone
	siltstone or mudstone
	cemented
	gravel (size > 2mm)
	sand (size 0.06 to 2.0 mm)
	silt (size 0.002 to 0.06 mm)
	clay (size < 0.002 mm)
	peat
	fill

These symbols are similar to those of the Unified Classification System (U.S.A.). They are adapted in some instances to denote soils not completely described in the adjacent table.

example

sandy clay

silty sand

Soil Strengths (cohesive)

Term	Undrained Shear Strength (kPa)
very soft	0 – 12
soft	12 – 25
medium	25 – 50
firm	50 – 100
stiff	100 – 200
hard	200 – 400
stone strength	>400

SOIL COLOURS

Colours, for purposes of description, have been simplified to light, standard and dark shades of red, pink, yellow, orange, brown, grey, green, blue and purple together with plain white and black.

ABBREVIATIONS

●	undrained triaxial test result	W_L	liquid limit
o	ditto – sample remoulded	PSD	particle size determination
■	laboratory vane test result	CONS	consolidation test
□	ditto – sample, remoulded	COMP	compaction test
N	blows per foot, standard penetration test (SPT)	Q	compressive strength
		Cu ϕu	undrained triaxial test (set)
B	blows per 3 feet for 3" open barrel driven as for S.P.T. test	C' ϕ'	effective stress triaxial test
		γ mm	max./min. density test
⏚	recorded water level	k	permeability coefficient
W	natural moisture content	S.L.	shrinkage limit
W_p	plastic limit	O.C.	organic content
St	sensitivity	ρ	bulk density

SAMPLE TYPES

●	open barrel	▮	large diameter thin walled tube (10 cm. or greater)

SITE: SELWYN RIDGE SUBDIVISION WELCOME BAY

BOREHOLE No. 1

JOB No: 5800 DATE DRILLED: 25/3/85 RL GROUND: 53.00

SHEET 1 OF 3

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
SILT slightly sandy hard yellow brown					
SILT sandy firm brown-yellow					
SAND silty weakly cemented light whitish-brown		1			
SAND (m-c) light pink-brown-white		2			
SILT soft spongey yellow-brown		3			
SAND (m-f) white-light grey					
CLAY silty some gravel white-yellow-brown grey incl.					
SILT sandy hard grey with brown Mn inclusions fissured horiz. and vert. (rotten rock)		4			
		5			

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 1

JOB No: 5800 DATE DRILLED: 25/3/85 RL GROUND: 53.00

SHEET 2 OF 3

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
very hard lens		6.0				
some red and yellow brown staining		7.0				
		8.0				
some softer lines						
		9.0				
very hard lens						
material becoming gradually harder		10.0		20		

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 1

JOB No: 5800 DATE DRILLED: 25/3/85 RL GROUND: 53.00

SHEET 3 OF 3

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
		11.0				
		12.0		21		
		13.0				
		14.0		22		
BOREHOLE TERMINATED AT 14.95m		15.0				

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 2

JOB No: 5800 DATE DRILLED: 26.4.85 RL GROUND: 55.46

SHEET 1 OF 3

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL silt with rare sand.Hard black						
SILT sandy grading SAND (m) silty hard. Yellow brown						
SAND fine grading medium loose light brown grey pumiceous.		1.0				
		2.0				
CLAY slightly silty with rare sand firm-hard. Light brown						
CLAY firm-hard brown						
SILT sandy hard-very hard light whitish brown-reddish brown		3.0				
SILT clayey with sand. Brownish red, brownish yeloow and greyish white medium firm (rotten rock)				8		
		4.0				

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 2

JOB No: 5800 DATE DRILLED: 26/3/85 RL GROUND: 55.46

SHEET 2 OF 3

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
becomes red with white and yellow speckles		6.0				
		7.0		11		
		8.0				
		9.0		14		
		10.0				

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 2

JOB No: 5800 DATE DRILLED: 26/3/85 RL GROUND: 55.46

SHEET 3 OF 3

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
		11.0				
		12.0		16		
		13.0				
grey with black speckles very hard		14.0				
whitish orange harder				17		
		15.0				
Borehole terminated at 14.95m						

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 3

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 55.28

SHEET 1 OF 3

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
Topsoil					
SILT clayey sl. sandy yellow brown becomes moist pumiceous dilatent light brown - white		1			
SAND (m-f) pumiceous light grey		2			
CLAY silty dark brown					
CLAY soft-medium wet light brown		3			
		4			
		5			

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 3

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 55.28

SHEET 2 OF 3

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
becomes moist-dry light brown some black inclusions		6			
		7			
		8			
becomes med-firm wet greasy grey-brown		9			
becomes firm-stiff orange-white (possible soft rock)	V	10			

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 3

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 55.28

SHEET 3 OF 3

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	*UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
becomes red-white	V	11			
END OF BORE					

SITE: SELWYN RIDGE SUBDIVISION - PRIMARY SCHOOL

BOREHOLE No. 4

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 52.04

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow-brown		1			
becomes sandy					
SAND, silty loose light brown		2			
becomes white-grey		3			
CLAY silty grey brown					
becomes firm orange		4			
becomes pinkish-grey firm		5			

SITE: SELWYN RIDGE SUBDIVISION - PRIMARY SCHOOL

BOREHOLE No. 5

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 49.70

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow-brown		1 2			
SAND clayey becomes coarse orange		3 4			
CLAY silty pink-red					
SAND (m) loose-grey		5			

SITE: SELWYN RIDGE SUBDIVISION - PRIMARY SCHOOL

BOREHOLE No. 6

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 44.87

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow-brown		1			
sl. sandy orange-red		2			
SILT sandy some clay grey-white					
SAND (m)sl. silty pumiceous brown-white		3			
becomes (m-f) grey		4			
SILT clayey firm pink-grey some black specks		5			

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 7

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 48.66

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow-brown					
sl. sandy orange-brown		1			
becomes clayey brown		2			
SAND (m-c) silty pumiceous pink white					
CLAY brown		3			
becomes pink-grey					
weathered ignimbrite					
bec. firm-hard		4			

SITE: SELWYN RIDGE SUBDIVISION - Primary School

BOREHOLE No. 8

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 37.59

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow brown becomes orange		1			
Sl. sandy (m)		2			
CLAY silty grey-brown black inclusions		3			
SAND silty grey-white		4			

SITE: SELWYN RIDGE - Adj. Lot 90 Meander Drive

BOREHOLE No. 9

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	*UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow brown		1			
becoming brown		2			
SILT sandy orange		3			
CLAY brown					
SAND (m-c) light yellow orange		4			
CLAY silty light grey brown					
SAND (m) loose grey					
CLAY firm greyish brown & orange					

SITE: SELWYN RIDGE - corner Meander Drive

BOREHOLE No. 10

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND:

SHEET 1 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow brown		1			
SILT sandy orange		2			
SAND (medium) silty loose, orange white		3			
SAND (m) loose, grey					
CLAY brown (palaesol)		4			
ROCK weathered dry whitish yellow silty becomes clayey, moist,		5			

SITE: SELWYN RIDGE - corner Meander Drive

BOREHOLE No. 10

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND:

SHEET 2 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
		6			
END OF BORE 6.0m					

SITE: SELWYN RIDGE SUBDIVISION - Portland St. Cul-de-sac

BOREHOLE No. 11

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 46.00 approx

SHEET 1 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow-brown					
SAND (m) loose grey		1			
CLAY plastic med-firm orange-brown palaesol		2			
becomes light orange-brown firm plastic		3			
		4			
SILT sandy firm dry light orange brown becomes pink					
becomes soft v soft wet		5			

SITE: SELWYN RIDGE SUBDIVISION - Portland St. Cul-de-sac

BOREHOLE No. 11

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND: 46.00 approx.

SHEET 2 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
firm grey-brown then soft		6			
END OF BORE		7			

SITE: PHILOMEL CREST SELWYN RIDGE SUBDIVISION

BOREHOLE No. 12

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow brown becoming CLAY silty slightly sandy brown with white flecks		1			
SAND (medium) loose with some silty lenses. Brownish white becoming grey		2 3			
CLAY brown (palaesol)					
SILT sandy light brown becomes hard		4			
ROCK weathered grey difficult to drill					
END OF BORE 4.8m		5			

SITE: LOT 134 - OSPREY DRIVE

BOREHOLE No. 13

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey becoming slightly sandy, yellow brown		1			
SILT sandy orange		2			
SAND slightly silty orange becoming SAND (m) loose light brownish white		3			
SILT pumiceous, whitish grey		4			
CLAY hard grey brown becomes silty becomes light orange with light yellow speckles					
ROCK weathered pinkish grey - to hard to auger					
END OF BORE 4.8m		5			

SITE: SELWYN RIDGE - cnr of OSPREY DRIVE & MEANDER DRIVE

BOREHOLE No. 14

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND:

SHEET 1 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey yellow brown becomes slightly sandy		1 2			
SILT sandy with some clay. Orange (rotten pumice)		3			
SAND silty, wet orange		4			
SAND (medium) silty loose, pumiceous, white becoming grey					
CLAY hard brown (palaesol)		5			
CLAY medium hard moist wet					

SITE: SELWYN RIDGE - cnr OSPREY DRIVE & MEANDER DRIVE

BOREHOLE No. 14

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND:

SHEET 2 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
		6			
END OF BORE 6.0m					

SITE: SELWYN RIDGE - OSPREY DRIVE

BOREHOLE No. 15

JOB No: 5800 DATE DRILLED: 4/7/85 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
Topsoil					
SILT clayey, yellow brown					
becomes sandy		1			
SILT sandy brown		2			
SAND (m) silty, light brownish white					
SAND (m) loose, grey		3			
CLAY firm brown		4			
becomes light brown, hard					
CLAY hard orange and dark red		5			

SITE: TIKORANGI FARMS, ORSPREY DRIVE

BOREHOLE No. 16

JOB No: 5800 DATE DRILLED: 16/4/86 RL GROUND:

SHEET 1 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL soft black-brown						
SILT sl. sandy medium dry yellow-brown		1		7		
becomes clayey firm yellow - brown						
SAND silty sl. compact light pink-yellow-white						
SILT sl. sandy soft light orange-yellow		2				
SAND silty sl. compact light pink-yellow-white						
SILT sandy medium-soft light brown				3		
SAND (m-c) loose sl. pumiceous light pink-white		3				
SILT soft pumiceous white with light brown white layers						
becomes sl. sandy		4				
SILT sl. sandy hard dark brown becomes clayey with gravel inclusions				11		
light green-light brown (weathered rock)						
becomes harder		5				

SITE: TIKORANGI FARMS, OSPREY DRIVE

BOREHOLE No. 16

JOB No: 5800 DATE DRILLED: 16/4/86 RL GROUND:

SHEET 2 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
SILT sandy hard grey with some yellow, green stains becomes soft rock pinkish grey black-brown speckles (weathered ignimbrite)		6		13		
very hard		7		30		
		8		38		
END OF BORE		9				

SITE: TIKORANGI FARMS, OSPREY DRIVE

BOREHOLE No. 17

JOB No: 5800 DATE DRILLED: 16/4/86 RL GROUND:

SHEET 1 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows /300	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL soft black						
SILT sl. sandy soft bec. very firm yellow-brown becomes clayey		1				
becomes sandy soft-medium light yellow-brown				3½		
SAND (m-c) loose light pink-white		2				
SILT sandy soft pink-white pumiceous						
SAND (f) loose grey becomes (c) loose white						
CLAY silty medium brown and grey-brown some grey weathered gravels becomes stiff-hard becomes orange-brown some green gravels		3		3		
SAND silty sl. cemented hard grey, black speckles (weathered rock)		4		8½		
some yellow staining black inclusions clay band (40mm) orange brown		5				

SITE: SELWYN RIDGE SUBDIVISION, WELCOME BAY

BOREHOLE No. 18

JOB No: 5800 DATE DRILLED: 16.4.86 RL GROUND:

SHEET 1 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300	UNDRAINED SHEAR STRENGTH K Pa — FILCON VANE (25, 50, 75)	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) — W_P W W_L
TOPSOIL soft black						
SILT mixed brown filling						
SILT, sandy soft pyrites incl. orange-yellow becomes light brown		1				
SAND (f) loose grey						
CLAY silty firm dark-brown				3		
becomes medium-soft plastic orange		2				
becomes firm white-brown with orange staining		3				
medium small grey weathered gravel inclusions white-orange to orange.		4		5		
soft-medium grey-brown with orange staining		5				

SITE: SELWYN RIDGE SUBDIVISION, WELCOME BAY

BOREHOLE No. 18

JOB No: 5800 DATE DRILLED: 16.4.86 RL GROUND:

SHEET 2 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300
becomes very soft, sample lost from barrel		6		0
SILT, clayey some sand very soft light brown firm gravelly (f) medium dark pink-brown		7		
CLAY, silty sl. gravelly firm becomes stiff dark pink-brown, orange-yellow. firm some sand, gravel brown with pink orange and light green staning.		8		18
Rock weatheredbrown and pink-brown yellow staining.		9 10		25

'UNDRAINED SHEAR STRENGTH K Pa

PILCON VANE

50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)

W_P W W_L

SITE: SELWYN RIDGE SUBDIVISION WELCOME BAY

BOREHOLE No. 19

JOB No: 5800 DATE DRILLED: 16-4-86 RL GROUND:

SHEET 1 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	SPT 'N' blows/300	UNDRAINED SHEAR STRENGTH K Pa (Pilcon vane) 50 100 150	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
SILT sl. sandy firm-stiff light yellow-brown						
firm brown bec. soft (SPT sank under own weight)		1		0		
SANDsl. silty loose lt. grey-white						
CLAY firm- stiff orange-brown, grey-brown mottle		2				
sample lost		3				
sl.silty v.soft brown						
ROCK soft pink-white orange-yellow speckles		4		23		
green-grey yellow and orange		5				

1/5/86

SITE: SELWYN RIDGE SUBDIVISION WELCOME BAY

BOREHOLE No. 19

JOB No: 5800 DATE DRILLED: 16-4-86 RL GROUND:

SHEET 2 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
becomes harder		6			
END OF BORE		7			

SITE: SELWYN RIDGE SUBDIVISION WELCOME BAY

BOREHOLE No. 20

JOB No: 5800 DATE DRILLED: 1-5-86 RL GROUND:

SHEET 1 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL soft black					
SILT sl.sandy firm dry yellow brown bec. dark yellow brown					
SILT clayey rare sand medium moist dark yellow brown bec. less clayey soft medium		1			
SILT sandy some clay firm brown-yellow with white-yellow mottle		2			
SILT sandy v. soft (rotten pum) wet orange					
SAND (m) sl. silty loose light brown-white					
CLAY silty firm dark brown		3			
SAND (m-c) loose and SILT sandy soft thin stratified beds light brown-white pumiceous		4			
CLAY firm dark brown black Mn inclusions bec. dark orange-brown		5			

SITE: SELWYN RIDGE SUBDIVISION WELCOME BAY

BOREHOLE No. 20

JOB No: 5800 DATE DRILLED: 1-5-86 RL GROUND:

SHEET 2 OF 2

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
firm brown with black Mn inclusions		6			
		7			
END OF BORE					

SITE: SELWYN RIDGE SUBDIVISION WELCOME BAY

BOREHOLE No. 21

JOB No: 5800 DATE DRILLED: 2-5-86 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL soft black					
CLAY some sand med.firm dark brown					
bec. dark yellow firm		1			
white-brown mottle					
bec. soft					
sandy		2			
SILT clayey some sand yellow-brown					
SAND(m)sl. silty loose v. moist (pumiceous)lt. yellow-white					
SILT sandy soft v. moist (pum) lt. yellow-white		3			
SILT clayey sl. sandy soft brown					
SAND(m) sl. silty loose light brown-white bec. SILT sandy brown					
SILT clayey some sand soft brown with white-brown mottle		4			
CLAY soft lt. orange-brown					
bec.sl. silty firm white-brown orange stains		5			

SITE: SELWYN RIDGE SUBDIVISION WELCOME BAY

BOREHOLE No. 22

JOB No: 5800 DATE DRILLED: 2-5-86 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL soft black					
SILT sl. sandy firm dk. brown					
SILT clayey some sand firm dark yellow-brown		1			
CLAY silty rare sand firm dk. yellow-brown bec. mottled white-brown some Mn incl. sl. sandy		2			
SAND (m) sl. silty loose white-yellow void SILT sandy soft white-yellow					
CLAY silty sl. sandy soft-medium v. moist dark brown (palaesol)		3			
CLAY sandy soft v. moist dark brown					
CLAY soft-medium white-orange-brown		4			
END OF BORE					

SITE: LOT 87/89 MEANDER DRIVE SELWYN RIDGE.

PIT No. 1

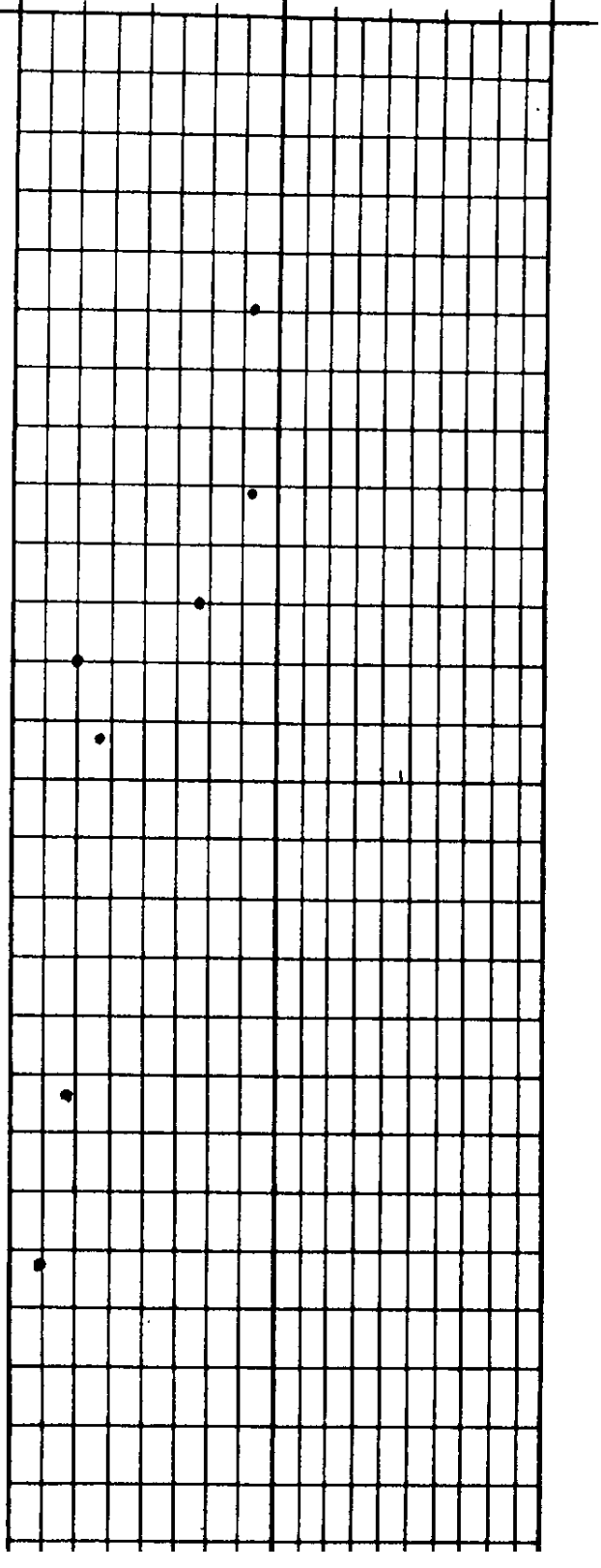
JOB No: 5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 40.72

SHEET 1 **OF** 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL			
SILT sandy yellow brown stiff bec. clayey with depth		1 2	
SILT sandy greasy orange (rotten pumice)			
SAND (m-c) loose brownish orange		3	
CLAY medium brownish pink			
SAND loose			
CLAY silty medium light brownish white with brown speckles			
SAND (m-f) loose light brownish grey		4	
CLAY silty med-soft light brownish white with blk specks fine holes			
END OF BORE 4.4m		5	

UNDRAINED SHEAR STRENGTH K Pa
Pilcon vane
50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)
W_P W W_L



SITE: Corner PELOROUS STREET & OSPREY DRIVE

PIT No. 2

JOB No: 5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 61.97

SHEET 1 **OF** 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL			
SILT soft brown			
SILT sandy stiff yellow brown bec. clayey with depth		1 2	
SILT sandy medium greasy orange (rottem pumice)		3	
SAND (m-c) loose light-pinkish white with black specks bec. light whitish yellow			
END OF BORE 3.5m		4	

UNDRAINED SHEAR STRENGTH K Pa

Pilcon vane

50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)

W_P W W_L

SITE: OSPREY DRIVE SELWYN RIDGE SUBDIVISION

PIT No. 3

JOB No:5800 DATE DRILLED. 24/9/85 RL GROUND.68.94

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT sandy stiff dry yellow brown					
SILT clayey stiff dark yellow brown		1			
SILT sandy medium orange		2			
SILT with some sand pumiceous light brown bec. light brownish white		3			
SAND (f) silty pumiceous light brownish white					
SAND (m) loose grey		4			
END OF BORE 4.00m		5			

SITE: LOT 108 OSPREY DRIVE SELWYN RIDGE

PIT No. 4

JOB No:5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 64.75

SHEET 1 **OF** 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL			
SILT sandy soft yellow brown			
SILT clayey stiff moist dark yellow brown		1	
CLAY silty stiff fine rootlets brown with mottling bec. soft		2	
SAND silty (m-c) loose pumiceous wet stratified layers orange and pinkish white (squeezes)			
CLAY medium-firm dark brown		3	
END OF BORE 3.5m			

UNDRAINED SHEAR STRENGTH K Pa

Pilcon vane

50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)

W_P W W_L

SITE: LOTS 69/70 MEANDER DRIVE SELWYN RIDGE

PIT No. 5

JOB No: 5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 43.62

SHEET 1 **OF** 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey stiff moist dark yellow brown with rootlets throughout		1			
SILT slightly sandy stiff dark yellow brown					
SAND (m-c) loose pumiceous orange (rotten pumice)		2			
SILT clayey with some sand firm moist light brown bec. wet becomes hard dry and then softer moist brown mottled grey		3			
		4			
END OF BORE 4.2m		5			

SITE: LOT 66/67 MEANDER DRIVE

PIT No. 6

JOB No: 5800 DATE DRILLED: 24/9/85 RL GROUND: 47.11

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL black bec. brown					
SILT sandy medium yellow brown					
SILT clayey stiff dark yellow brown		1			
		2			
SAND (m-c) loose orange (rotten pumice)					
SILT sandy firm rootlets throughout pumiceous light whitish brown		3			
SAND (medium) loose light yellowish white and greyish white		4			
END OF BORE 4.2m					

SITE: MEANDER DRIVE - ADJACENT TO LOT 64

PIT No. 7

JOB No: 5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 46.66

SHEET 1 **OF** 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL black					
SILT sandy stiff yellow brown bec. SILT clayey with some sand stiff slightly moist small roots throughout yellow brown		1			
		2			
SAND (m-c) loose moist orange (rotten pumice)		3			
SILT slightly sandy pumiceous light brownish white with some orange staining					
CLAY hard brown blotched grey brown		4			
		5			

SITE: LOT 136/137 PHILOMEL CREST SELWYN RIDGE

PIT No. 8

JOB No: 5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 58.30

SHEET 1 **OF** 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL			
SILT sandy bec. SILT clayey brown some roots included		1	
SILT slightly sandy medium orange (rotton pumice)		2	
SAND coarse loose pumiceous light greyish white speckled black and white		3	
SILT sandy medium pumiceous light greyish white with black speckles		4	
CLAY stiff-hard brown			
ROCK weathered pinkish grey			
END OF BORE 4.4m		5	

UNDRAINED SHEAR STRENGTH K Pa
Pilcon vane
50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)
W_P W W_L

SITE: LOT 95 OSPREY DRIVE SELWYN RIDGE

PIT No. 9

JOB No:5800 DATE DRILLED 24/9/85 RL GROUND: 49.22

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa — Pilcon vane (50 100 150)	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) — W_P W W_L
TOPSOIL					
SILT sandy yellow brown		1			
SILT clayey with some sand stiff dark yellow brown root holes throughout		2			
SAND (m-c) loose greasy orange (rotton pumice)		3			
CLAY firm rootlet holes brown					
SILT firm pumiceous moist grey with orange brown staining		4			

SITE: LOT 142 OSPREY DRIVE SELWYN RIDGE

PIT No. 10

JOB No: 5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 51.35

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL			
SILT sandy firm yellow brown			
SILT clayey stiff yellow brown		1	
SAND (m-c) pumiceous orange (rotten pumice) bec.less weathered brownish orange		2	
SILT slightly clayey pumiceous light brownish white		3	
SAND (m-f) loose grey bec. silt firm-hard brownish grey			
CLAY stiff orange brown moist		4	
END OF BORE 3.9m		5	

UNDRAINED SHEAR STRENGTH K Pa
Pilcon vane
50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)
W_P W W_L

SITE: LOT 115 PELOROUS STREET SELWYN RIDGE

PIT No. 11

JOB No: 5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 67.54

SHEET 1 **OF** 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT firm yellow brown					
SAND (m-c) loose pumiceous brownish white		1			
SILT firm pumiceous					
SAND (m-c) loose brownish white		2			
SILT hard orange brown					
CLAY hard orange brown		3			
ROCK weathered pinkish grey		4			
END OF BORE 4.0m					

SITE: OSPREY DRIVE - ADJACENT TO PA SELWYN RIDGE

PIT No. 12

JOB No: 5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 68.66

SHEET 1 **OF** 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL			
CLAY firm brown with rootlet holes throughout		1	
SILT sandy medium pumiceous orange bec. SAND (m-c) loose pumiceous orange		2	
SILT sandy firm brown			
SAND (c) slightly silty loose dry pumiceous light whitish grey-greyish white		3	
SAND (m-f) loose grey			
SILT firm brown		4	

UNDRAINED SHEAR STRENGTH K Pa
Pilcon vane
50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)
W_P W W_L

SITE: PHILOMEL CREST SELWYN RIDGE

PIT No. 13

JOB No: 5800 **DATE DRILLED:** 24/9/85 **RL GROUND:** 67.55

SHEET 1 **OF** 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL black bec. brown					
SAND slightly silty loose orange bec. orange brown		1			
SILT clayey stiff brown					
SAND (m-c) loose, pumiceous light pinkish white-greyish white		2			
SILT medium pumiceous light greyish white					
SAND (medium) loose grey		3			
SILT clayey hard dry dark grey					
CLAY stiff-hard orange brown		4			
ROCK weathered grey	Y				
END OF BORE 4.2m		5			

SITE: LOT 142, OSPREY DRIVE SELWYN RIDGE

PIT No. 14

JOB No: 5800 DATE DRILLED: 24/9/85 RL GROUND: 58.77

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) W_P W W_L
TOPSOIL					
SILT clayey with some snad, stiff rootlets throughout, yellow brown					
SILT sandy medium pumiceous light orange brown		1			
bec. brown					
SAND (m-c) loose pumiceous light orange with white and yellow white		2			
bec. silty					
SAND (f) loose grey		3			
CLAY stiff moist orange brown					
		4			
END OF BORE 4.6m					

SITE: MEANDER DRIVE (GULLEY) SELWYN RIDGE

PIT No. 15

JOB No: 5800 DATE DRILLED: 3.10.85 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
CLAY, silty, (med-firm) whitish grey with orange brown stains.		1	
SAND, (med-coarse), loose, grey and light grey with SAND, silty layers included.		2	
SILT, clayey. Light greyish white with orange brown stains.		3	
GRAVEL, sandy. Compact. Light blue green with white blotches (pumice rock).			
e o p 3.2m			

UNDRAINED SHEAR STRENGTH K Pa

Pilcon vane

50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)

W_P W W_L

SITE: LOT 54 MEANDER DRIVE SELWYN RIDGE

JOB No: 5800 DATE DRILLED: 3.10.85 RL GROUND: 38.04

PIT No. 16

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa (Pilcon Vane; 50 100 150)	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) (w_p w w_L)
FILL, SAND silty and SILT, clayey, mixed. firm					
FILL - topsoil, weathered rock, mixed. medium wet zone wet zone		1			
Topsoil and silt. firm		2			
SILT, yellow brown. Hard		3			
e o p 3.0m					

NB: This filling was removed during subdivision construction and replaced with correctly compacted filling in accordance with NZS 443I

SITE: SELWYN PARK (GULLEY) SELWYN RIDGE

PIT No. 17

JOB No: 5800 DATE DRILLED: 3.10.85 RL GROUND: 24.00

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa (50 100 150)	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) (W_P W W_L)
SILT, sandy and SAND, silty medium - soft light grey with brown staining. Thin organic horizon approx 80mm		1			
SAND (m-f) loose, light grey stained brown.		2			
SILT, medium-firm, pumiceous, light brown with orange brown and dark brown staining with some hard Fe staining lumps.		3			
GRAVEL, sandy and silty, Compact. Light blue green with white blotches (pumice rock)					
e o p 3.4m		4			

SITE: SELWYN RIDGE SUBDIVISION LOT74

PIT No. 18

JOB No: 5800 DATE DRILLED: 22/5 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL soft black			
SILT firm yellow brown bec. stiff		1	
SILT sl. clayey some sand firm yellow-brown			
SILT sl. sandy firm orange		2	
SAND (m-c) sl. silty loose orange bec. (c)			
SAND silty loose pumiceous pink-white		3	
SAND (f) loose grey pumiceous			
CLAY silty stiff brown-grey			
END OF PIT		4	

UNDRAINED SHEAR STRENGTH K Po
Pilcon vane
50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)
W_P W W_L

SITE: SELWYN RIDGE SUBDIVISION LOT 168

PIT No. 19

JOB No: 5800 DATE DRILLED: 22/5 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL soft black			
SILT yellow-brown bec. stiff clayey			
CLAY silty sand incl. brown mottled lt.br.		1	
SILT sl. sandy pumiceous whitish orange		2	
SAND silty pum. lt. brown			
SAND(m-c) loose orange with black and white specks			
SILT clayey brown mottled white-brown		3	
SAND(m) sl. silty pum. white-grey			
SILT firm pumiceous pinkish white			
SAND(f) loose grey			
END OF PIT		4	

UNDRAINED SHEAR STRENGTH K Pa

Pilcon vane

50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)

W_P W W_L

SITE: SELWYN RIDGE SUBDIVISION LOT 169

PIT No. 20

JOB No: 5800 DATE DRILLED: 22/5 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL soft black			
SILT stiff yellow-brown			
SILT clayey some sand rootlet holes through out		1	
SILT sandy stiff brown-orange			
SAND (m-c) loose pumiceous orange with black and white speckles		2	
SILT clayey firm brown			
SAND (m-c) loose pum. light pinkish white			
SILT pum.med. sensitive pink-grey		3	
SAND (f) loose grey			
CLAY firm-stiff brown stained orange			
END OF PIT		4	

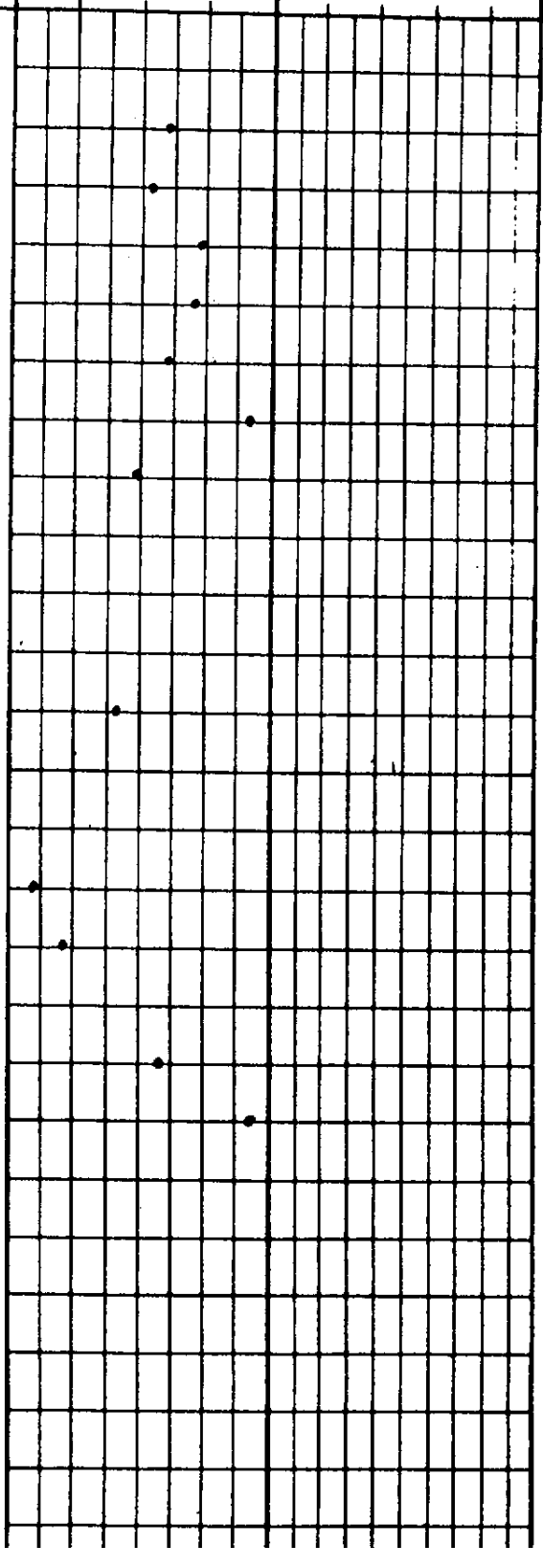
UNDRAINED SHEAR STRENGTH K Pa

Pilcon vane

50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)

W_P W W_L



SITE: SELWYN RIDGE SUBDIVISION LOT 12

PIT No. 21

JOB No: 5800 DATE DRILLED: 23/5 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL med. black			
SILT firm yellow-brown bec. sl. sandy		1	
SILT sl. clayey some sand yellow-brown with grey mottle		2	
SILT sandy pumiceous orange (rotten pumice)			
SAND sl. silty loose pum. orange		3	
SILT clayey firm light grey-brown			
SAND(c) pumiceous sl. cemented compact		4	
END OF PIT			

UNDRAINED SHEAR STRENGTH K Pa

Pilcon vane

50 100 150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)

W_P W W_L

SITE: SELWYN RIDGE SUBDIVISION LOT 14

PIT No. 22

JOB No: 5800 DATE DRILLED 23/5 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE
TOPSOIL soft black			
SILT sandy stiff yellow brown			
SAND(c) loose pumiceous yellow			
SILT sl. sandy lt. brown		1	
SAND(m-f) loose pum. pink-grey			
SILT firm light pink-brown			
SAND(f) loose red-brown			
CLAY sl. silty lt. brown bec. orange-brown		2	
SILT clayey some gravels variable hardness grey-brown and orange-brown bec.med. very moist		3	
stiff moist		4	
END OF PIT			

UNDRAINED SHEAR STRENGTH K Pa

Pilcon vane

50 100,150

NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%)

W_P W W_L

SITE: SELWYN RIDGE SUBDIVISION

PIT No. 23

JOB No: 5800 DATE DRILLED: 23/5 RL GROUND:

SHEET 1 OF 1

DESCRIPTION OF SOIL	SOIL SYMBOL	DEPTH (m)	SAMPLE TYPE	UNDRAINED SHEAR STRENGTH K Pa — Pilcon vane (50 100 150)	NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS (%) — W_p W W_L
TOPSOIL black					
SILT sandy yellow-brown					
CLAY silty stiff pinkish brown		1			
SILT sl. sandy firm orange-brown		2			
SAND silty loose pumiceous light yellow					
CLAY silty light brown		3			
SAND (m-c) loose pumiceous light grey-white					
END OF PIT		4			

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Received 1-5-91

Our Ref: 10311

30 April 1991

Timber 2000 high retaining wall to be deleted off plans

Jennian Homes Ltd
PO Box 847
TAURANGA

Attention: MR G ROBINSON

Dear Mr Robinson -

Re: LOT 134 ~~OSPREY DRIVE~~ (6 Philomel Cres - owner - Blake)
WELCOME BAY

As requested we have visited the above site to inspect the site of the proposed retaining wall along the northern and western (roadside) boundary. We comment as follows :

(1) RETAINING WALL LOCATION

The stone face batters are formed from grouted stone pitching placed on the face of steep batters cut in natural ground. The stability of the batters is adequate provided that the slopes are not surcharged or ground water conditions are altered. The stone facing is not a retaining wall and provides weather protection only to prevent soil erosion.

In our geotechnical report prepared for the subdivision developer dated May 1986 we recommended on page 21 that :

"no building or vehicle accessway be sited closer than a horizontal distance from the top of the batter equal to the total vertical height of the batter including berms"

This would ensure that the batters are not surcharged by extra vertical loadings. Such loadings effectively increase the height of the batter and reduce stability margins.

It should also be noted that the roadside boundary is in the road berm and so the stone facing is within Lot 134.

Measurements taken at the boundary peg at the north western corner of the property show the vertical height of the rock wall to be 2.75 metres. Here the

proposed timber wall is to be 2 metres high. The toe of the timber wall should therefore be located not closer than 2.75 metres from the outside edge of the rockwork.

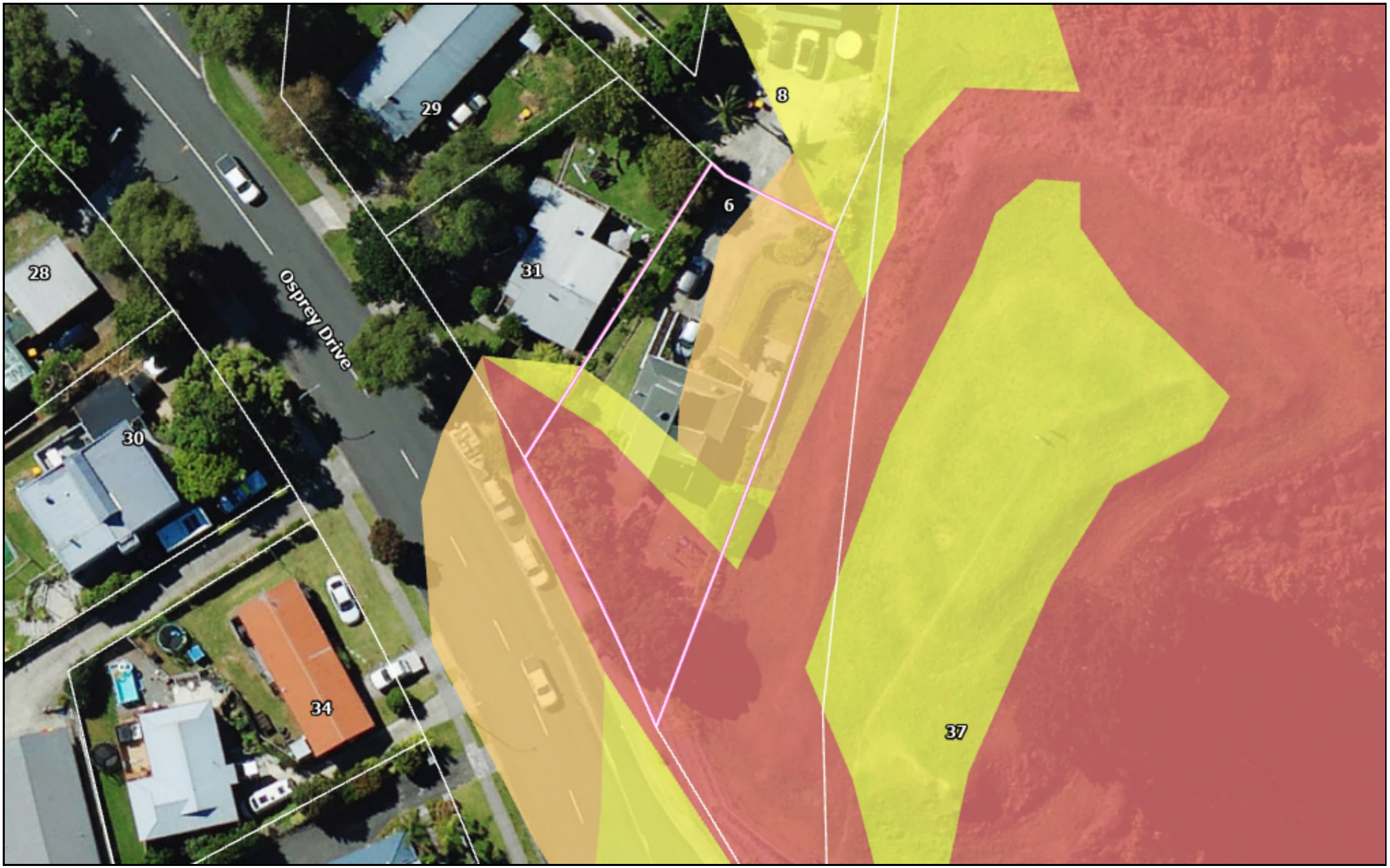
We understand that the length of the wall along the western boundary is 7 metres from the north western corner. This section of wall should be located parallel with and not closer than 2.75 metres to the top of the rockwork.

(2) FILLING ON THE PROPERTY

In our geotechnical report, we recommended on page 22 that filling should be undertaken according to the techniques and principles of NZS 4431. These methods of fill placement should still be adopted to reduce possible settlement on the filling which may cause surface undulations. However the proposed retaining walls should have been designed to resist lateral earth pressures from the backfill and would therefore prevent instability on the sloping ground caused by movement of the filling. We do not consider that specific supervision and compaction testing of the filling is required in this case.

Yours faithfully

M W Hughes



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Slope Hazard Zones Plan

0 5 10 m

Meters

Scale 1: 500 @A4

N

Information shown on this plan is indicative only. The Council accepts no liability for its accuracy and it is your responsibility to ensure that the data contained herein is appropiate and applicable to the end use intended.

Tauranga City

Natural Hazards Key

Slope Hazard Zones

Failure Zone 2:1

Regression Zone 3:1

Runout Zone 4:1

Relic Slip

Slope debris lobe showing evidence of recent or current activity

Possible slope debris lobe

Probable slope debris lobe

Interpreted head scarp with poorly defined morphology

Interpreted head scarp with clearly defined morphology

Slope

Tauranga City