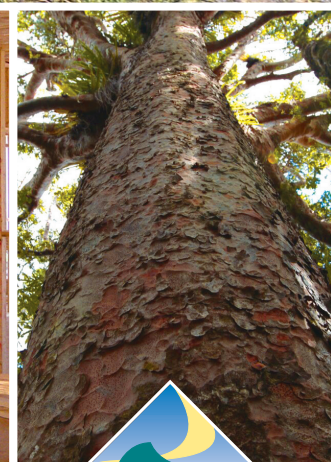
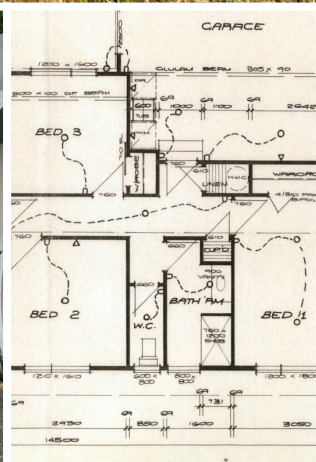


LIM

Land Information Memorandum



Tauranga City



Land Information Memorandum

This L.I.M. has been prepared for:

Applicant	Tremains
Client	Coral Gertrude Nasey
Property Address	1 Ellesmere Close
Legal Description	Lot 754 DP 463737
Application Date	12 June 2019

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 44A(2), 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 of Title, which is not held by Council, be searched by the purchaser.

Contents

Services Information

Rating and Valuation Details

Building Information

- Consents and Permits
- Requisitions

Land Development

- City Plan
- Resource Consents
- Land Features
- Hazardous Contaminants

Other Information

- Licences

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 69ZH Health Act 1956	No Information Available

Note:

1. Cross Lease situations differ to Freehold Titles in that any building additions to the property in question may need to have the cross lease plan updated. Any unregistered changes could be regarded as not legally part of the lease. For information regarding the updating of a cross lease plan please contact a Surveyor or your Solicitor.
2. 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.
3. 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" – copy attached) applicable to that supply are included in this Land Information Memorandum.
4. 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.
5. 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.
6. Any information notified to the territorial authority by a drinking-water supplier under section 69ZH of the Health Act 1956 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. A further 10% arrears penalty will be added in July and January on any rates balance that remains outstanding after 30 June of each rating year.

The Capital Valuation details are based on a revision date of 1 July 2018.

Valuation Details

Valuation Reference	06619 030 21
Land Value	\$325,000
Value Of Improvements	\$410,000
Capital Value	\$735,000

Rating Details

Current Annual Rates (Based on 1 July 2015 valuation)	\$2,988.82
Paid Until	30 June 2019
Arrears Owing	\$Nil
Balance Owing	\$Nil

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

Note:

Please arrange for a final water meter reading prior to date of possession.

Water Meter Details

Water Meter On Property	Yes
Date Read	15 June 2019
Number	13M1543419
Last Reading	00560
Individual Meter	Yes
Shared Meter	No
Water Rates Owing	\$15.78

Building Information

This information is sourced from Council records and may not reflect the situation on site if work has been undertaken without consent.

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

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.

Swimming / Spa Pools: If the property contains a swimming pool or spa pool that is filled or partly filled with water then the pool must have a physical barrier restricting access to the pool that meets the requirements of the Building Act 2004. For more information, go to www.tauranga.govt.nz/council-a-z/swimming-pool-fencing.aspx.

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 Consents

Date Issued	Description of Work	BC Number	CCC Issued
24/12/2013	Erect dwelling and retaining walls	48774	Yes

Compliance Schedule

N/A

Requisitions

Any Outstanding Requisitions

No

City Planning

The Operative Tauranga City Plan

The Operative Tauranga City Plan (City Plan) is a document that regulates all subdivision, use and development across the City. It also covers 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.

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.

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.

Copies of the planning maps for the Operative Tauranga City Plan are included in this LIM.

To view the Operative Tauranga City Plan please visit the Tauranga City Council website www.tauranga.govt.nz.

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 (07 577 700) 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.

Integrated Transportation Strategy and Reserve Management Plans

As part of Tauranga City Council's Integrated Transportation Strategy and Reserves Management Plans, properties neighbouring Council-owned or administered land may be subject to walkway and cycleways development or other development, activities or use of the land. The Tauranga Reserves Management Plan is available online at <http://www.tauranga.govt.nz/council/council-documents/strategies-plans-and-reports/plans/reserve-management-plans>

Special Housing Areas

Special Housing Areas are sites in the city that are suitable for new housing and able to be developed fast to increase housing supply. Development of these sites can be fast-tracked under the Housing Accord and Special Housing Areas Act 201, through an accelerated resource consenting process.

Special Housing Areas are proposed by landowners / developers, considered by Council and if supported by Council, submitted to the Minister of Building and Construction for a final decision. Under the current Housing Accord, Council and the Government will be able to consider applications for new Special Housing Areas up until September 2019.

Special Housing Areas will only be established in areas where there is a clear demand for housing, and where there is already suitable infrastructure in place (e.g. roads, wastewater systems, water supply pipes), or plans for it to be built.

For more information on Special Housing Areas including detail on any Proposed and Active sites with the Tauranga area <https://www.tauranga.govt.nz/our-future/enabling-growth/housing-accord-and-special-housing-areas>

Relevant Planning Information

Zone: Operative Tauranga City Plan	Suburban Residential Plan Attached
Identified Plan Areas	None Known
Designations	None
Protected Heritage/Notable or Groups of Trees, or Protected Buildings	None Known
Archaeological or Heritage Sites	None Known
Council Consents, Certificates, Notices, Orders or Bonds Affecting The Land:	Yes
Description	Date Issued
221 Consent Notice (<i>Resource Management Act 1991</i>)	21 June 2013

Land Features

This information relates only to details held on Council files and may not reflect the on site situation.

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

The land form 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

This property is within the Study Area of a Study Report ‘Microzoning for Earthquake Hazards for the Western Bay of Plenty’, January 2003, which assesses the magnitude of earthquake hazards in the Tauranga District and elsewhere including, ground shaking hazards, liquefaction hazards, subsidence hazards, and earthquake slope hazards using the information available at the time of the report. The Study Report also includes a number of maps, including Ground Shaking Hazard Maps. There are also Liquefaction Ground Damage Hazard Maps which divide the Study Area into various liquefaction ground damage zones.

Please note the limitations of the mapping identified in the Study Report, particularly those noted on Figures 6-15 (inclusive) under “Important Notes”.

These notes outline that the zone boundaries are approximate only and have been determined with the aid of a national seismic hazard model, regional geological maps and available borehole data. Accuracy can vary from tens of metres to hundreds of metres. The classification of the liquefaction hazards in the Report is indicative only, and the level of damage to any facility will depend on a variety of factors such as the potential for liquefaction, the thickness and depth of liquefying layers and their relationship to other layers, and the topography and the nature of the facility itself. Localised areas of enhanced hazard may be present within areas identified as having low hazard, and also the hazard may be lower in some sections identified as having a high hazard. Further limitations are given in the Study Report.

Site specific assessment of the hazard (such as ground shaking or liquefaction) based on site-specific investigations and risk should be considered for assessing the performance and design of a specific facility.

The presence of earthquake hazards 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 (refer to the design standard outlined in *Chapter 10.10.6 Liquefaction* of Tauranga City Council’s Infrastructure Development Code).

http://idc.tauranga.govt.nz/design-standards/ds-10-natural-hazards-earthworks-/ds-10_10-design.aspx

A copy of the Study Report can also be accessed from the link below.

https://www.smartgrowthbop.org.nz/media/1313/f-2002-29_western_bay_of_plenty_lifelines_earthquake_microzoning.pdf

Note: The referenced Study Report is dated 2003. There has been a significant volume of land development and subdivision in Tauranga since 2003, for which a more recent Geotechnical Report may exist, and this will be attached if applicable to this property.

Special Land Features Relevant to the Subject Property

Yes

Comments:

1. Refer Consent Notice dated 21 June 2013 together with geotechnical report by S & L Consultants Ltd dated 16 March 2013, reference 20302 R1.
2. See also report by Civil Limited dated 17 April 2014.

Additional Information

Licences

Licences Affecting the Land or Buildings

No

Signed for and on behalf of the Council:



Position held: LIM Officer

Date: 24 June 2019





Title Plan - DP 463737

Survey Number DP 463737
Surveyor Reference 1520-132631-01 Lakes Stage 2IN
Surveyor Michael Peter Dewhirst
Survey Firm Harrison Grierson Consultants Ltd
Surveyor Declaration I Michael Peter Dewhirst, being a licensed cadastral surveyor, certify that:
(a) this dataset provided by me and its related survey are accurate, correct and in accordance with the Cadastral Survey Act 2002 and the Rules for Cadastral Survey 2010, and
(b) the survey was undertaken by me or under my personal direction.
Declared on 28 Jun 2013 04:23 PM

Survey Details

Dataset Description Lots 103, 661-667, 751-776 and 1060-1065 being a subdivision of Lots 106 & 107 DP 436316 and Pt Lot 103 DP 408042
Status Deposited
Land District South Auckland
Submitted Date 28/06/2013
Survey Class Class A
Survey Approval Date 05/07/2013
Deposit Date 28/06/2013

Territorial Authorities

Tauranga City

Comprised In

CT 541501
CT 541502
CT 428562

Created Parcels

Parcels	Parcel Intent	Area	CT Reference
Lot 661 Deposited Plan 463737	Fee Simple Title	0.0409 Ha	614296
Lot 662 Deposited Plan 463737	Fee Simple Title	0.0455 Ha	614297
Lot 663 Deposited Plan 463737	Fee Simple Title	0.0497 Ha	614298
Lot 664 Deposited Plan 463737	Fee Simple Title	0.0512 Ha	614299
Lot 665 Deposited Plan 463737	Fee Simple Title	0.0460 Ha	614300
Lot 666 Deposited Plan 463737	Fee Simple Title	0.0381 Ha	614301
Lot 667 Deposited Plan 463737	Fee Simple Title	0.0404 Ha	614302
Lot 751 Deposited Plan 463737	Fee Simple Title	0.0652 Ha	614303
Lot 752 Deposited Plan 463737	Fee Simple Title	0.0575 Ha	614304
Lot 753 Deposited Plan 463737	Fee Simple Title	0.0611 Ha	614305
Lot 754 Deposited Plan 463737	Fee Simple Title	0.0642 Ha	614306
Lot 755 Deposited Plan 463737	Fee Simple Title	0.0554 Ha	614307
Lot 756 Deposited Plan 463737	Fee Simple Title	0.0511 Ha	614308



Title Plan - DP 463737

Created Parcels

Parcels	Parcel Intent	Area	CT Reference
Lot 757 Deposited Plan 463737	Fee Simple Title	0.0575 Ha	614309
Lot 758 Deposited Plan 463737	Fee Simple Title	0.0561 Ha	614310
Lot 759 Deposited Plan 463737	Fee Simple Title	0.0637 Ha	614311
Lot 760 Deposited Plan 463737	Fee Simple Title	0.0684 Ha	614312
Lot 761 Deposited Plan 463737	Fee Simple Title	0.0657 Ha	614313
Lot 762 Deposited Plan 463737	Fee Simple Title	0.0725 Ha	614314
Lot 763 Deposited Plan 463737	Fee Simple Title	0.0591 Ha	614315
Lot 764 Deposited Plan 463737	Fee Simple Title	0.0610 Ha	614316
Lot 765 Deposited Plan 463737	Fee Simple Title	0.0601 Ha	614317
Lot 766 Deposited Plan 463737	Fee Simple Title	0.0610 Ha	614318
Lot 767 Deposited Plan 463737	Fee Simple Title	0.0922 Ha	614319
Lot 768 Deposited Plan 463737	Fee Simple Title	0.0786 Ha	614320
Lot 769 Deposited Plan 463737	Fee Simple Title	0.0661 Ha	614321
Lot 770 Deposited Plan 463737	Fee Simple Title	0.0604 Ha	614322
Lot 771 Deposited Plan 463737	Fee Simple Title	0.0689 Ha	614323
Lot 772 Deposited Plan 463737	Fee Simple Title	0.0660 Ha	614324
Lot 773 Deposited Plan 463737	Fee Simple Title	0.0560 Ha	614325
Lot 774 Deposited Plan 463737	Fee Simple Title	0.0535 Ha	614326
Lot 775 Deposited Plan 463737	Fee Simple Title	0.0547 Ha	614327
Lot 776 Deposited Plan 463737	Fee Simple Title	0.0560 Ha	614328
	Road	0.2342 Ha	
Lot 1061 Deposited Plan 463737	Vesting on Deposit for Local Purpose Reserve	0.0307 Ha	614329
Lot 1062 Deposited Plan 463737	Fee Simple Title	0.0049 Ha	Multiple
Lot 1063 Deposited Plan 463737	Fee Simple Title	0.0063 Ha	Multiple
Lot 1064 Deposited Plan 463737	Fee Simple Title	0.0217 Ha	Multiple
Lot 1065 Deposited Plan 463737	Fee Simple Title	0.1032 Ha	614330
Lot 103 Deposited Plan 463737	Fee Simple Title	18.9282 Ha	614331
Area A Deposited Plan 463737	Easement		
Area B Deposited Plan 463737	Easement		
Area C Deposited Plan 463737	Easement		
Area D Deposited Plan 463737	Easement		
Area E Deposited Plan 463737	Easement		
Area F Deposited Plan 463737	Easement		
Area G Deposited Plan 463737	Easement		
Area H Deposited Plan 463737	Land Covenant		
Total Area		21.2730 Ha	

Schedule / Memorandum

Land Registration District

SOUTH AUCKLAND

Plan Number

DP 463737

TCC Ref: RC16807

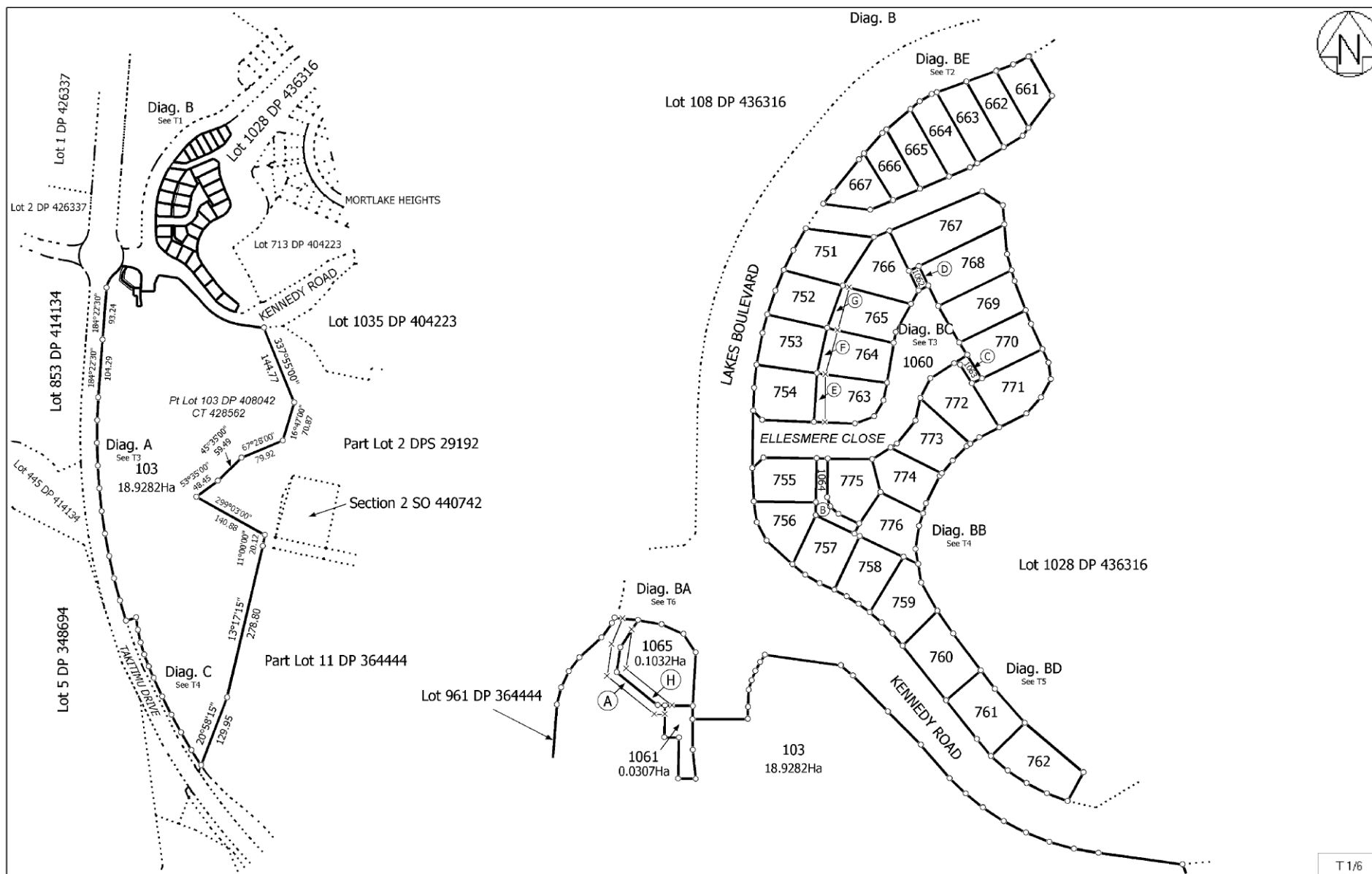
Harrison Grierson Ref: 1520-132631-01

Memorandum of Easements (Pursuant to s243 Resource Management Act 1991)			
Purpose	Shown	Servient Tenement	Dominant Tenement
Right of Way Right to drain Water and Sewage Right to convey Electricity, Water & Gas Right to convey Telecommunications and Computer Media	B	Lot 1064 hereon	Lots 756, 757, 775 & 776 hereon
	C	Lot 1063 hereon	Lots 770 & 771 hereon
	D	Lot 1062 hereon	Lots 767 & 768 hereon

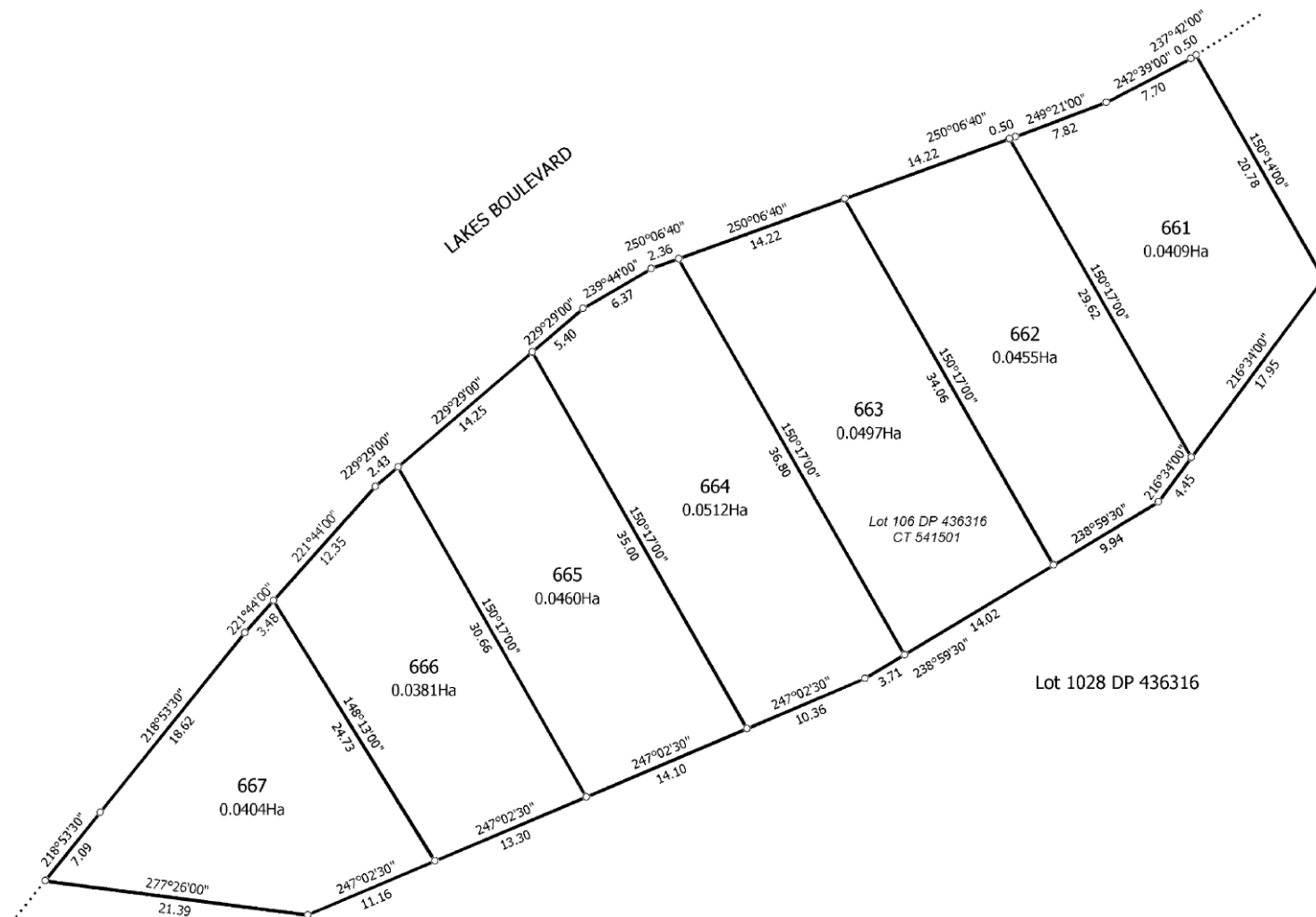
Memorandum of Easements in Gross Pursuant to s243 Resource Management Act 1991			
Purpose	Shown	Servient Tenement	Grantee
Right to drain Sewage	A	Lot 103 hereon	Tauranga City Council
Right to convey Electricity			Powerco Ltd
Right to drain Water and Sewage	E	Lot 763 hereon	Tauranga City Council
	F	Lot 764 hereon	
	G	Lot 765 hereon	

Area H is subject to a Consent Notice

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T 2/6

Land District: South Auckland

Lots 103, 661-667, 751-776 and 1060-1065 being a subdivision of Lots 106 & 107
DP 436316 and Pt Lot 103 DP 408042

Surveyor: Michael Peter Dewhirst
Firm: Harrison Grierson Consultants Ltd

Title Plan
DP 463737

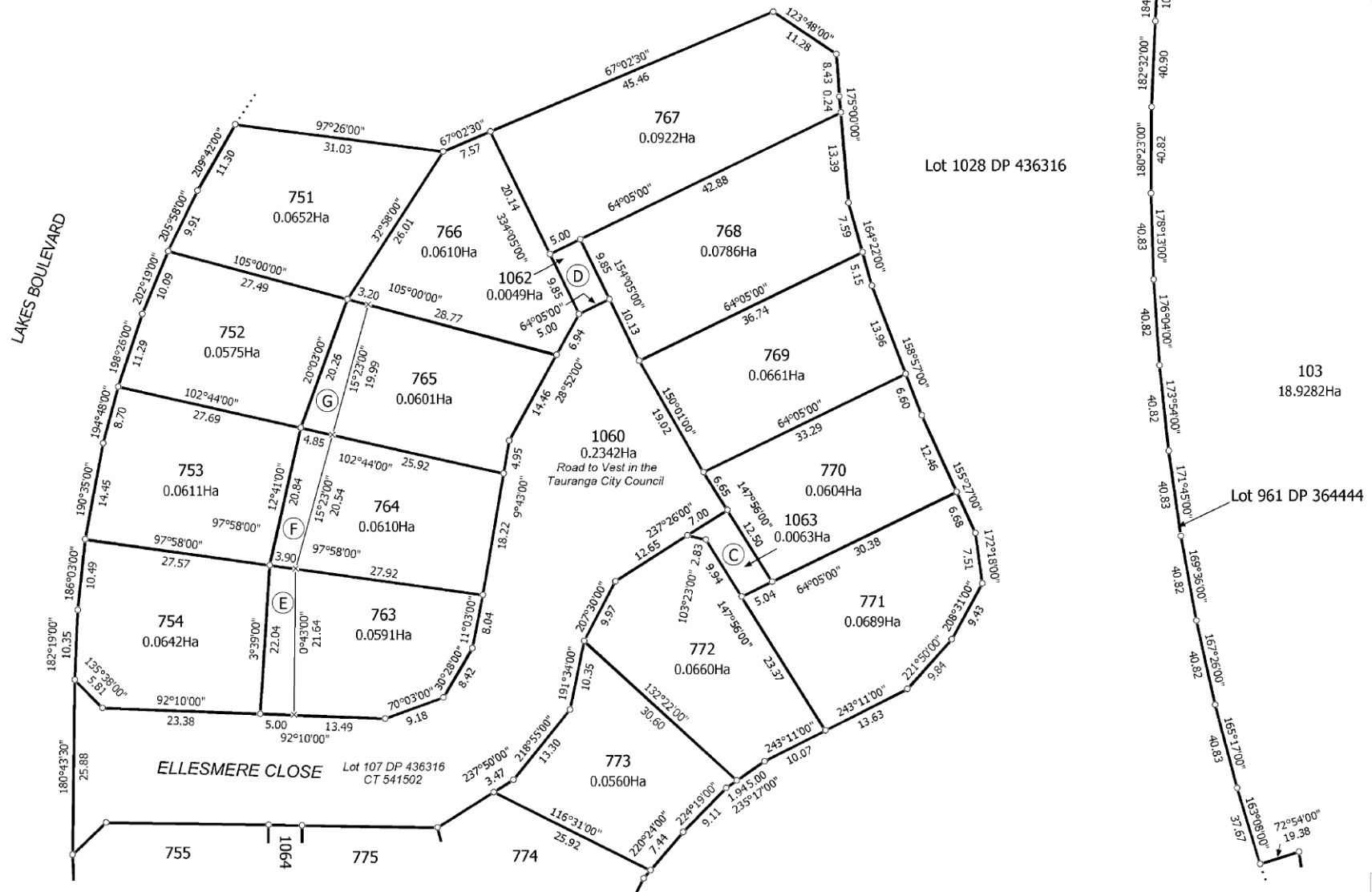
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Diag. A



T 3/6

Land District: South Auckland

Lots 103, 661-667, 751-776 and 1060-1065 being a subdivision of Lots 106 & 107
DP 436316 and Pt Lot 103 DP 408042

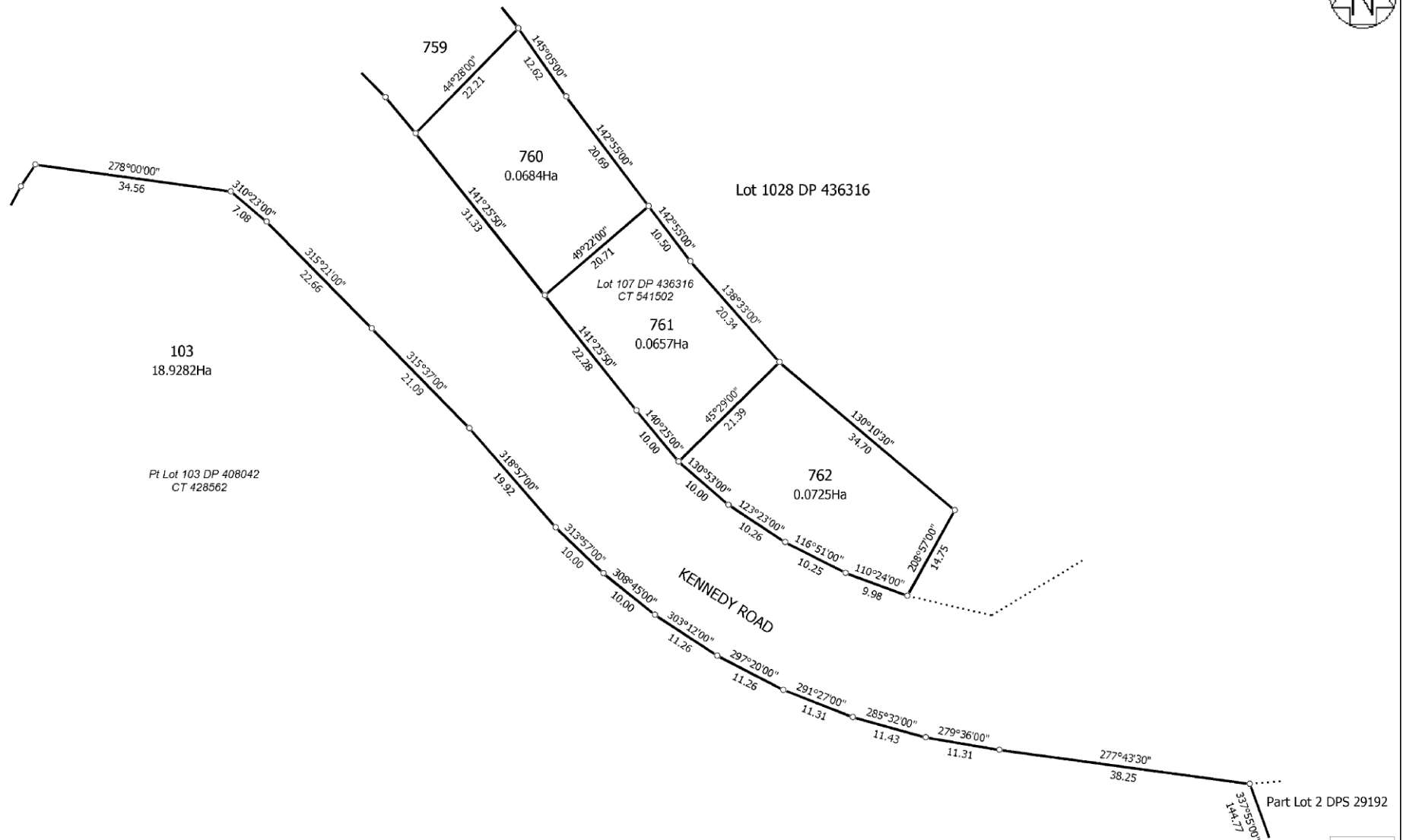
Surveyor: Michael Peter Dewhirst
Firm: Harrison Grierson Consultants Ltd

Title Plan
DP 463737

Deposited on: 28/06/2013

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T 5/6

Land District: South Auckland

Lots 103, 661-667, 751-776 and 1060-1065 being a subdivision of Lots 106 & 107 DP 436316 and Pt Lot 103 DP 408042

Surveyor: Michael Peter Dewhirst
Firm: Harrison Grierson Consultants Ltd

Title Plan
DP 463737

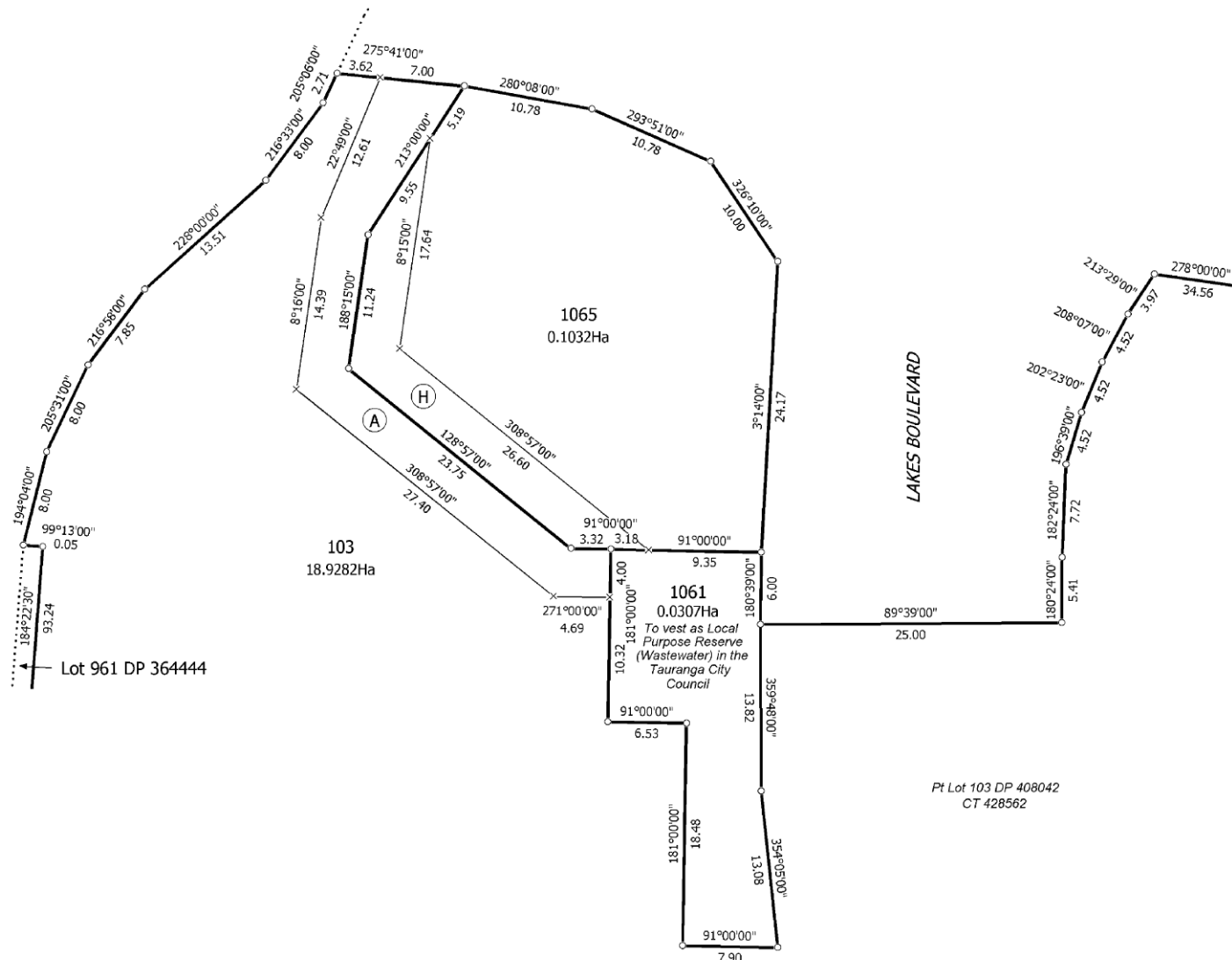
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TAKITIMU DRIVE



T 6/6

Land District: South Auckland

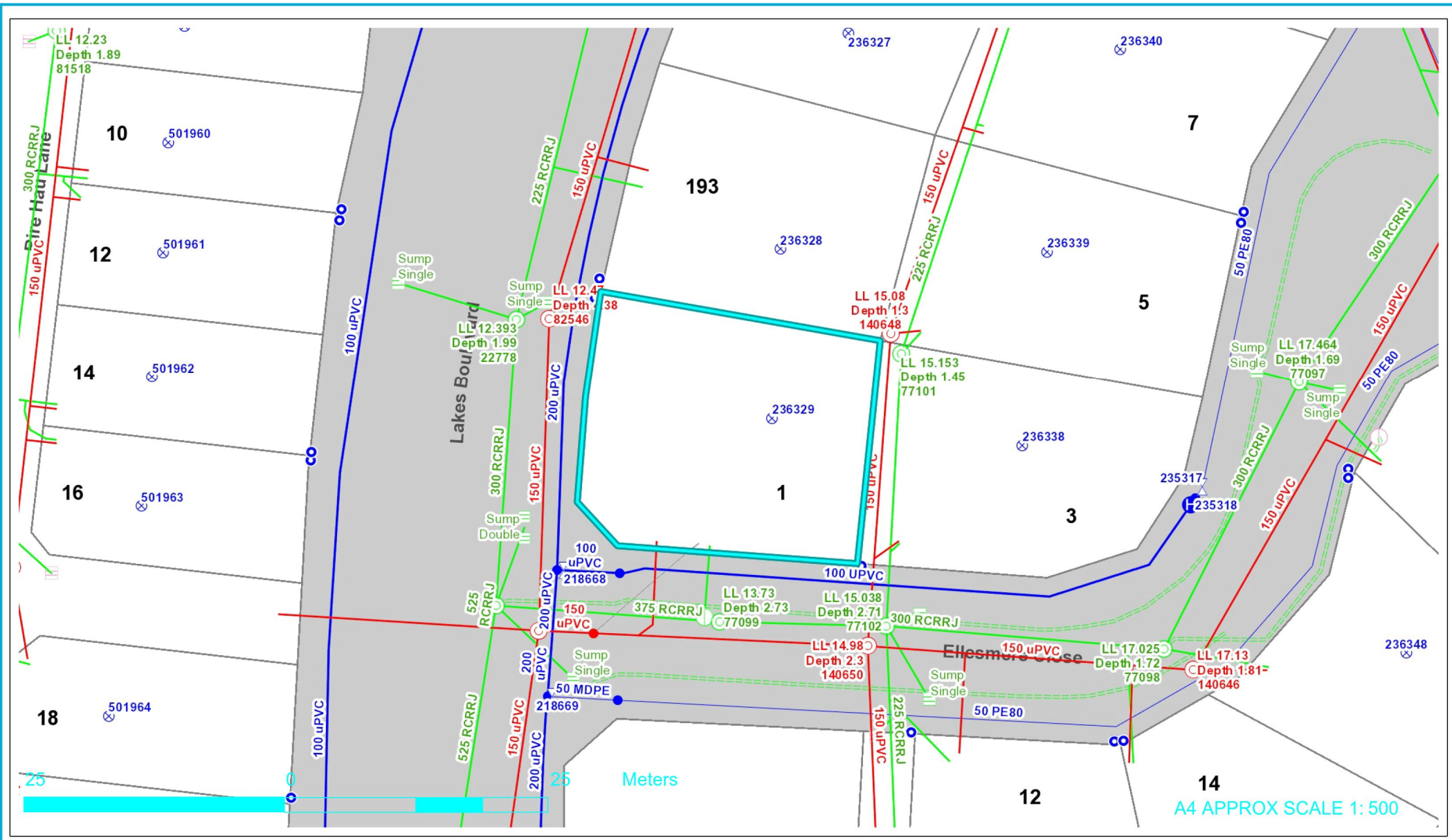
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Surveyor: Michael Peter Dewhirst
Firm: Harrison Grierson Consultants Ltd

Title Plan
DP 463737

Deposited on: 28/06/2013

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Tauranga City Council Services and Land Feature Key








Services







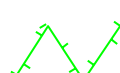

Wastewater

-  Wastewater Manhole
-  Wastewater Chamber
-  Wastewater Pump Station
-  Wastewater Valve
-  Wastewater Node






-  Wastewater Service Line
-  Odour Duct
-  Stormwater Main
-  Rising Main
-  Reclaimed





Stormwater

-  Stormwater Manhole
-  Stormwater Chamber
-  Stormwater Pump Station
-  Sump
-  Stormwater Outlet

-  Stormwater Inlet
-  Stormwater Soakhole
-  Stormwater Node
-  Stormwater Service Line
-  Stormwater Main
-  Culvert
-  Stormwater Drain
-  Overland Flow Path






Water

-  Water Scour Valve
-  Water Valve
-  Water Service Line
-  Water Reservoir
-  Water Node





-  Hydrant
-  Rider Main
-  Reticulation Main
-  Trunk Water Main

Land Features

Relic Slips

-  1. Slope debris lobe showing evidence of recent or current activity
-  2. Possible slope debris lobe
-  3. Probable slope debris lobe
-  4. Interpreted head scarp with poorly defined morphology
-  5. Interpreted head scarp with clearly defined morphology

Inner Harbour Erosion

-  Cliffline or Shoreline
-  Low 20 or 100 year risk - Landward or Seaward of Cliffline or Shoreline
-  Medium 20 or 100 year risk - Landward or Seaward of Cliffline or Shoreline
-  High 20 or 100 year risk - Landward or Seaward of Cliffline or Shoreline



Rates Information

Location 1 ELLESMERE CLOSE
 Valuation Ref 06618 030 21
 Legal Description LOT 754 DP 463737
 Area 0.0642
 Land Value 325,000
 Capital Value 735,000

Total rates assessed this year



Tauranga Council	Units	Rate	Annual Amount	Regional Council	Units	Rate	Annual Amount
Uniform Annual General	1	626.08695652	626.09	Regional General	215,000	0.00034180	73.49
General	565,000	0.00205468	1160.89	Regional UAGC	1	108.40000000	108.40
Lakes Targeted Rate	1	68.61739130	68.62	Passenger Transport	1	119.24000000	119.24
Resilience Targeted Rate	565,000	0.00003021	17.07	Rate	1	17.75000000	17.75
Wastewater Connected	1	384.81739130	384.82	Civil Defence			318.88
Glass Recycling	1	22.60869565	22.61	(CDEM)			
Total			2,280.10	Total			
Includes GST of							\$389.84
Total Rates (01 JUL 2018 to 30 JUN 2019)							\$2988.82

Water Rates

Metered A/C # 1 Route # M Class # Rate: 0 /m3 Supply Area: METERED WATER

What are rates?

The amount you pay in rates doesn't directly relate to the amount of things Council does for you personally. Rates are not a 'charge for services', they are a tax on the value of your property. It is not a perfect system but it is one of the very few ways the Government allows Councils to collect revenue. Rates provide 55% of the Council's income.

Rates Information

The rating year starts on 1 July each year to 30 June the following year.

- Rates and charges are inclusive of GST.
- Annual Rates are set in July each year.
- Rates are payable in two instalments and are paid in advance.

Each year an assessment is sent out to property owners on 1 August together with the first instalment invoice. Payments are due on the last working day in August. The second instalment invoice is sent out to property owners on 1 February each year and is due on the last working day of February.

What are the charges for rates and how are they calculated?

Rates are a tax on the value of your property. The value of your property is set by an independent agency and is driven by national legislation. Revaluations are done every three years.

What do General Rates pay for?

Rates are used to pay for a wide range of services and capital projects such as new roads, storm water, libraries, reserves and so on. Councils ten year plan is a good place to find out more about how Council plans to spend rates income. Tauranga City collects rates on behalf of the regional council also.

Tauranga City Rates Schedule 2018/2019		
Description	Inclusive of GST	Charge
Uniform Annual General	\$720.00	Per occupancy
Glass Recycling	\$26.00	Per occupancy
Wastewater	\$442.54	Per residential property or per connection for commercial
Wastewater Availability	\$221.27	Per property
General Residential	\$0.00236288	Capital value
General Commercial	\$0.00252119	Capital value
City Mainstreet	\$0.00067549	Capital value
Greerton Mainstreet	\$0.00197672	Capital value
Papamoa Mainstreet	\$0.00045746	Capital value
Mount Mainstreet	\$0.00099438	Capital value
Resilience	\$0.00003474	Capital Value
Economic Development	\$0.00067405	Per commercial property
The Lakes	\$78.91	Per property in the subdivision
Papamoa Coast	\$34.44	Per property in the subdivision
Excelsa	\$48.20	Per property in the subdivision

Uniform Annual General Rates (UAGC)

This is a fixed charge per rateable property and is irrespective of the value of a property. For residential properties it is a charge per occupancy.

Each occupancy is defined by physically having a separate living area, bedroom, bathroom facilities, entrance (including shared foyers) and cooking facilities. E.g. a property with a self contained flat on the ground floor would be rated for two UAGC's and two wastewater connections.

(Note: This rate is not based on ability to earn revenue or rent, frequency of use or the relationship of person/s using or able to use the separate area. This does not relieve the owner or occupier of any duty or responsibility under the Building Act 2004 or the Resource Management Act 1991 or the Tauranga City Plan) For commercial properties this is a charge on the number of separate businesses or leases.

General Rate

This variable rate is charged on the capital value of a property. Capital value is land value plus improvements value.

Wastewater Rates

Residential properties connected to Council wastewater pay a uniform annual charge for one toilet per occupancy. Commercial properties connected to Council wastewater pay a uniform annual charge for each toilet or urinal.

Those properties with wastewater available (i.e. they are within 100m of wastewater lines) but not connected will pay an availability charge.

The Lakes, Papamoa Coast and Excelsa Targeted Rate

This rate is charged on the capital value of a property. Capital value is land value plus improvements value. The Lakes Development at Tauriko/Pyes Pa and Papamoa Coast and Excelsa developments at Papamoa have significantly increased level of service costs as a result of wider roads, more gardens, reserves and streetlights etc. All properties in these subdivisions are charged this targeted rate.

Economic Development Rate

This rate is charged on the capital value of a property.

It is charged to commercial properties only and funds economic development through Priority One and Tourism Bay of Plenty.

Mainstreet Rates

This rate is charged on the capital value of a property. It is charged to commercial properties only and funds the Tauranga, Mount and Greerton Village Mainstreet organisations.

WATER SUPPLY BYLAW 2019



Tauranga City

First adopted	<i>22 November 2004</i>	Minute reference	<i>M04/105.3</i>
Reviews	<i>25 September 2007</i> <i>16 April 2019</i>	Minute references	<i>M07/84.15</i>
Review date	<i>April 2029</i>		
Engagement required	<i>Special Consultative Procedure</i>		
Associated documents	<i>Tauranga Water Meter Policy 2019</i> <i>Tauranga Large Water Users Policy</i> <i>Local Government Act 2002</i> <i>Health Act 1956</i> <i>Health (Drinking Water) Amendment Act 2007</i> <i>Local Government (Rating) Act 2002</i> <i>Public Works Act 1981</i> <i>Tauranga City Plan</i> <i>Tauranga Infrastructure Development Code</i> <i>Fire and Emergency New Zealand Act 2017</i>		
Relevant legislation	<i>This bylaw is made under the Local Government Act 2002 and the Health Act 1956</i>		

TABLE OF CONTENTS

1.	TITLE	3
2.	COMMENCEMENT	3
3.	APPLICATION	3
4.	PURPOSE	3
5.	DEFINITIONS	3
6.	APPLICATION FOR SUPPLY AND ACCESS TO THE NETWORK	5
7.	CUSTOMER RESPONSIBILITIES IN ACCEPTING SUPPLY	6
8.	WATER SUPPLY CONNECTION AND INFRASTRUCTURE	6
9.	RESPONSIBILITIES FOR MAINTANCE AND REPAIR	7
10.	ACCESS TO POINTS OF SUPPLY AND POINTS OF RESONSIBILITY	7
11.	BACKFLOW PREVENTION	8
11.	DEDICATED FIRE CONNECTIONS	8
12.	FIRE HYDRANTS	8
13.	WORKS NEAR THE WATER SUPPLY NETWORK	8
14.	RESTRICTIONS ON WATER USE	9
15.	LICENCES	9
16.	OFFENCES AND PENALTIES	10
17.	DISPENSING POWERS	11
	ATTACHMENT A	12

1. TITLE

- 1.1 This bylaw is the "Tauranga Water Supply Bylaw 2019"

2. COMMENCEMENT

- 2.1 This bylaw comes into force on 22 April 2019.

3. APPLICATION

- 3.1 This bylaw applies to Tauranga City.
- 3.2 Any person being supplied with water, or who has made application to be supplied with water, by Council.

4. PURPOSE

- 4.1 The purpose of this bylaw is to:
- (a) protect the health and safety of people using the water supply network;
 - (b) protect the public water supply network from damage, misuse and interference;
 - (c) assist in the provision of reliable, safe and efficient water supply in Tauranga.

5. DEFINITIONS

- 5.1 For the purposes of this bylaw the following definitions shall apply:

Term	Definition
Approved	approved in writing by the Council, either by resolution of the Council or by any authorised officer of Council
Approved Licensed Contractor	contracting company approved by Council under this bylaw to carry out work on Council's Water Supply Network and Wastewater Network, using employees who are licensed by Council to undertake the work
Authorised Agent	a person or company who has been delegated responsibility to act for a customer
Authorised Officer	any officer of the Council or any other person authorised under the Local Government Act 2002 and authorised by the Council to administer and enforce its bylaws
Backflow	means the flow of water or other liquid through any service pipe or supply pipe in a reverse direction to the normal supply flow
Backflow Prevention Device	is a device that prevents backflow
Child Meter	a separate water meter located downstream from a parent meter that records water supplied to a Premises

Term	Definition
Council	Tauranga City Council or any person authorised or delegated to act on its behalf
Cross Connection	any potential direct or indirect connection between the potable water supply and a contaminant
Customer	a person, or the authorised agent, who has been given approval by Council to use water supplied by Council
Dedicated Fire Connection	a connection to the water supply connection that supplies water solely for the purpose of fire protection
Parent Meter	a meter that leads onto a number of supply pipes
Person	a person or body of persons whether corporate or unincorporated, and includes the Crown and any successor of a person
Points of Responsibility	<p>The points on the Water Supply Network located on private property that identify the area and all assets within that area that Council will be responsible for.</p> <p>The Points of Responsibility for each Premises with a Child Meter or any separate Backflow Prevention Device that is located more than one metre away from its associated Meter Box, will be 300mm along the pipe either side of the Child Meter box or separate Backflow Prevention Device.</p>
Point of Supply	<p>The point on the Water Supply Network that marks the boundary of responsibility between the Council and Customer, irrespective of property boundaries.</p> <p>For premises connected to one Water Meter, the Point of Supply is either:</p> <ul style="list-style-type: none"> (a) 300 mm along the pipe immediately after the Water Meter box (b) or if a separate Backflow Prevention Device is installed, the Point of Supply is 300mm along the pipe immediately after the separate Backflow Prevention device provided the Backflow Prevention Device is located within one meter of the meter box; (c) if the Backflow Prevention Device is located more than one metre from the meter box the Point of Supply is 300mm immediately after the meter box and the responsibility of Council resumes 300mm either side of the separate Backflow Prevention Device. <p>Where two or more Premises share a Parent Meter there will be one Point of Supply at the Parent Meter box and two or more additional Points of Responsibility further along the Supply Pipe. The Point of Supply will be defined as above.</p> <p>The Points of Responsibility for each Premises with a Child Meter will be</p>

Term	Definition
	<p>300mm along the pipe either side of the Child Meter box.</p> <p>Council will be responsible for the Parent and Child Meters/boxes but not the Supply Pipe itself.</p> <p>See Attachment A of this bylaw.</p>
Premises	<p>means:</p> <p>(a) a property or allotment which is held under separate certificate of title or for which a separate certificate of title may be issued and in respect of which a building consent has or may be issued; or</p> <p>(b) a building that has been defined as an individual unit by cross lease, unit title or company lease and for which a certificate of title exists; or</p> <p>(c) an independent dwelling unit as defined in the Tauranga City Plan.</p>
Restricted Works	any works that will or are likely to damage, or adversely affect the operation of the Water Supply Network as defined by Clause 14.4
Service Pipe	means the section of pipe between a water main and the Point of Supply that is owned and maintained by Council
Supply Pipe	means the section of pipe between the Point of Supply and the Customer's Premises that is installed, owned and maintained by the Customer
Water Meter	a Council-owned meter to measure the flow of water supplied including Parent and Child meters
Water Supply	means the supply of drinking water by network reticulation to the point of supply for dwelling houses, commercial and other premises
Water Supply Network	means all infrastructure components such as pipes, fittings, valves, hydrants, Backflow Prevention Devices, Water Meters, meter manifolds / boxes and other related equipment required of the water supply network between the point of abstraction from the natural environment to the premises

6. APPLICATION FOR SUPPLY AND ACCESS TO THE NETWORK

6.1 Every Person wishing to do any of the actions prescribed in clauses 6.1(a) to 6.1(g) must follow Council's application and pay the prescribed charges:

- (a) Obtain a new permanent or temporary connection for the supply of water, including connection for the purposes of dust control and connection to a new subdivision.
- (b) Obtain a new connection and supply for a Dedicated Fire Connection system

- (c) Make changes to an existing connection, including
 - i. new owner taking over an existing supply
 - ii. type of supply
 - iii. classification type e.g. residential to commercial
 - iii. location of the Point of Supply
 - iv. level of service of supply e.g. quantity of supply
 - (d) Access, operate or work on any part of the Water Supply Network.
 - (e) Disconnect from the Water Supply Network.
 - (f) Seek specific Council approval to install quick-closing valves, pumps or any other equipment that may cause pressure surges or fluctuations to be transmitted within the water supply system, or compromise the ability of Council to maintain its level of service.
 - (g) Supply water from a connected Premises to other Persons outside the ordinary use of the connected Premises.
- 6.2 Where the applicant is not the owner of the Premises seeking supply, the applicant must produce written evidence of their authority to act on behalf of the owner of the premises for which the supply is sought.
- 6.3 Council shall either approve the application and inform the applicant of the type of supply, and the conditions applicable to the applicant's supply, or refuse the application and notify the applicant of the decision, giving reasons for the refusal.
- 7. CUSTOMER RESPONSIBILITIES IN ACCEPTANCE OF SUPPLY**
- 7.1 The Customer must comply with the requirements of this bylaw, including any conditions of approval of an application under clause 6.3.
- 7.2 The Customer shall not transfer to any other party the rights and responsibilities provided for under this Bylaw or any approval given under this Bylaw.
- 7.3 Unless specifically approved by Council no Person shall use water or water pressure directly from the Water Supply for:
- (a) driving lifts, machinery, generators, condensers or any other similar device; or
 - (b) a single pass cooling system; or
 - (c) the dilution of trade waste prior to disposal; or
 - (d) dust suppression.
- 7.4 The Customer shall be liable to pay for any Water Supply services.
- 7.5 A Supply Pipe must serve only one Premises and the Customer must not extend the Supply Pipe, by hose or any other means, to any other Premises.
- 7.6 In the event of a Premises changing ownership or the Customer wishing to terminate the supply, the outgoing Customer shall give Council seven working days' notice to arrange a final water reading.
- 7.7 Council does not guarantee an uninterrupted or constant supply of water, or any maximum or minimum pressure.

8. WATER SUPPLY CONNECTION AND INFRASTRUCTURE

- 8.1 No person other than an Approved Licensed Contractor (under clause 16) shall undertake any works to the Water Supply Network including the connection or disconnection to or the installation of any Service Pipe.
- 8.2 All works to the Water Supply Network must be in accordance with Council's Infrastructure Development Code.
- 8.3 No Person shall cause damage to the Water Supply Network.
- 8.4 No person shall do anything to the Water Supply Network that puts at risk the health and safety of those using the Water Supply Network.
- 8.5 All connections to the Water Supply shall include a Water Meter and a Backflow Prevention Device in accordance with clause 11.1.

9. RESPONSIBILITIES FOR MAINTENANCE AND REPAIR

- 9.1 Council is responsible for the Service Pipe, Water Meter box and fittings up to the Point of Supply and in between any Points of Responsibility.
- 9.2 The Customer is responsible for the Supply Pipe and fittings beyond the Point of Supply excluding the part of the Water Supply Network between any Points of Responsibility.
- 9.3 Council is responsible for the Parent and Child Meter boxes and all Backflow Prevention Devices but not the Supply Pipe itself, apart from the portion of Supply Pipe that is within the Points of Responsibility.
- 9.4 Any issues of responsibility past the Point of Supply and excluding the area within the Points of Responsibility within the property boundary are a matter for the property owners.
- 9.5 The Customer is responsible for repairing any leaks occurring on their side of the Point of Supply but excluding the part of the Water Supply Network between any Points of Responsibility.
- 9.6 The Customer shall maintain the areas in and around the Point of Supply and the Points of Responsibility, keeping them free of soil, growth or other matter or obstruction, which prevents, or hinders access to the Water Meter box and any separate Backflow Prevention Devices.
- 9.7 No other devices are permitted to be installed in the Water Meter box or Backflow Prevention device without Council approval.
- 9.8 Where in the opinion of Council any pipe, fitting or ground levels on the Customer's side of the Point of Supply and Points of Responsibility has been damaged or is causing or likely to cause water to be wasted or is insufficient for the proper supply of water, Council may give the customer notice in writing requiring any work specified in the notice to be carried out.
- 9.9 Wherever practical Council will make every reasonable attempt to notify the potentially affected Persons of a scheduled maintenance shutdown of the supply network before the work commences. Where immediate action is required and this is not practical, Council may shut down the supply without notification.

10. ACCESS TO POINT OF SUPPLY AND POINTS OF RESPONSIBILITY

- 10.1 Where the Point of Supply and Points of Responsibility are on private property, the Customer shall allow Council's Authorised Officer unrestricted access to, and about these areas between 7am and 6pm on any day for:
- (i) Water Meter reading, or
 - (ii) checking, testing and maintenance work with advance notice being given where practicable to do so.
- 10.2 For works outside these hours Council shall give written notice to the Customer 48 hours prior to Council's Authorised Officer entering the Premises except in emergency situations where Council shall be entitled to enter Premises that have a water supply at any hour without notice.

11. BACKFLOW PREVENTION

- 11.1 Every Customer must install a Backflow Prevention Device appropriate to the level of risk at the Premises as specified by Council.
- 11.2 The Customer shall provide to Council, on request, any information about any activities carried out on their Premises, which may contribute to the risk of Backflow or Cross Connection.
- 11.3 The Customer shall notify Council in writing if a change of use or a change of activity occurs that changes the risk of Backflow. Council may require a reassessment of the risk of Backflow at the Premises and if the Backflow Prevention Device requires upgrading this will be at the Customer's cost.

12. DEDICATED FIRE CONNECTIONS

- 12.1 No person shall install a new Dedicated Fire Connection unless authorised in writing by Council to do so. Any such connection must be installed by an Approved Licensed Contractor at the applicant's expense and shall be subject to any terms and conditions specified by Council.
- 12.2 Any Dedicated Fire Connection provided to supply water for fire protection shall not be used for any purpose other than firefighting and the testing of the fire protection system.

13. FIRE HYDRANTS

- 13.1 No Person shall have access to and draw water from fire hydrants unless he or she is:
- An authorised officer of Council or
 - A member of the Fire Service for the purposes of testing, training or emergency incidents only or
 - Is authorised by Council to do so.

14. WORKS NEAR THE WATER SUPPLY NETWORK

- 14.1 Any person proposing to carry out excavation work shall view the as-built information to determine whether or not the Water Supply Network is located in close proximity.
- 14.2 To protect the Water Supply Network from construction plant loading, the location of Council's Water Supply Pipes must be marked out on site before commencing any work with heavy construction plant (above a gross weight of 10 tonnes). Before heavy construction work will be permitted over or within two metres of Council's water pipes, an engineering assessment is to be undertaken and submitted for Council approval.

- 14.3 At least two working days' notice in writing shall be given to Council of an intention to carry out Restricted Works in close proximity of the Water Supply Network, including the proposed methodology to ensure infrastructure is not impacted. Council may specify in writing any restrictions on the work it considers necessary or require an engineering assessment be undertaken to provide a methodology to protect the Water Supply Network. Council may charge for this service.
- 14.4 Restricted Works are works of the following type which are carried out closer than the specified distance to the asset type set out in the following table:

Type of works	Types of Water Supply Network asset	Specified distance from the Water Supply Network
General excavation	Pipes 300mm in diameter and greater, including connected manholes and structures	10 metres
	Pipes less than 300mm in diameter, including connected manholes and structures	2 metres
Piling	Pipes 300mm in diameter and greater, including connected manholes and structures	10 metres
	Pipes less than 300mm in diameter, including connected manholes and structures	2 metres
Blasting	Pipes 300mm in diameter and greater, including connected manholes and structures	15 metres
	Pipes less than 300mm in diameter, including connected manholes and structures	15 metres

- 14.5 Any Person excavating and working around the Water Supply Network shall take due care to ensure that the network is not damaged and that bedding and backfill is reinstated in accordance with the specifications set out in the Infrastructure Development Code.
- 14.6 A Person causing damage to the Water Supply Network shall report that damage to Council immediately. Repairs shall be arranged by Council and repair costs may be charged to the person responsible for the damage.

15. RESTRICTIONS ON WATER USE

- 15.1 Council may impose restrictions on the use of Water Supply where it considers that its ability to maintain an adequate supply of drinking water is or may be at risk because of drought, emergency or increased water demand.
- 15.2 Any such restriction may apply to all of Tauranga or one or more parts of Tauranga.
- 15.3 Council will give such public notice as is reasonable in the circumstances of any restriction on water use under clause 15.1.
- 15.4 No Person may use water contrary to a restriction made under this clause.
- 15.5 Council may give notice in writing to any Person acting contrary to any restriction made under this clause. Council may restrict Water Supply to any Person that fails to comply with any restrictions made under clause 15.1.

16. APPROVED LICENSED CONTRACTORS

- 16.1 Only Council Approved Licensed Contractors shall undertake any works to the Water Supply Network.
- 16.2 The form of any application for and grant of Approved Licensed Contractor status required under this Bylaw will be determined by Council.
- 16.3 No application for an approval or licence from the Council, and no payment of or receipt for any fee paid in connection with such approval application or licence, shall confer any right, authority or immunity on the person making such application or payment.
- 16.4 Council may revoke or suspend an approval or licence granted under this Bylaw if it reasonably believes the licence holder:
 - (a) has acted or is acting in breach of the approval or licence; or
 - (b) is unfit in any way to hold such an approval or licence.
- 16.5 Council may require the Approved Contractor or Licence holder to attend a hearing to explain why the approval or licence should not be revoked or suspended. The Council may revoke or suspend the approval or licence at its discretion. If either:
 - (a) the Approved Contractor or Licence holder does not attend the hearing; or
 - (b) if after the hearing the Council is satisfied the Approved Contractor or Licence holder has been in breach of the licence or is unfit to hold the approval or licence.

17. OFFENCES AND PENALTIES

- 17.1 Every person who breaches this Bylaw commits an offence under section 239 of the Local Government Act 2002. Further, every Person commits a breach under this Bylaw who:
 - (a) Fails, refuses or neglects to comply with any notice duly given to that person under this Bylaw;
 - (b) Obstructs or hinders any Authorised Officer of the Council or other Council appointed person in performing any duty or in exercising any power under this Bylaw.

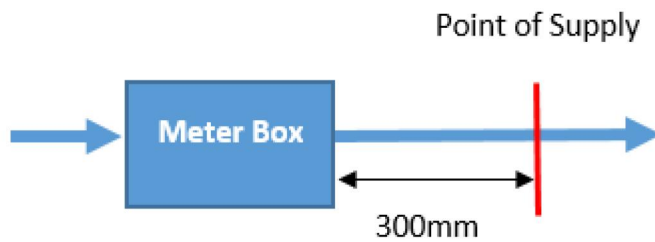
- 17.2 In accordance with section 193 of the Local Government Act 2002, any Person who fails to comply with any part of this Bylaw, may have their Water Supply restricted.
- 17.3 Subject to any provision to the contrary, any person guilty of an offence against this Bylaw shall be subject to the penalties set out in Section 242(4) of the Local Government Act 2002, and is liable on summary conviction to a fine not exceeding \$20,000.
- 17.4 Council may:
- (a) remove or alter any work or thing that is, or has been, constructed in breach of this Bylaw; and
 - (b) recover on demand the full costs of removal or alteration from the Person who committed the breach.
- 17.5 If a Customer or other Person defaults in undertaking any action required under this Bylaw, the Council may at its discretion, upon giving notice to that Customer or other Person, undertake that action and recover on demand from them the full cost of undertaking the action from that Person.

18. DISPENSING POWERS

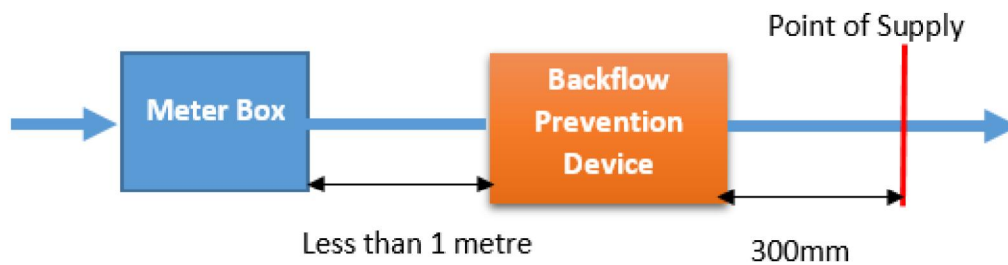
- 18.1 Council may waive full compliance with any provisions of this Bylaw in a case where Council is of the opinion that full compliance would needlessly cause harm, loss or inconvenience to any person or business without any corresponding benefit to the community. Council may, in its discretion, impose conditions of any such waiver.

Attachment A

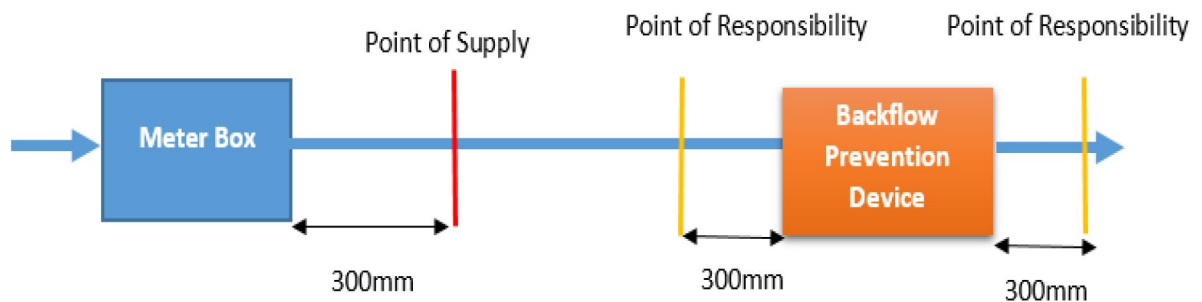
One meter box



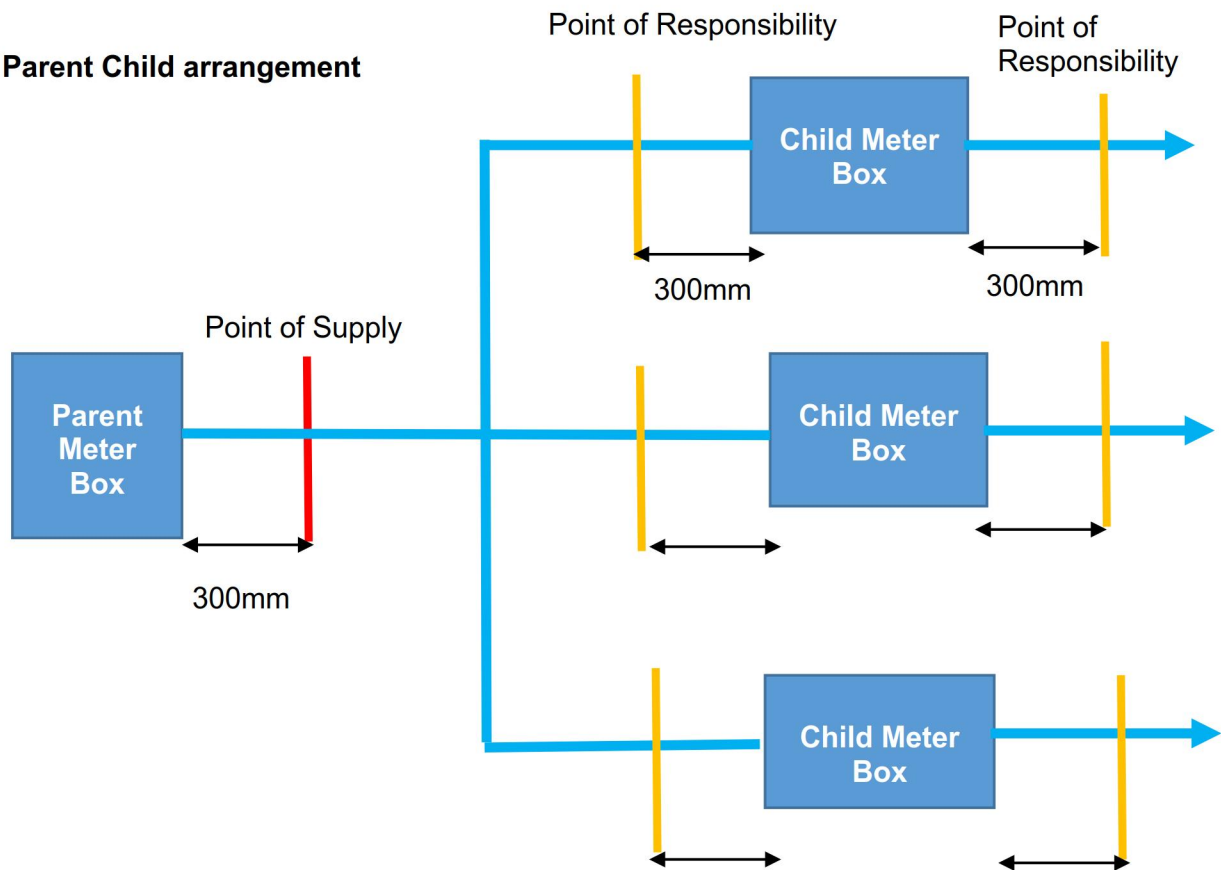
One meter box and a separate backflow prevention device within one metre of the meter box



When the separate backflow prevention device is further than one metre from the meter box



Parent Child arrangement



Trenches should be excavated to allow for adequate depth of bedding, the pipe diameter and the recommended cover. Bedding materials are listed as per AS/NZS 26551.

Roads & Streets - 750mm
Driveways & similar areas - 600mm
Footpaths & gardens - 500mm
Construction traffic - 750mm

All stormwater pipes to be 100mm dia. PVC.

Contractor to check & confirm all heights, location, direction, inverts & dimensions prior to commencement of works.
All drainage to AS/NZS 3500 standards & local authority requirements.
Plumber/Drainlayer to provide as built drawings to local authority.

Note : Sediment and runoff control shall be designed and installed by the licensed building practitioner prior to, or, during the site works for the project. The sediment controls shall be installed in accordance with the Tauranga City Councils City Plan (Chapter 4C.2) and Small Site Erosion and Sediment Control for the City of Tauranga Guideline.

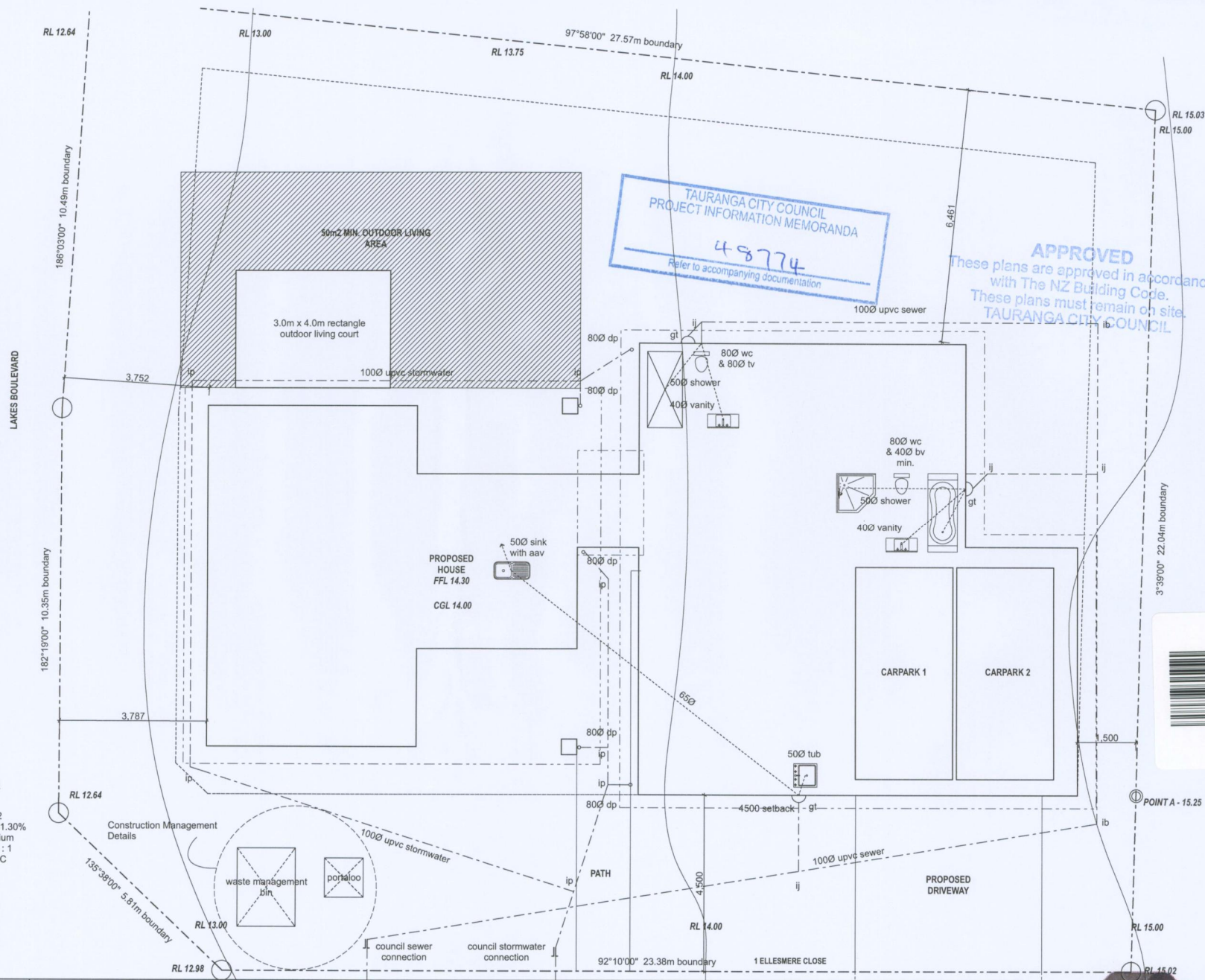
Contractor to confirm ground has adequate bearing to comply with Firth Technical Manual section 3.5 'foundation soils'.
Contractor to locate all service connection points prior to commencement of work. Check invert levels of pipes and manholes.
Contractor too confirm on site all boundary peg locations on site prior to commencement of work to ensure house position is correct.

Size of graded section of pipe DN	Minimum grade %
40	2.5
50	2.5
65	2.5
80	1.65
100	1.65
125	1.25
150	1.00
225	0.65
300	0.40

scale 1:100@A3
Note : Level Site
Note : Allow for 100m2 of concrete coverage to site. Dimensions shown indicative only.
Note : Service connection locations assumed only - to be confirmed. Levels to be confirmed

House Floor Area over brick : 184m² + Covered Areas : 17m² = 201m²
 Site Area : 642m²
 $201 \div 642 = .3130 \times 100 = 31.30\%$

Legal Description
Lot 754
DP 463737
Site Area : 642m2
Site Coverage : 31.30%
Wind Zone : Medium
Earthquake Zone : 1
Corrosion Zone : C



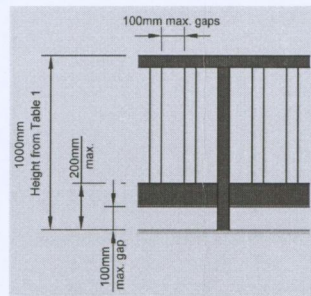
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project PROPOSED HOUSE AT LOT 754 THE LAKES 1 ELLESMERE CLOSE TAURANGA	sheet contents SITE/DRAINAGE PLAN	rev.	amendments	date	by	job number		Copyright of this drawing and its contents remain the property of Venture Developments Ltd. Any unauthorised reproduction is forbidden. © Venture Developments Ltd. 2008				
		A	for building consent	24/10/13	G.F	10263						
						sheet	of	rev.	date drawn.	24th Oct 2013	drawn by.	Glenn
						A2	A	sheet scales 1:50@ A1 1:100@ A3				

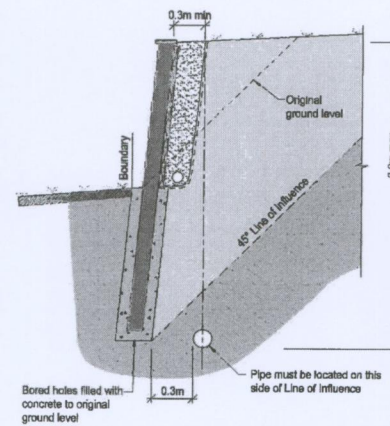


VENTURE
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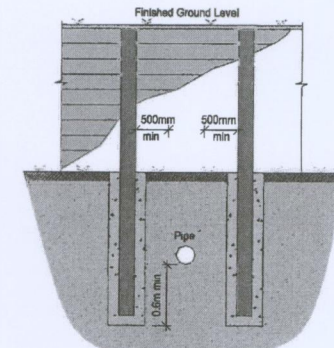
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TIMBER BARRIER - CRITICAL DIMENSIONS
not to scale



SECTION
Pipe parallel to retaining wall

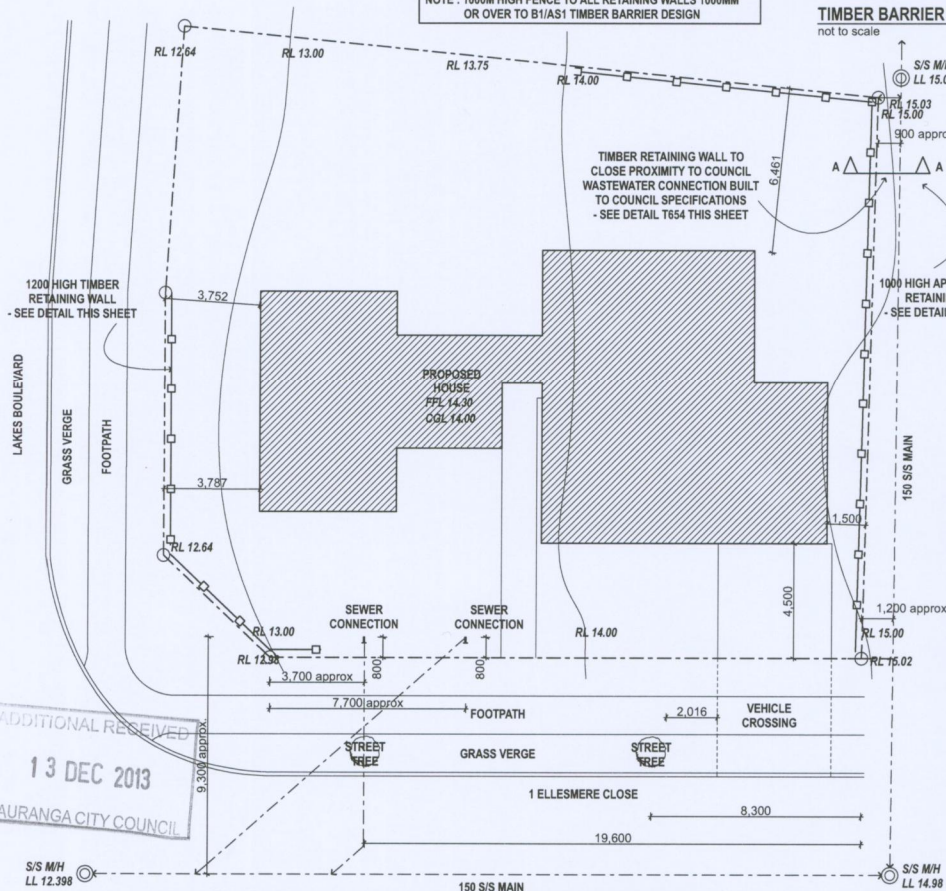


SECTION
Pipe perpendicular to retaining wall

TIMBER RETAINING WALL CLOSE PROXIMITY DETAIL T654
not to scale

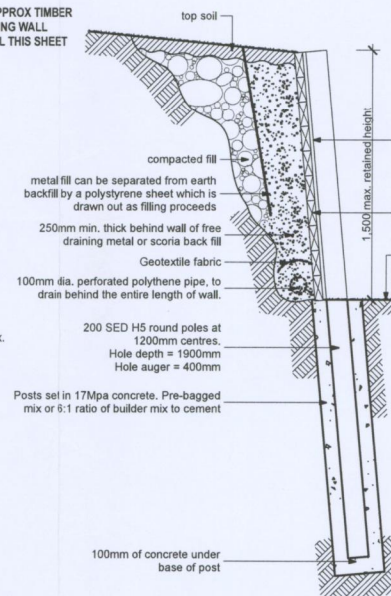


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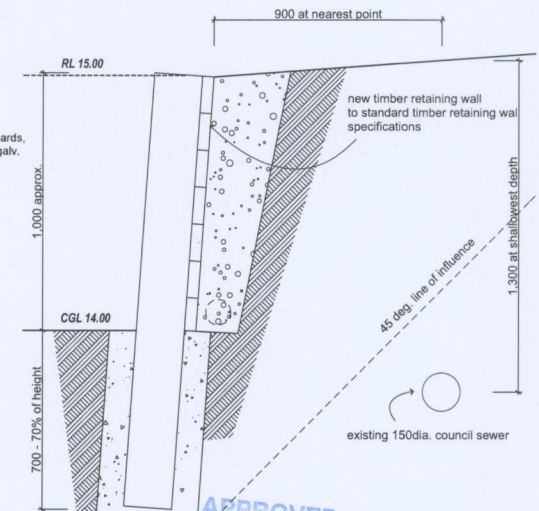


OVERALL SITE PLAN
scale 1:200@A3

NOTE: FOR RETAINING WALLS WITH POTENTIAL SURCHARGE
LOADING SEE CIVIL LTD DETAILS/CALCS. PROJECT NO. 13123491



STANDARD TIMBER RETAINING WALL DETAIL
not to scale

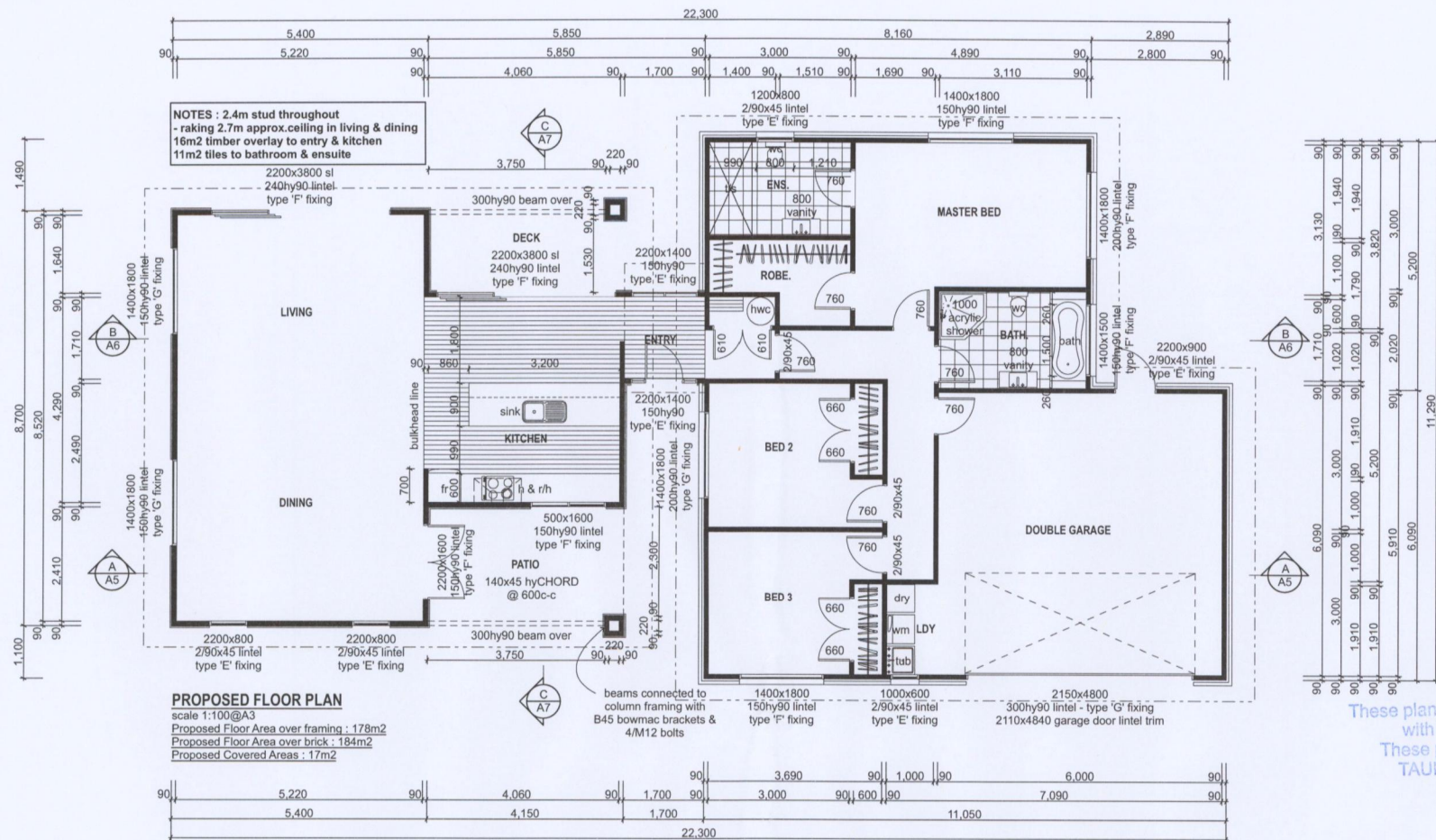


RETAINING WALL CROSS SECTION A-A
scale 1:20@A3
APPROVED
These plans are approved in accordance
with The NZ Building Code
Tauranga City Council

project	sheet contents	rev.	amendments	date	by	job number	Copyright of this drawing and its contents remain the property of Venture Developments Ltd. Any unauthorised reproduction is forbidden. © Venture Developments Ltd. 2008
PROPOSED HOUSE AT LOT 754 THE LAKES 1 ELLESMERE CLOSE TAURANGA	OVERALL SITE PLAN & TIMBER RETAINING WALL DETAILS	A	for building consent	24/10/13	G.F	10263	date drawn, 24th Oct 2013
							drawn by, Glenn
							sheet scales 1:100@ A1 1:200@ A3, NTS

Note: All aspects of this project are to fully comply with the Building Act, N.Z.S. 3604, The NZ Building Code, Project Specifications and all relevant Manufacturers Details. Venture Developments Ltd. accepts no responsibility for variations to materials & products specified. Building contractor to confirm all dimensions on site and notify this office of any variations.





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

GENERAL NOTES:

All timber to be sized from SG8 grade timber unless otherwise noted
and to be confirmed by pre-cut manufacturer. All timber H1.2
to external and internal framing.

Kitchen layout is indicative only to be confirmed by kitchen designer.

Smoke detectors to comply with A51/F7.

Gib Aqualine to all wet areas.

**ALL CONSTRUCTION TO COMPLY WITH NZS3604:2011
AND THE NZ BUILDING CODE.**

All products/materials to be installed as per manufacturers
specifications and instructions.

GIB Braceline may be substituted for GIB Fyrelime
as per manufacturers specifications.

Thermakraft Coverup building wrap over framing - support with
polypropylene tape straps @ 300c-c where stud c-c exceed 450c-c

GLAZING NOTES:

All joinery polyester powder coated.

All glazing to NZS 4223:1985 Parts 1 and 2 and 3:1993.

All glazing to bathroom/WC to be selected obscure,
safety glass to wet areas.

All jambs ex 25 mm H3.1 LOSP p.q pine
- 40mm single bevelled architraves.

**ALL GLAZING EXCLUDING GARAGE
TO BE DOUBLE GLAZED.**

TAURANGA CITY COUNCIL
PROJECT INFORMATION MEMORANDA

48774
Refer to accompanying documentation



TCC765461

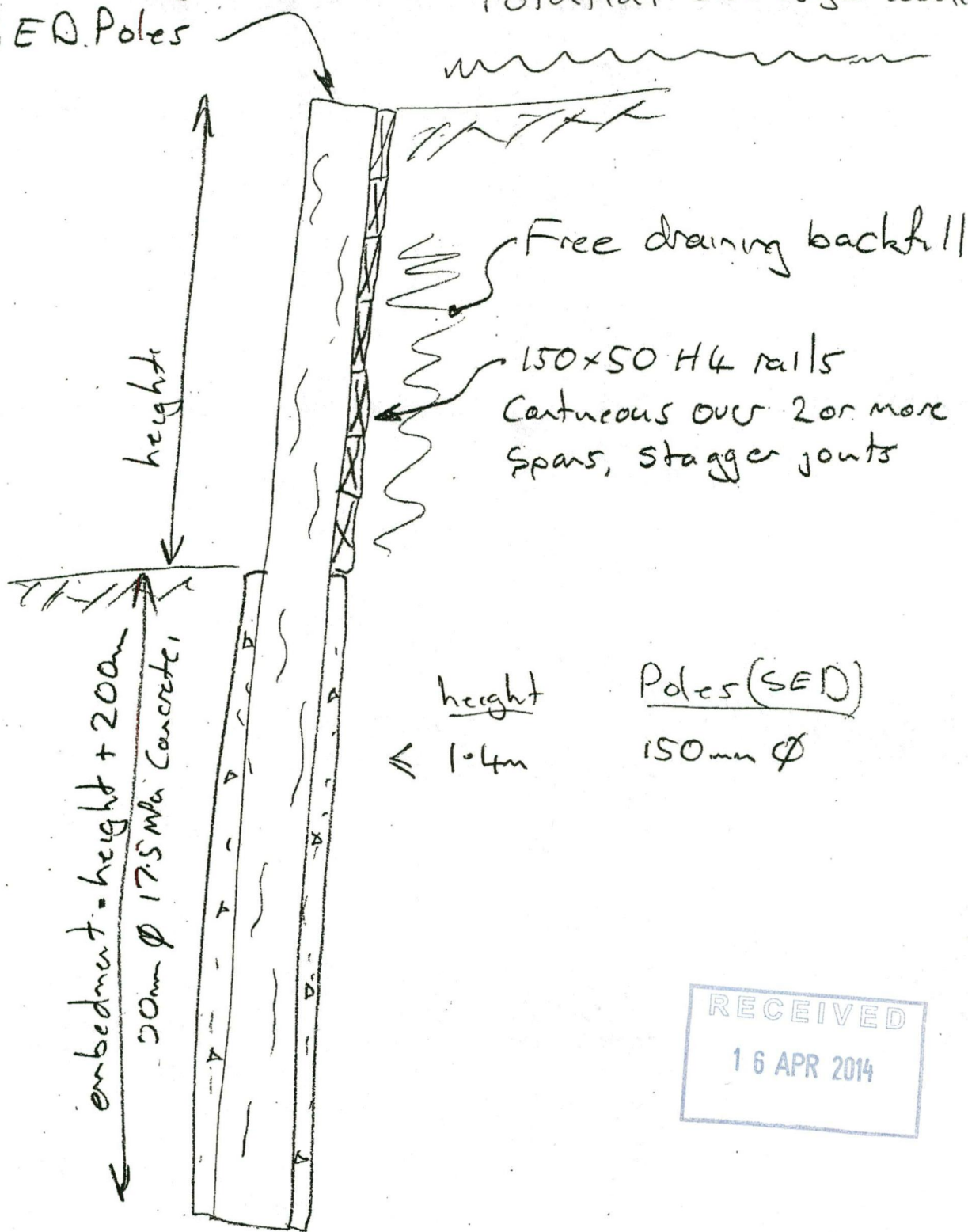
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PROPOSED HOUSE AT LOT 754 THE LAKES 1 ELLESMERE CLOSE TAURANGA	PROPOSED FLOOR PLAN & LINTEL FIXING DETAILS	A	for building consent	24/10/13	G.F	10263		
						sheet of rev.	date drawn. 24th Oct 2013	drawn by. Glenn
						A3 A	sheet scales	
							1:50@ A1 1:100@ A3	

Note: All aspects of this project are to fully comply with the Building Act, N.Z.S. 3604, The NZ Building Code, Project Specifications and all relevant Manufacturers Details.
Venture Developments Ltd. accepts no responsibility for variations to
materials & products specified. Building contractor to confirm all dimensions on site and notify this office of any variations.

1.2m Spacing
SED Poles

Potential Swicharge loading



1 Ellesmere Close - The Lakes

13123491

13/12/13

(2)

Civil

As Built

Drainage Plan



Tauranga City

Drainage Plan for:

Street Number 1 Street Name Ellesmere close
Lot 754 DP 463737
Suburb The Lakes
Owner The Lakes (2012) Ltd
Type of Building Dwelling
Drainlayer Mount Drainage Ltd
Date of Inspection 3/04/14 Inspector Malcolm Hunt
Drainage Permit No 46774

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.



COPY

Willow Street, Tauranga
Private Bag 12022, Tauranga 3143
Telephone: 07 577 7000. Facsimile 07 577 7034

CODE COMPLIANCE CERTIFICATE NO: 48774

Section 95, Building Act 2004

THE OWNER

CONTACT PERSON

THE LAKES (2012) LIMITED
C/O CARRUS PROPERTIES LIMITED
PO BOX 345
SEVENTH AVENUE
TAURANGA 3140

VENTURE DEVELOPMENTS LIMITED
23/38 ASHLEY PLACE
PAPAMOA BEACH
PAPAMOA 3118

Ph day 0064 07 5420101 ext
Email/website: info@venturedevelopments.co.nz

The building

Street address of building: 1 ELLESMERE CLOSE

Legal description of land where building is located: LOT 754 DP463737

Building name:

Current, lawfully established, use: DETACHED DWELLING

Year first constructed: 2014

First point of contact for communications with the council/building consent authority: Tauranga City Council, Building Services, Private Bag 12002, Tauranga 3143, phone 07 5777000, fax 07 5777034, info@tauranga.govt.nz

Building work ERECT DWELLING

Building consent number: 48774

Issued by: Tauranga City Council

Code compliance

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

- a) the building work complies with the building consent

Compliance Schedule: No

Signature


MANAGER: BUILDING SERVICES

On behalf of: Tauranga City Council

Date: 06 Jun 2014

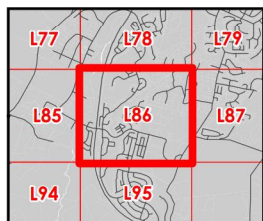
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City Plan

Planning Map

L86



0 50 100 200 300

Metres

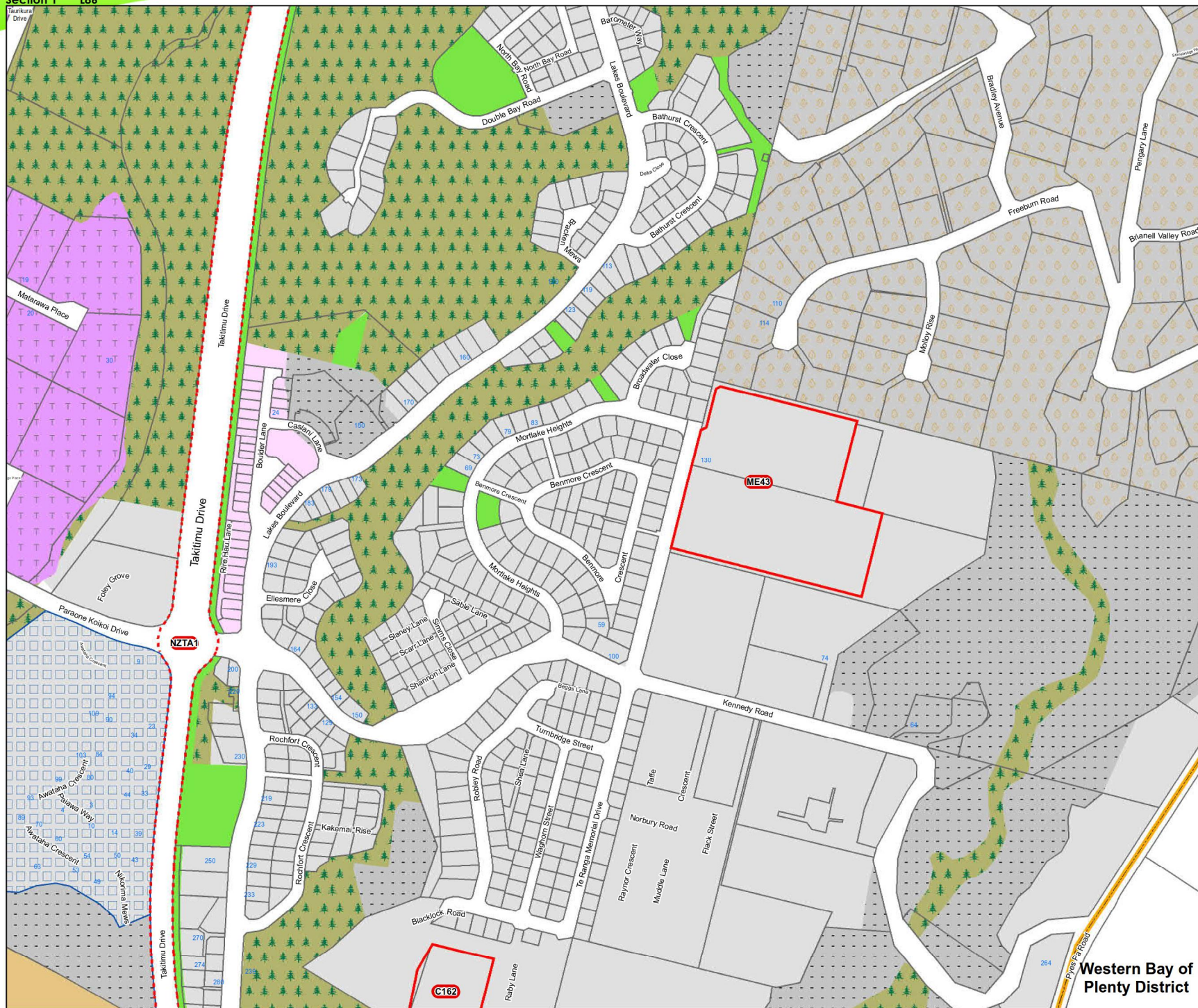
Scale = 1:5,000

Cadastral Information sourced from
Land Information New Zealand
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Tauranga City

Section 1 L86



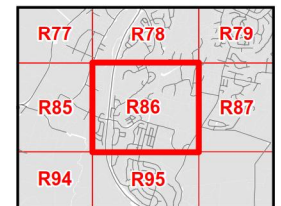
Western Bay of
Plenty District



City Plan

Planning Map

R86



0 50 100 200 300

Metres

Scale = 1:5,000

Cadastral Information sourced from
Land Information New Zealand
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Tauranga City

Tauranga City Plan

Planning Maps Key (1 of 2)














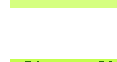
Jurisdiction

- 1) The rules of this City Plan only apply landward of Mean High Water Springs.
- 2) The Bay of Plenty Regional Council is the consent authority for activities seaward of Mean High Water Springs and for activities on the surface of waterbodies.
- 3) The line of the coast shown on this map represents the position of Mean High Water Springs based on aerial mapping (2007). It does not necessarily represent the current position of Mean High Water Springs.
- 4) The Bay of Plenty Regional Council should be consulted before undertaking any activity in the vicinity of Mean High Water to establish the actual line of Mean High Water Springs.

Planning Zones

	City Centre Zone
	City Centre Waterfront Subzones
	Commercial
	City Living – Mixed Use (CLMU)
	City Living – Mixed Use (CLMR) 19 metre max. height
	City Living – Residential (CLR) 9 metre max. height
	City Living – Residential (CLR)
	Suburban Residential
	Residential Large Lot
	High Density Residential















Planning Zones (continue)

	Port Industry
	Tauriko Industry
	Tauriko Commercial
	Industry
	Rural Residential
	Rural
	Education Centre
	Passive Open Space
	Active Open Space
	Active Open Space (Major)
	Conservation
	Greenbelt

Planning Zones (continue)

	Te Tumu Future Urban
	Rural Marae Community
	Urban Marae Community
	Ngati Kahu Papakainga
	Special Use Baypark
	Wairakei Town Centre (Core)
	Wairakei Town Centre (Fringe)
	Neighbourhood Centre (Wairakei)
	Papamoa East Employment
	Wairakei Residential
	Rail
	Road All Public Roads and Service Lanes are Road Zone

Plan Areas

	Current Erosion Risk Zone (CERZ)
	50 year (2060) Erosion Risk Zone (50 year ERZ)
	100 year (2010) Erosion Risk Zone (100 year ERZ)
	Scheduled Site
	Commercial Plan Area
	High Rise Plan Area
	Medium Rise Plan Area
	Flood Hazard Plan Area
	Special Ecological Area (Category 1)
	Special Ecological Area (Category 2)
	Outstanding Natural Features and Landscapes Plan Area
	Important Amenity Landscapes Plan Area
	Kiwi Rail Reverse Sensitivity Plan Area
	NZTA Reverse Sensitivity Plan Area

Tauranga City Plan Planning Maps Key (2 of 2)





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- 3) The line of the coast shown on this map represents the position of Mean High Water Springs based on aerial mapping (2007). It does not necessarily represent the current position of Mean High Water Springs.
- 4) The Bay of Plenty Regional Council should be consulted before undertaking any activity in the vicinity of Mean High Water to establish the actual line of Mean High Water Springs.


Other Symbols

 Legal Parcel Boundary as at Date Printed on Map

 Mean High Water Springs


 Sub Zone Boundary

 Pedestrian Environment Street Frontage

 Pedestrian Link Requirement

 Coastal Protection Area

 Special Noise Rule Applies (Courtney Road, Bethlehem Town Centre)

 Territorial Authority Boundary

Utilities


Note: While only transmission and key electric lines are identified on the Planning Maps, works in close proximity to all electric lines can be dangerous. Compliance with the New Zealand Electrical Code of Practice 34:2001 is mandatory for buildings, earthworks and mobile plants within close proximity to all electric lines. Compliance with the Electricity (Hazards from Trees) Regulations 2003 is also mandatory for tree trimming and planting. To discuss works, including tree planting, near electrical lines especially within 20m of those lines, contact the line operator.

 High Voltage Transmission Plan Area-Support Structure

 High Voltage Transmission Plan Area-Electric Line

 High Voltage Transmission Plan Area

 Powerco Structure

 Powerco Overhead Electric Line

 Powerco Underground Cable

 Trustpower Structure

 Trustpower Electric Line

 Gas Transmission Pipeline

Heritage



Built Heritage Site Number

(Refer Heritage Register, Chapter 7)
NOTE: tree canopy and number within it indicates tree(s) on this legal parcel, but not necessarily at the marked location within the parcel.



Notable Tree

(Refer Notable Tree Register, Chapter 6)
NOTE: tree canopy and number within it indicates tree(s) on this legal parcel, but not necessarily at the marked location within the parcel.



Heritage Tree

(Refer Heritage Tree Register, Chapter 7)
NOTE: tree canopy and number within it indicates tree(s) on this legal parcel, but not necessarily at the marked location within the parcel.



Significant Groups of Trees

(Refer Significant Groups of Trees Register, Chapter 6) NOTE: Tree canopies should be sighted on site to determine actual extent



Significant Maori Areas

(Refer Chapter 7, Appendix 7B: Register of Significant Maori Areas)



Significant Archaeological Areas

(Refer Chapter 7, Appendix 7D: Register of Significant Archaeological Areas)



Te Tumu Archaeological Management Areas

(Refer Chapter 7, Appendix 7E: Te Tumu Archaeological Management Areas)

Designations



Designated Site Boundary (other than Road Designation)



Designated Road or Road Widening



Designated Site Number (Refer Appendix 10C:Designations)



Limited Access Road



Proposed Designated Site Boundary (other than Road Designation)



Proposed Designated Road or Proposed Road Widening



Proposed Designated Site Number (Refer Appendix 10C:Designations)

Requiring Authority Abbreviations

C	Tauranga City Council
MJ	Ministry for Courts
DR	Department of Corrections
MD	Ministry of Defence
ME	Ministry of Education
MH	Ministry of Health
MS	Meteorological Service of New Zealand
NP	New Zealand Police
NZTA	New Zealand Transport Agency
PC	PowerCo Limited
RC	New Zealand Railways Corporation
TNZ	Telecom New Zealand Ltd and Telecom Mobile Communications Ltd
TW	Transpower New Zealand Limited
WB	Western Bay of Plenty District Council
CH	Chorus Limited

Other Abbreviations

AW	Accessway - Zoned Passive Open Space
SL	Service Lane
C.M.A	Coastal Marine Area covered by Regional Coastal Environment Plan

TAURANGA CITY COUNCIL

**CONSENT NOTICE PURSUANT TO SECTION 221
RESOURCE MANAGEMENT ACT 1991**

TCC Reference: RC16807

IN THE MATTER OF Plan LT 463737

AND

IN THE MATTER OF Subdivision Consent pursuant to
Sections 104, 108, 220 & 221 of the
Resource Management Act 1991

Pursuant to section 221 of the Resource Management Act 1991 Tauranga City Council hereby certifies that by way of resolution passed under delegated authority on 3 October 2012, the following conditions were imposed on the subdivision consent of Lots 106 and 107 DP 436316 and Pt Lot 103 408042.

That a consent notice be registered on the Certificate of Titles of allotments as set out below advising owners and subsequent owners of the following requirement to be complied with on a continuing basis:

For Lots 661 to 667, 751 to 776 and 1065 inclusive:

- a) *The design and construction of any structures requiring a building consent in accordance with the Building Act 2004 shall fully comply with the recommendations contained in the geotechnical completion report compiled by S & L Consultants Limited for Stages 2I and 2N referenced 20302 R1 dated 16 March 2013. Any development of the property shall also be undertaken in accordance with the above report.*

For Lot 1065:

- b) *This Lot contains a building restriction area labelled H as shown on the survey plan and in the geotechnical completion report compiled by S & L Consultants Limited for Stages 2I and 2N referenced 20302 R1, dated 16 March 2013. No structures or additional fill is to be placed in these areas unless specific design is provided by a Category One Geo-Professional for approval.*

For Lots 661 to 667, 751, 759 to 762, 766 to 774, 776, and 1065 inclusive:

- c) *The owners are required to meet the full cost of any fencing along the common boundary between the lot and the adjoining land that is vested in the Tauranga City Council as local purpose reserve.*

DATED at Tauranga this 21st day of June 2013



Authorised Officer

TCC Ref: 6264241

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 rhyolitic 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.



**THE LAKES DEVELOPMENT
STAGES 2I and 2N
Lakes Boulevard, Ellesmere Close
Pyes Pa, Tauranga**

Geotechnical Completion Report

Prepared for : **The Lakes (2012) Ltd**

Ref : 20302 R1

Date : 16 March 2013

Contents

1.0	INTRODUCTION.....	3
2.0	ORIGINAL LANDFORM AND GEOLOGY	4
3.0	PRESUBDIVISION INVESTIGATIONS	5
4.0	SCOPE OF SUBDIVISION EARTHWORKS	5
5.0	EARTHWORKS STANDARDS.....	6
6.0	RECOMMENDATIONS FOR DEVELOPMENT	7
7.0	FUTURE BUILDING ON SLOPING GROUND.....	11
8.0	LOTS 1061 AND 1065	11
9.0	TOPSOIL THICKNESS.....	12
10.0	PROFESSIONAL OPINION.....	12
11.0	APPLICABILITY.....	12

Appendix 1 Reference Drawings
 Approved Subdivision Plan 132631-2N-RC02
 Report Reference Plan 20302-01
 Contour Plan Prior to Construction-2013 20302-02
 Post Construction Borehole Location Plan 20302-03
 As Built Cut-Fill Plan (2013) 132631-2N-AB220
 DP 463737 (6 sheets)

Appendix 2 Certificates
 Infrastructure Development Code Form G2
 Infrastructure Development Code Form G3

Appendix 3 Test Results – Coffey Geotechnical (2008)

Appendix 4 Borehole Logs – S & L Consultants Ltd (2008 and 2013)

Appendix 5 Coffey Report for Lot 1065 (2008)

1.0 Introduction

This report refers to the site development earthworks completed for Stages 2I and 2N of The Lakes residential subdivision development at Pyes Pa.

The location of these stages of The Lakes development are shown on plans 132631-2IN-RC01 and DP 463737, both prepared by Harrison Grierson Consultants (HG). Copies of these plans are included in Appendix 1 of this report. These plans show the residential development for Stages 2I and 2N to comprise

- 7 residential lots numbered 661 to 667 incl. with frontage to Lakes Boulevard within Stage 2I
- 5 residential lots numbered 751 to 755 incl. with frontage to Lakes Boulevard within Stage 2N
- 16 residential lots numbered 756, 757 and 763 to 776 incl. with frontage to the new road of Ellesmere Close which was constructed as part of the development of Stage 2N
- 7 residential lots numbered 758 to 762 incl. with frontage to the existing formation of Kennedy Road within Stage 2N
- Lot 1061 located on the southern side of Kennedy Road between the intersections of Kennedy Road with Lakes Boulevard to the east and Takitimu Drive to the west. This lot is the site of a recently constructed wastewater transfer pumping station and is defined as Local Purpose Reserve (Drainage).
- Lot 1065 located adjacent to lot 1061 on the southern side of Kennedy Road.

Construction of the roading and reticulation to service these lots has been completed by the developer, The Lakes (2012) Ltd.

Approval for the Lakes Development was initially granted jointly by the Tauranga City Council and Western Bay of Plenty District Council on 24 May 2004 based on subdivision plan 16916 dated 20 April 2004 prepared by S&L Consultants Ltd (S&L). A variation was approved by the Tauranga City Council on 18 September 2007 for the proposed development on the area known as Stage 2 at The Lakes.

Construction of Stages 2I and 2N has been undertaken at two different times. Bulk earthworks were undertaken on all lots by Grasshopper Farms Ltd in 2008 and 2009. These stages of subdivision were then completed during January to April 2013 in accordance with resource consent RC 16807 dated 3 October 2012 issued by Tauranga City Council based on HG scheme plan 132631-2K-RC01 rev 2.

During the second January to April 2013 construction period minor modifications were only undertaken to lots 763 to 766 during the construction of Ellesmere Close.

Condition 12 of the approval required that

The Consent Holder shall provide to the Council a "Geotechnical Completion Report" compiled by a Category 1 Geo-Professional. The report shall

- *Comply with the Councils IDC QA4 requirements*

- *Display the position of all designated building platforms and building restriction lines where applicable;*
- *Provide recommendations for the ongoing development of the lots (i.e. maximum cut/fill heights, management of steep slopes, etc.);*
- *Confirm earthworks and/or building platforms have been constructed to comply with the New Zealand Building Code requirements;*
- *Certify that any residential settlement or differential settlement that may still occur shall not exceed the manufacturer's recommendations with respect to the installed underground pipe networks to be vested in Council or exceed accepted design techniques with respect to road settlement or long term deflection, or exceed the settlement limitations as detailed in the New Zealand Building Code.*

Pursuant to Section 128 of the Resource Management Act 1991, the Council may review this condition, upon receipt of the "Geotechnical Completion Report", and require a Consent Notice to be registered on the Certificate of Title of any allotments to which the recommendations of the "Geotechnical Completion Report" relate to.

This report has been prepared for the Section 224C Certificate application for DP 463737 and describes the earthworks undertaken in the formation of Stages 2I and 2N and summarises the suitability of the prepared ground in cut and fill for future urban housing development. The report states the relevant standards adopted for the placement of filling to support residential buildings and recommendations for developing future building sites.

2.0 Original Landform and Geology

The landform prior to the commencement of the Lakes development in 2004 comprised:

- Elevated areas along the eastern side as a central plateau described locally as the Te Ranga Tablelands. These areas have been variously used for farming and horticultural cropping. The existing Pyes Pa residential area further to the east had been established on similar level areas of the same elevation.
- Lower lying areas mainly along and adjacent to the Kopurererua Stream to the west and extending eastwards.
- Transitional slopes of varying steepness between the lower lying areas and the elevated central plateau. Re entrant erosion gullies were present on some of these slopes but most were uniform in slope gradient, albeit steep in some locations.

The geological setting for the development area can be derived from the publication:
Occasional Report 22 – Department of Earth Sciences University of Waikato
"Geology of the Tauranga Area" by Briggs et al – 1996

Stages 2I and 2N are located on the transitional and elevated areas within the eastern side of The Lakes development area and the original geology can be described from preconstruction subsoil investigations to comprise

- Taupo volcanic zone tephras comprising Rotoehu ash (light grey sand) overlaid by brown or yellow post Rotoehu ash being coarse grained silts, sandy silts and sands. These are collectively referred to as "younger ashes" and overlay
- "Older" ash derivative strongly weathered clay textured tephra beds and palaesols (Hamilton ash) overlaying

- Older terrestrial and estuarine sediments deposits of the Matua subgroup of the Tauranga formation. These may comprise a wide variety of lithologies
- Te Ranga ignimbrite being white-grey pumiceous sands and coarse silts.

3.0 Presubdivision Investigations

Prior to obtaining approval for the original development on 24 May 2004, a comprehensive geotechnical assessment was undertaken by S&L. The subsequent report that accompanied the consent application was titled "Pyes Pa West Urbanisation Development, Geotechnical Assessment Report, reference 16944" and was dated October 2003.

Fifty two machine drilled boreholes and twenty six excavated pits were used to identify the subsoils that are present on the development area.

Additional boreholes were put down during earthworks in 2008 to identify the continuity of the subsoils present in the upper ground and to provide data for stability analyses subsequently undertaken for the design of the slope profiles established by the site earthworks between the upper areas of Stages 2J and 2K and the lower areas within Stages 2I and 2N.

The presubdivision investigations concluded that:

- The soils to be obtained in areas of cut on the higher ground would be suitable for placement as filling to support future houses although some conditioning may be required so that placement would be near optimum moisture contents.
- Areas of higher ground away from the areas of peat and not to be disturbed by construction earthworks would be suitable for the support of future houses in accordance with NZS 3604.
- As the volcanic ash stratigraphy varies in type and relative strength, foundation bearing conditions may vary across building sites formed in areas of cut.
- Similar variations in soil type may be encountered in road subgrades and insitu testing would be required to determine pavement depths applicable to the subgrade conditions present.
- The peat soils can be removed to depths governed by the capability of the earthmoving machinery on the site and the cost effectiveness of removing the peat and undertaking its replacement with filling obtained from elsewhere within the subdivision development area.

4.0 Scope of Subdivision Earthworks

Large scale earthworks were undertaken in the Stage 2I and 2N areas in the 2008-2009 earthworks season by Hick Bros Earthmoving. As shown on 20302-01 in Appendix 1, the site development earthworks in cut removed a substantial volume of soil for placement elsewhere within The Lakes development. In the areas within the Stage 2J development above Stages 2I and 2N the original plateau was reduced in height by up to 8 to 10 m. In order to achieve the regular slope gradients of 1 in 2 that had been determined by analysis to provide adequate stability above Stages 2I and 2N, as shown on 20302-02, cut depths of up to 25 m took place. Significant depths of cut occurred on lot 759 (25 m), and on lots 769 and 770 (16 to 20 m).

As the cut depths range from 0 to 25 m on the Stage 2I and 2N areas, all of the soil types described in 2.0 above are likely to be present at various locations at the finished ground levels on the lots.

Filling was placed at the head of a former gully in 2008 as part of construction of Kennedy Road. This filling extended into lots 760 and 761 as indicated on 20302-01.

Subdivision filling was placed in 2009 within lots 665 to 667 and lots 751 and 766 to depths of up to 1.2 m as shown on 20302-01. This filling was mainly placed to provide cover to the realigned natural gas main which was installed in the reserve area between stages 2I and 2N.

These earthworks were undertaken in compliance with consent 62387 issued by the Bay of Plenty Regional Council.

Following detailed design of the Stage 2N development by HG, additional minor earthworks were undertaken during the construction of the Stage 2N roading and services by Higgins Contractors in the 2012-2013 earthworks season. These earthworks comprised

- (a) A further reduction in ground levels in cut by up to 1.5 m at the rear of lots 770 and 771
- (b) A further reduction in ground levels in cut by up to 0.75 m in lots 768, 769, 773, 774 and 775
- (c) A further reduction in cut of up to 1.25 m and down to design road subgrade levels at the cul de sac head of Ellesmere Close
- (d) The construction of retaining walls up to 1.2 m high along the roadside boundaries of lots 769, 770, and 772 to support cut faces.
- (e) The placement of minor depths of additional filling up to 0.75 m deep on lots 755 to 759

The extent of these earthworks is shown on HG drawing 132631-2N-AB220 contained in Appendix 1.

5.0 Earthworks Standards

The performance specification required of the contractors for the earthworks of 2008 and 2013 was based on the guidelines contained in NZS 4431:1989 "Code of Practice for Earthfill for Residential Development". Compliance with the compaction requirements listed below satisfies the standards listed in Section 7 of the NZS 4431.

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

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

Undrained shear strength (measured by in situ vane)

- Average value not less than 150kPa (any 10 tests)
- Minimum single value 100kPa

The earthworks were observed by engineering staff from S&L for the work in 2008 and 2009 and from HG in 2012 - 2013. Compaction and strength control testing was undertaken by IANZ accredited Opus International Consultants Ltd and Coffey Geotechnical during the Lakes development, both on site and in their Tauranga laboratories. Tests were undertaken by Coffey in lots 760 and 761 and their test results are listed in Appendix 3. Opus tested filling placed in Lakes Boulevard opposite Stage 2I but no tests were undertaken by Opus in

the shallow filling placed on Stage 2I. For the filling placed in lots 665, 666, 667, 751, 756 and 766, S&L undertook tests in the post construction boreholes with a shear vane.

6.0 Recommendations for Development

6.1 Post Constructing Testing

Post construction machine drilled or handaugered boreholes were put down under the management of S&L on each lot at locations shown on drawing 20302-03 in Appendix 1. These boreholes were generally 2.0m deep in accordance with the recommendations in NZS 3604:2011 and were intended to show soil types and continuity and to confirm the ground bearing conditions for shallow building foundations.

As the boreholes were being drilled undrained shear strengths were recorded with a hand held shear vane pushed in advance of the auger. Where sandy soils were encountered, a Scala penetrometer was used to test the relative strengths of the cohesionless soils.

At some post construction borehole positions minor filling is noted on the borelog sheets in areas of cut. It is likely that the soils noted as filling may have either been placed to level areas of cut locally or may have been disturbed as natural soils from the passage of bulk earthmoving equipment. At all of these test positions the minor depths of filling were found to have been compacted to the construction standards listed in 5.0 above.

Summary logs of the soils found in the post construction boreholes are in Appendix 4. The soils found in the boreholes in areas of cut and their strengths determined in the boreholes are summarised in table 1 on page 8. The boreholes indicated the varying soil types that may be present at building foundation levels in the areas of subdivision cut.

In each post investigation borehole the undrained shear strengths in the cohesive soils (clayey silts and silts) were variable but were mainly very high. Where cohesionless soils (sands and silty sands) were present, the Scala penetrometer tests achieved blow counts that averaged 4 or more per 100mm of penetration.

The post construction boreholes showed that perched groundwater levels were present on lots 769 and 770 below 1.5m, while, on other lots, some of the subsoils in the boreholes were noted as being wet or saturated. If groundwater is encountered in excavations or as seepage from cut faces professional, engineering advice should be sought on methods to capture and reticulate away the surplus groundwater through the stormwater reticulation that serves each lot.

6.2 Subdivision Construction Filling

Supervised structural filling, as shown on S&L drawing 20302-01 in Appendix 1, was placed at the time of the bulk earthworks during 2009 and is present on lots 665 to 667, 751, 760, 761, 765 and 766. This filling was placed in accordance with the methods and standards quoted in NZS 4431 and discussed in Section 5.0.

Compaction testing on site confirmed that a high and uniform degree of compaction had been achieved and is therefore suitable for the support of buildings with shallow

surface foundations. Some post construction boreholes that encountered the filling also confirmed this suitability.

During the construction of Stages 2I and 2N in 2013, minor additional filling was placed on lots 755, 766 and 757. This filling is not more than 0.75 m deep as indicated on HG drawing 132631-2N-AB220 in Appendix 1. Testing showed this filling to be of adequate compaction to be suitable for the support of shallow foundations detailed to NZS 3604.

A statement in support of the suitability of the filled areas for the erection of buildings is contained in Appendix 2 of this report in the format of Form G2 of the Council Infrastructure Development Code. This statement meets the requirements of NZS 4431 and therefore the filled ground may be considered as good ground in terms of Section 3.1.3 of NZS 3604:2011.

However, within areas of structural filling on which buildings may be erected, the possibility of variations of soil type and strength may exist away from observation or compaction test locations. The normal inspection of foundation conditions during construction of buildings by competent tradesmen as described in NZS 3604 and/or by building inspectors should therefore be undertaken. If, for any reason, areas of low soil strength are found, professional geotechnical engineering advice should be sought.

Table 1

Summary of Subsoil Types As Determined from Post Construction Boreholes

<u>Lot No.</u>	<u>Depth of Cut (m) average over lot</u>	<u>Soil Type</u>	<u>Shear Strength or Scala Penetrometer Range Over Borehole Depth of 2.0m (kPa)</u>
661	1.0	Minor fill over silts, sands	101-162
662	1.0	Minor fill over clayey sandy silts #	87-200+
663	1.0	Minor fill over silts and sands	98-149
664	0	Clayey and sandy silts #	200+
665	0	Fill over clayey silts #	200+
666	0	Fill over clayey silts #	200+
667	0	Fill to 1.5m	200+ Scala 13-R/100
751	0	Fill to 1.5m	Scala 6+/100
752	0-2.0	Minor fill over sands, clayey silts	61-200+
753	2.0	Minor fill over silty sands, sands	Scala 2-7/100
754	2.0	Clayey silts #	200+
755	3.0	Minor fill over sandy silts, sands #	200+ Scala 2-3/100
756	4.0	Minor fill over silty sands #	Scala 2-11/100
757	7.0	Sands, silts	200+ Scala 6-8/100
758	15.0	Sands	Scala 5-8/100
759	20.0-25.0	Minor fill over sands #	Scala 9-R/100
760	0-22.0	Minor fill over sands #	200+ Scala 7-11/100
761	0-9.0	Clayey silts, sands	200+ Scala 5-9/100
762	0-6.0	Minor fill over sands #	200+
763	2.0	Silty sands	Scala 3-11/100
764	3.0	Sands, silts	Scala 13-R/100
765	0-7.0	Silty sands #	Scala 9-R/100
766	0-6.0	Fill to 0.9m over sands	200+ Scala 9-12/100
767	6.0	Sands	Scala 4-R/100
768	11.0	Sands #	Scala 15-R/100

769	13.0	Sands		Scala	6-R/100
770	15.0	Sands		Scala	5-R/100
771	15.0	Sands		Scala	3-9/100
772	12.0	Sands		Scala	6-R/100
773	4.0	Sands	#	Scala	2-11/100
774	4.0	Sands		Scala	3-5/100
775	4.0	Minor fill over sands		Scala	2-12/100
776	10.0	Sands		Scala	9-R/100

NOTE

based on boreholes 1m deep

soil types based on descriptions in Section 2.0 of this report

R = refusal at 15+ blows per 100mm

6.3 Areas of Cut

As shown on 20302-01 and described on table 1 and in the borehole logs, the varying depths of cut over most of the Stage 2I and 2N areas have exposed a number of different soil types and strengths immediately below the topsoil overlay. These soils vary from the more friable younger ashes (clayey silts and sandy silts) to the pumiceous sands and silts which are representative of the underlying weathered Te Ranga ignimbrite.

The recorded undrained shear strengths where cohesive soils are present (clayey and sandy silts) indicate that the soils at likely foundation depths in the areas of cut are generally of high strength but the ranges of undrained shear strengths listed on the borehole log sheets and summarised on table 1 indicate that variations in shear strengths may be present vertically and horizontally away from the test positions. Similarly, the Scala penetrometer results in the sands that are likely to be present at and below the foundation levels showed that while these soils may be compact, there are variations in the compaction densities and therefore differing ground bearing capacities would be applicable for the detailing of building foundations.

For all lots located in the areas of cut, the ultimate ground bearing capacity in the limit state may be taken at 300kPa for the detailing of surface foundations and this capacity meets the definition of "good ground" as defined in NZS 3604: 2011.

However, the possibility of variations of soil type and strength or compaction may exist away from observation or post construction borehole locations. If the subsoils at foundation excavation levels are found to be of lower strength or have been disturbed by earthworks machinery during any further site development, foundations detailed in accordance with NZS 3604:2011 may have to be deepened or widened under engineering advice. This may require additional on site testing specific to the building that is to be erected and the calculation of actual ground contact pressures under foundations by a structural engineer. It may be found that the actual ground bearing capacities determined by additional testing are not exceeded for foundations detailed to NZS 3604.

6.4 Land Stability Considerations

To assess the finished profiles that were formed on the steep sloping ground that rose above Stages 2G to the north and 2I and 2N up to the Stage 2J areas to the east, investigation boreholes were put down under the supervision of S & L Consultants Ltd by Perry Drilling Ltd during April 2007. These boreholes supplemented the original subsurface data that was available from machine drilled boreholes in September 2003 on the upper plateau.

The boreholes put down in April 2007 were located at the crests of the original slopes below Stage 2J and at intermediate lifts on the slope faces on the haul tracks for the bulk earthmoving equipment. From this borehole data and the existing slope geometry it was derived, by analysis, that the sloping ground between the upper and lower stages had to be reduced in gradient to not more than 26 degrees (1 on 2) to provide acceptable factors of safety against slope failure. In plotting these slope angles and providing for an intermediate berm for slope maintenance and also as an extension of the cycle and walkway through the subdivision, it was found that the surface ash soils would be removed by the recontouring earthworks leaving the Te Ranga ignimbrite to be mostly exposed on the cut faces.

The stability of the slopes, so formed in cut above Stages 2I and 2N, was discussed in the geotechnical completion report submitted to Council titled "The Lakes Development, Stages 2D, 2F, 2G, 2J, 2K, 2L and 2M inclusive – Report on Earthworks and Recommendations for Development," reference 18264 and dated August 2008. Slope cross 1 described in that report was analysed above Stage 2I. In that analysis the computed factors of safety were

Lower Slope		Upper Slope		Total Slope	
Fully Drained	Raised Ru	Fully Drained	Raised Ru	Fully Drained	Raised Ru
1.83	1.43	1.78	1.34	1.94	1.50

These stability factors of safety are in excess of conventionally accepted values.

The slopes that rise above lots 759 to 762 and 767 to 776 are of similar or lesser gradients and therefore these properties below those slopes within Stages 2I and 2N are considered to be unlikely to be the subject of a future natural hazard in the form of erosion or slippage. This degree of stability would be maintained by the Council in their role as the building consent issuing authority and also as the administrators of the reserve area above the lots by ensuring compliance with the recommendations in the geotechnical completion report for Stage 2J that stated that

- the slope faces in the reserve are maintained with a dense grass and plant cover.
- the properties above the slopes are developed so that no surface water flows can occur over the slope faces. Surface water should be collected and be piped to the stormwater outfalls on each lot that were installed as part of the subdivision development
- even though permeable soils may be present, ground soakage is not to be used as a means of disposing of stormwater runoff on the lots above the slopes

On lots 770, 771 and 772 minor earthworks were undertaken at the bases of the slopes during the subdivision construction to increase the near flat areas at the rear of those lots. These earthworks have not steepened or undercut the existing slopes above those lots and therefore the stability of the slopes has not been compromised.

On lots 769, 770 and 772 where retaining walls are present along their road frontages, buildings or any additional filling should not be located within 1.5m of the backs of those walls.

Surface water should be collected and be piped to the stormwater outfalls on each lot that were installed as part of the subdivision development. Even though permeable soils may be present' ground soakage is not to be used as a means of disposing of stormwater runoff on the lots.

7.0 Future Building on Sloping Ground

Sloping ground is present on all lots in Stages 2I and 2N. Level building sites may be developed by cutting and filling as required. Cut batters could expose soils that may be variable. Batters higher than 1.5 m or steeper than 45 degrees should be retained because the exposed soils may be subject to future erosion. Walls of that height require a specific design and approval by way of a building consent. The designer should check the subsoil conditions where vertical poles are to be embedded in drilled holes. It is not appropriate to construct walls that are not more than 1.5 m high when the cut batters that may be subject to future erosion are higher than 1.5 m.

Any filling shall be placed to comply with the definition of good ground in terms of NZS 3604. Such filling is to be placed under professional engineering management. The engineer would advise compaction standards to be adopted based on the soil types to be used as the filling material.

8.0 Lots 1061 and 1065

Lots 1061 and 1065 are located in the Stage 3 development area at The Lakes. Past earthworks in the area of lot 1065 were managed by Coffey Geotechnics NZ Ltd in 2008. At that time the area of lot 1065 was investigated by Coffey on behalf of Powerco who intended to erect a residential building structure in which a transformer was to be housed.

Coffey undertook a number of subsoil investigations on Lot 1065 and the scope of their investigations and conclusions reached were described in their investigation report of 9 December 2008, to Powerco. A copy of that report and attachments is within Appendix 5 of this report.

In their report Coffey advised that

- the subsoils comprised subdivision filling up to 3.0 m deep overlaying natural ground comprising stiff clayey and sandy silts. The filling had been placed under Coffey's management to replace surface peats and other low strength soils
- the risk of liquefaction at the site is low
- induced settlements under the mass of the transformer on a concrete pad would be in the range of 14 to 43 mm
- for the specific design of the transformer pad an ultimate bearing capacity in the limit stage of 150 kPa would be applicable, but for other residential type buildings an ultimate bearing capacity of 300 kPa would be applicable.
- while not stated in the text of the report Coffey showed a building restriction line along the southern and western sides of the lot as shown on their diagram 02 to position any future buildings away from underlying peat that was not removed during the site development earthworks as shown on Coffey drawing 03 in the report. The building restriction line is shown on DP 463737.

From the Coffey report it is reasonable to assume that proposed lot 1065 would be suitable for the support of buildings detailed to NZS 3604:2011 provided that the building restriction line is observed. If the property is to be used for specialist structures outside of the scope of NZS 3604, the Coffey site data should be reviewed by a geotechnical engineer. The engineer may undertake their own additional tests to verify the Coffey data or to address subdivision conditions that are applicable to the support of the intended structure.

A wastewater transfer pumping station has been constructed on lot 1061. Specific investigations were undertaken by Coffey and the results of these investigations were incorporated in the design and subsequent construction of the pump station.

9.0 Topsoil Thicknesses

During the subdivision earthworks areas of cut or fill were initially stripped of topsoil and this was then replaced to target depths of up to 300mm. No guarantee is implied or given that the topsoil on any part of any lot is 300mm deep or less and it is recommended that future owners or builders check topsoil depths when preparing site development plans and cost schedules.

10.0 Professional Opinion

A statement in the format of Councils Infrastructure Development Code (Form G2) that all lots are suitable for building is contained in Appendix 2. This statement is accompanied by Form G3 which summarises the information and recommendations within this report.

In accordance with subdivision consent condition 8, it is recommended that the content of this report is advised to future owners of the 33 lots within Stages 2I and 2N of the development at The Lakes by a consent notice on the certificates of title for all lots.

11.0 Applicability

Recommendations contained in this document are based on data from pre and post subdivision boreholes, observations of soil exposures during earthworks, and the results of tests in filling placed. Inferences about the nature and continuity of subsoils away from these locations are made but cannot be guaranteed.

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

This report has been prepared specifically for the proposed subdivision development on Stages 2I and 2N of The Lakes development as shown on DP 462245 and no responsibility is accepted by S & L Consultants Ltd for the use of any part of this report for other development sites without their written approval.

S & L Consultants Ltd
Consulting Engineers, Surveyors, Planners



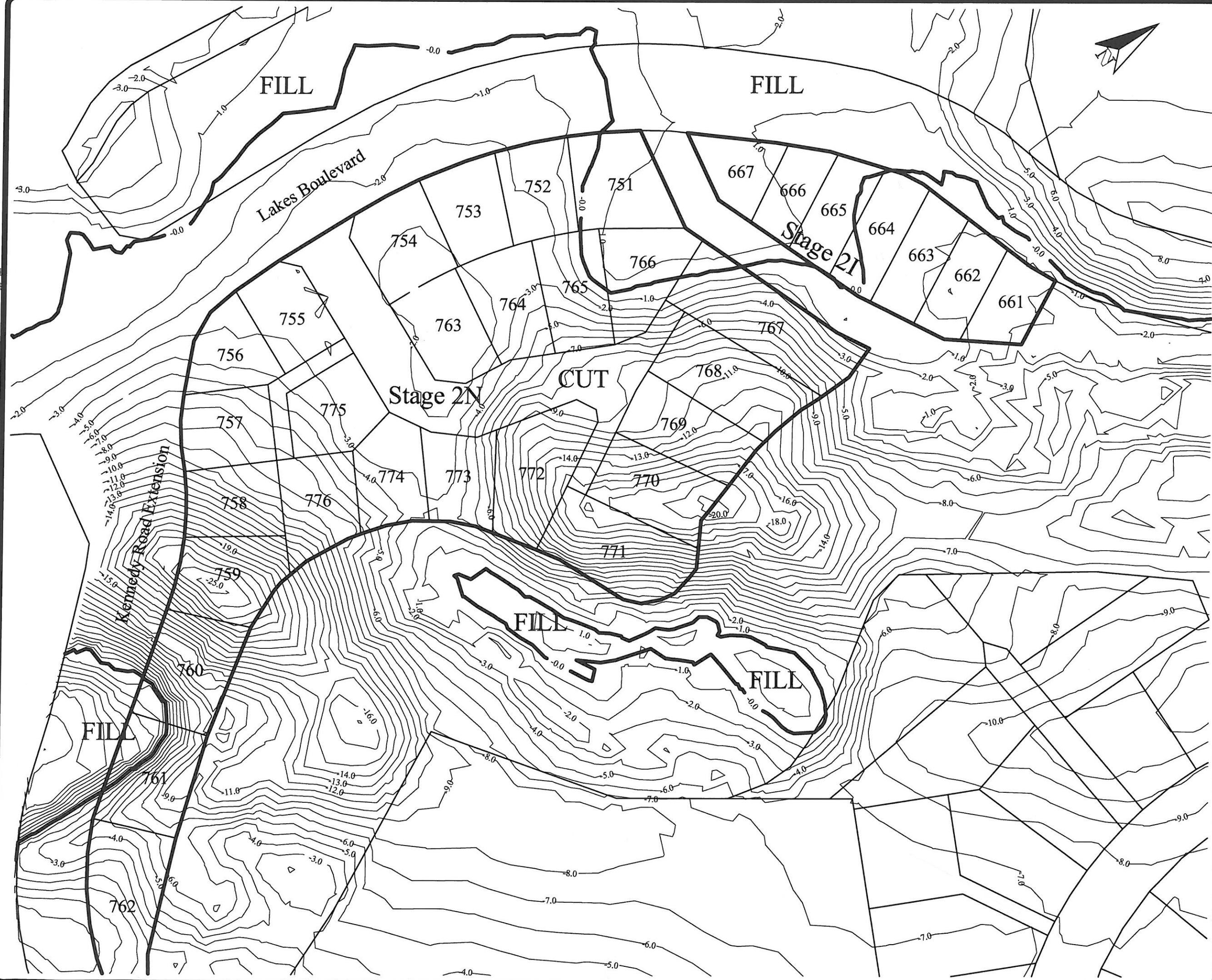
M W Hughes CPEng MIPENZ
Geotechnical Engineer

**Prequalified category one geotechnical
adviser with Tauranga City Council**

16 March 2013

Appendix 1 Reference Drawings

Approved Subdivision Plan 132631-2N-RC02
Report Reference Plan 20302-01
Contour Plan Prior to Construction-2013 20302-02
Post Construction Borehole Location Plan 20302-03
As Built Cut-Fill Plan (2013) 132631-2N-AB220
DP 463737 (6 sheets)



- Key**
- Fill Compaction Test
 - Pre-subdivision Test Site
 - Settlement Control Marker
 - Post Earthwork Borehole
 - Subsoil Drain
 - Building Restriction Line Lot 1
- FILL** Subdivision Cut and Fill Areas
- CUT**
- 1 — Fill Contour
 - 1 — Cut Contour


checked by	3	For Completion Report	05/13
	2	Issued for Consent	09/12
	1	Issued with Report	10/09
Rev. No.		Description	DATE
		NAME	DATE
		SIGNED	
Surveyed			
Designed	CJH	09/09	
Drawn	MJH	09/09	
Checked			
Approved			
REFERENCES			



S & L CONSULTANTS LTD
SURVEYORS - ENGINEERS - PLANNERS

111 Cameron Road, Tauranga, New Zealand
P.O. Box 231 Ph.(07)577-6069
Fax(07)577-6065
Email: slconsultants@sltga.co.nz

TITLE



THE LAKES
- HILLSIDE CONSULTANTS -

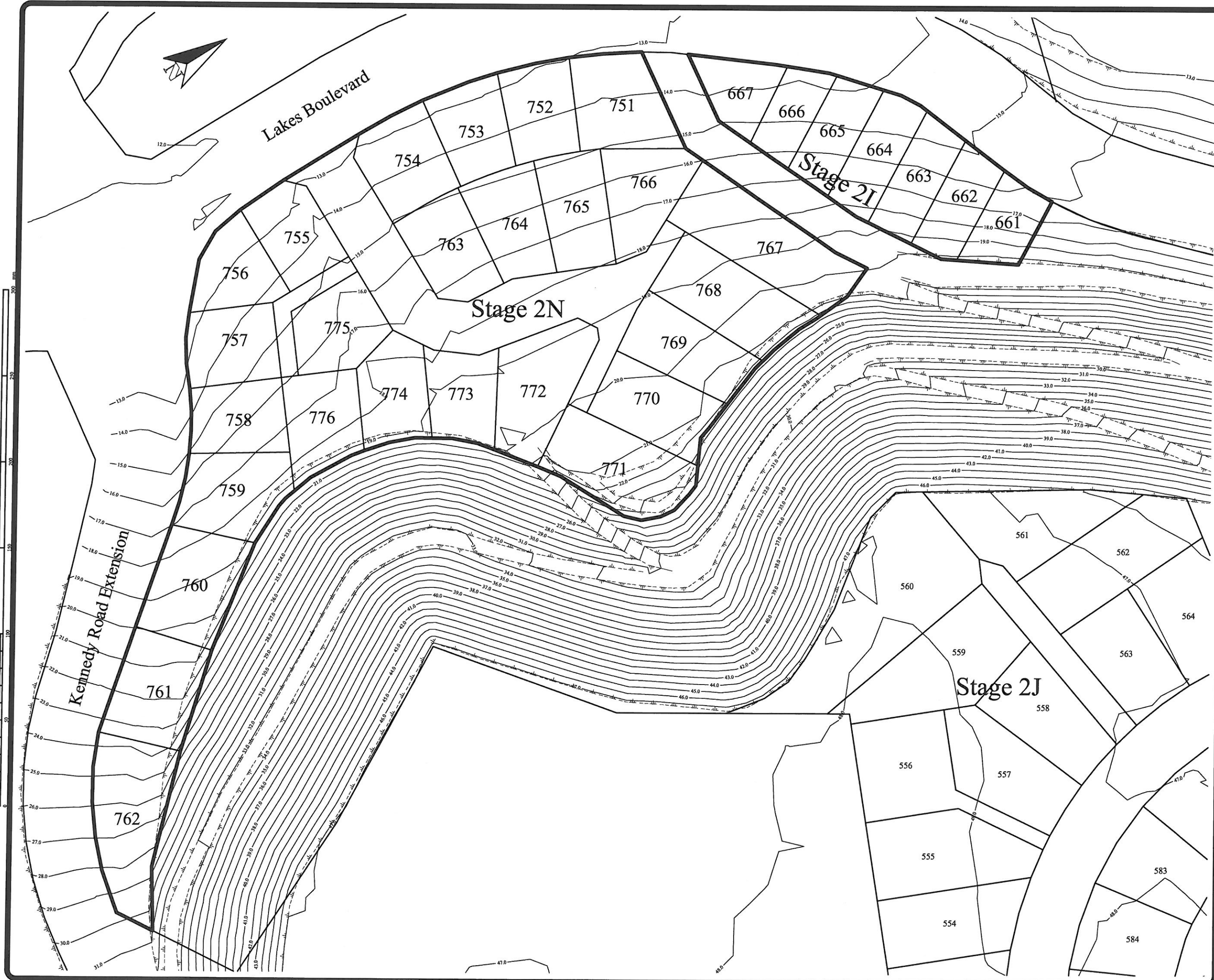
Stages 2I & 2N

Geotechnical Report
Reference Plan

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ORIGINAL SCALES	DATE
1:1000 @ A3	09/12
DRAWING No	
20302 - 01	
Revision:	1 2 3





Levels are in terms of Moturiki Datum
 Refer to Harrison Grierson drawing 132631-2N-AB220
 for Earthworks details during construction 2013

checked by:	2	For Completion Report	05/13
Rev. No.	1	Issued for Consent	09/12
		Description	DATE
Surveyed		NAME	DATE
Designed			SIGNED
Drawn			
Checked			
Approved			
REFERENCES			



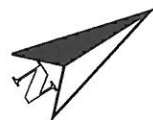
S & L CONSULTANTS LTD
 SURVEYORS - ENGINEERS - PLANNERS
 111 Cameron Road, Tauranga, New Zealand
 P.O. Box 231 Ph.(07)577-6069
 Fax(07)577-6065
 Email: slconsultants@slta.co.nz



Stages 2I & 2N
 Prior to Construction Contour Plan

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ORIGINAL SCALES	DATE
1:1000 @ A3	09/12
DRAWING No	
20302 - 02	
Revision:	1 2





Key:

● Borehole Position

Kennedy Road Extension

Lakes Boulevard

Stage 2N

Stage 2I

Stage 2J

CKD BY	REV No.	DESCRIPTION	DATE
1	2	For Completion Report Issued for Consent	05/13
1	1		09/12
Designed			
Drawn			
Checked			
Approved			
REFERENCE			


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Web Site: www.sltga.co.nz

TITLE

THE LAKES
BUILDING CONTRACTORS
Stages 2I & 2N
Post Construction
Borehole Location Plan

Copyright on this drawing is reserved	
ORIGINAL SCALES	DATE
1:1000 @ A3	09/12
DRAWING No	
20302 - 03	
REVISION:	1 2



METRIC
DESIGN



NOTES:

1. CUT / FILL CONTOURS ARE SHOWN AT 0.25m INTERVALS.
2. CUT / FILL CONTOURS ARE THE DIFFERENCE BETWEEN THE PRE-DEVELOPED SURFACE AND THE FINISHED SURFACE.

LEGEND:

- CUT CONTOURS
- FILL CONTOURS
- ZERO CUT FILL CONTOURS
- TIMBER RETAINING WALL



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Level 1 Harrison Grierson House
141 Cameron Road Tauranga 3110
P +64 7 578 0023
www.harrisongrierson.com

A	AS BUILT	HJD	08.05.13
REF	REVISIONS	BY	DATE

PROJECT:

THE LAKES (2012) LTD
TAURANGA

TITLE:

STAGE 2N
AS BUILT CUT/FILL
CONTOUR PLAN

ORIGINATOR:	DATE:	SIGNED:	PLOT BY:
RCH	08.05.13		DJH
DRAWN:	DATE:	SIGNED:	PLOT DATE:
HJD	08.05.13		08.05.13
CHECKED:	DATE:	SIGNED:	SURVEY BY:
RCH	08.05.13		
APPROVED:	DATE:	SIGNED:	SURVEY DATE:
GPR	08.05.13		

ISSUE STATUS:

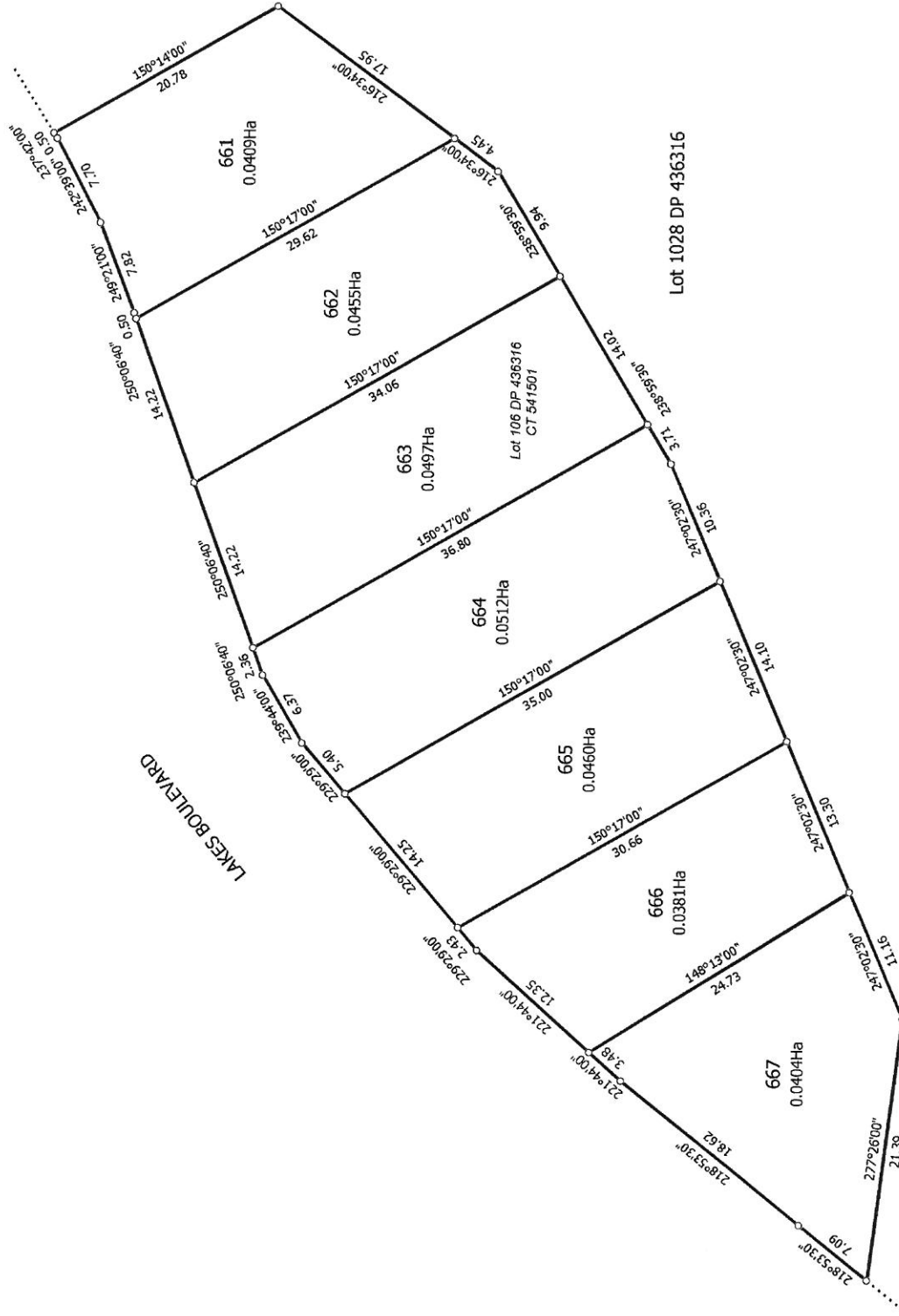
AS BUILT

PROJECT No:	1520-132631-01	SCALES:	1:500 - A1 1:1000 - A3	A1
DRAWING No:				REV

132631-2N-AB220 A



Diag. BE



T 2/6

Lots 103, 661-667, 751-776 and 1060-1065 being a subdivision of Lots 106 & 107
DP 436316 and Pt Lot 103 DP 408042

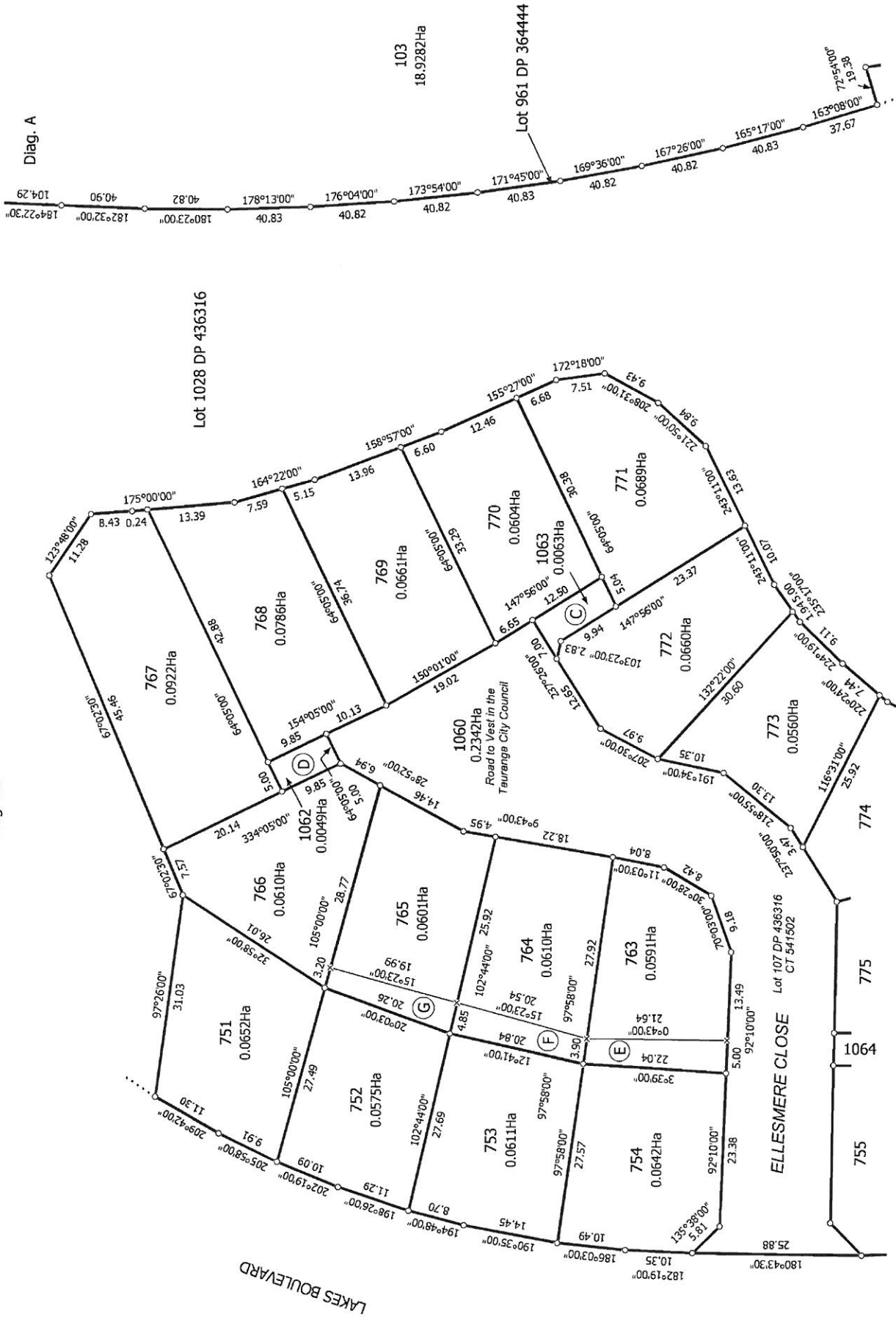
Surveyor: Michael Peter Dewhurst
Firm: Harrison Grierson Consultants Ltd

Title Plan
LT 463737
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Land District South Auckland

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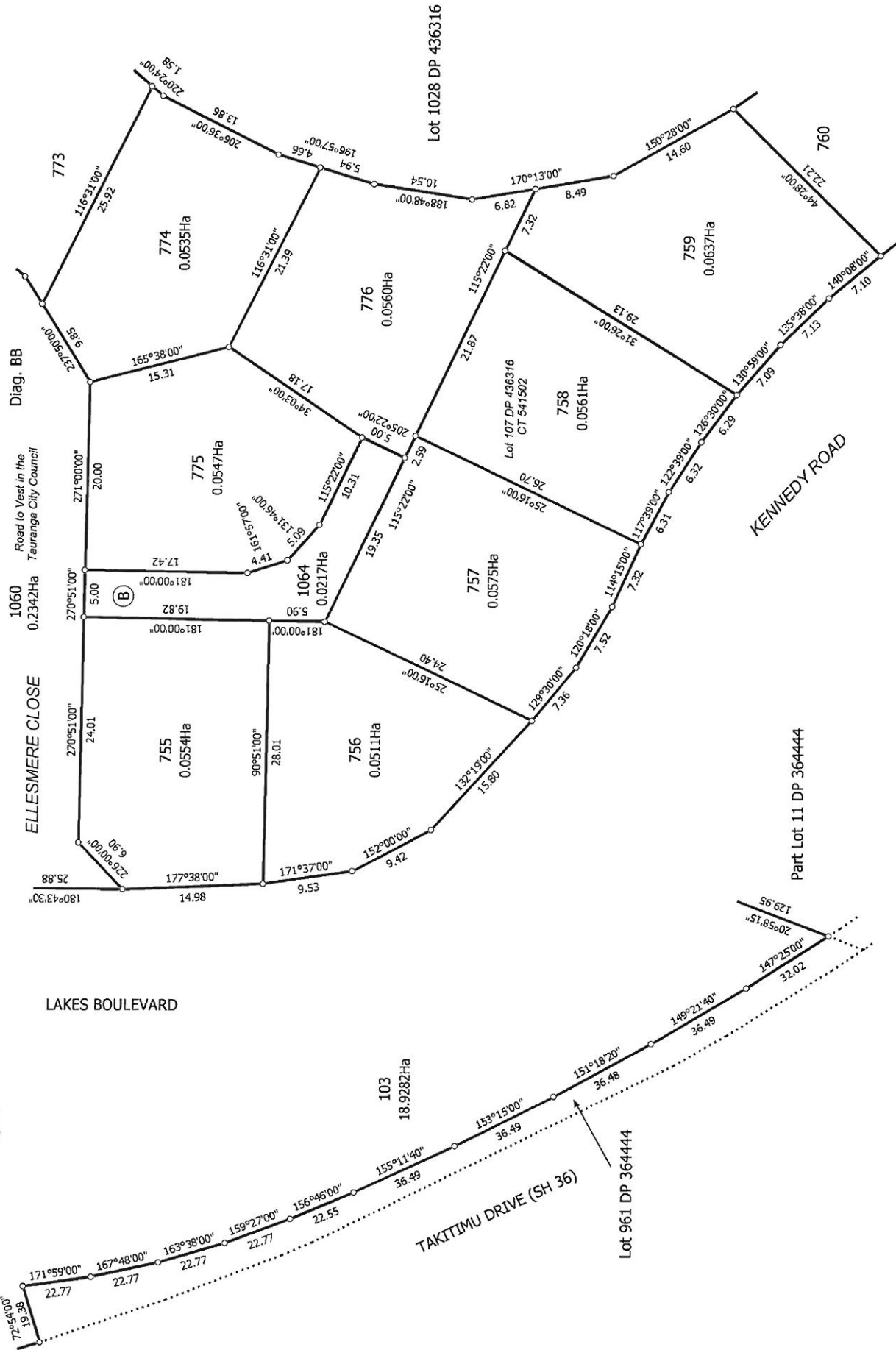
Lots 103, 661-667, 751-776 and 1060-1065 being a subdivision of Lots 106 & 107
DP 436316 and Pt Lot 103 DP 408042

Surveyor: Michael Peter Dewhurst
Firm: Harrison Grierson Consultants Ltd

Title Plan
LT 463737
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T 4/6

Land District South Auckland

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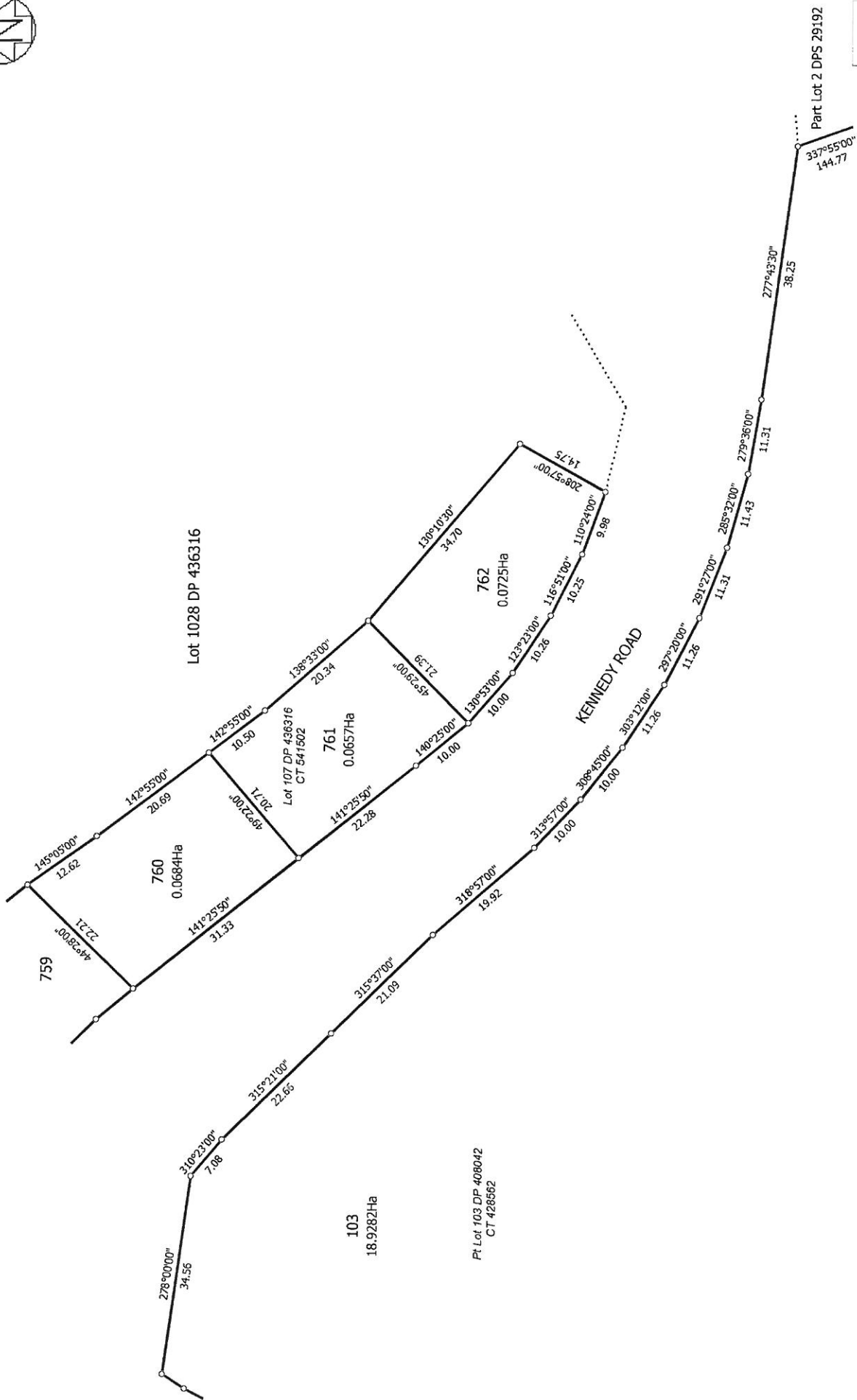
Lots 103, 661-667, 751-776 and 1060-1065 being a subdivision of Lots 106 & 107
DP 436316 and Pt Lot 103 DP 408042

Surveyor: Michael Peter Dewhurst
Firm: Harrison Grierson Consultants Ltd

Title Plan
LT 463737
DRAFT



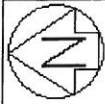
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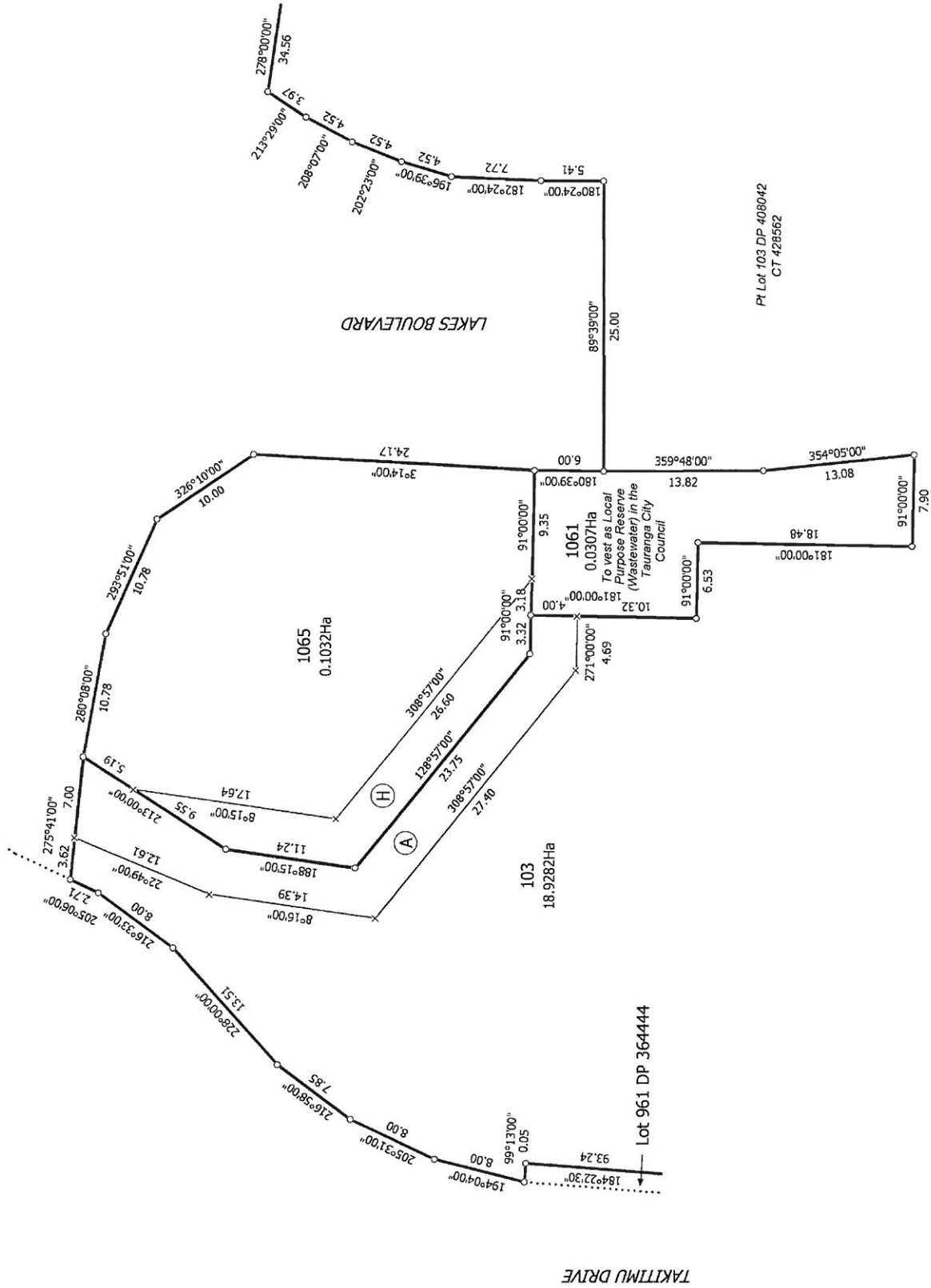
Part Lot 2 DPS 29192

T 5/6

Land District South Auckland Digitally Generated Plan Generated on: 31/05/2013 3:17pm Page 8 of 9	Lots 103, 661-667, 751-776 and 1060-1065 being a subdivision of Lots 106 & 107 DP 436316 and Pt Lot 103 DP 408042	Surveyor: Michael Peter Dewhirst Firm: Harrison Grierson Consultants Ltd	Title Plan LT 463737 DRAFT
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T 6/6

Appendix 2 Certificates

Infrastructure Development Code Form G2
Infrastructure Development Code Form G3

CERTIFICATION**G2****STATEMENT OF PROFESSIONAL OPINION AS TO THE
GEOTECHNICAL SUITABILITY OF LAND FOR BUILDING**

NAME OF SUBDIVISION	The Lakes Stages 2I and 2N
COUNCIL FILE NUMBER RC No:	16807
ENGR RESPONSIBLE FOR INVESTIGATION:	M W Hughes
QUALIFICATIONS:	BE CPEng MIPENZ

I Michael William Hughes of S & L Consultants Ltd

Hereby confirm that;

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

1. An appropriate level of site investigation and construction supervision has been carried out under my direction and is described in my development evaluation report dated 16 March 2013.
2. In my professional opinion, not to be construed as a guarantee, I consider that;
 - a) The areas shown in my report dated 16 March 2013 of each new allotment are suitable for the erection thereon of the building types appropriate to the zoning of the land, provided that, buildings are set back from easements, slopes or retaining walls as described in my report.
 - b) The earth fills shown on the attached Plans No. 20302-01 and 132631-2N-AB220 have been placed in accordance with the requirements of the Infrastructure Development Code.
 - c) The completed works give due regard to all land slope and foundation stability considerations.
 - d) The filled ground is suitable for the erection thereon of residential buildings not requiring specific design in terms of NZS 3604:2011 and related documents based on data from specific test sites.
 - e) The original ground not affected by filling is suitable for the erection of residential buildings not requiring specific design in terms of NZS 3604:2011 and related documents based on data from specific test sites but ground conditions may vary away from these test sites.
3. This professional opinion is furnished to the Council and the owner for their purposes alone, on the express condition that it will not be relieved upon by any other person and does not remove the necessity for normal inspections of foundation conditions at the time of erection for any dwelling.

Signed: Date: 16 March 2013

**PRODUCER STATEMENT**
SUITABILITY OF LAND FOR BUILDING DEVELOPMENT**G2**Version 1
July 2011

SUMMARY OF GEOTECHNICAL DATA/RECOMMENDATIONS FOR INDIVIDUAL LOTS

FROM IDC _ G3

Subdivision:

The Lakes St ages 21 and 2N

Lakes Boulevard, Ellesmere Close, Kennedy Road, Pyes Pa

Location:

TCC Ref: RC 16807

S&L Ref: 20302

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

Lot No.	Area (m2)	Subsurface Data						Building Restriction Line	S/W Specific Design	S/W Soakage	S/W Reticulate	Designated Building Platform	Minimum Building Platform	Compressible Soils	on-site effluent disposal	consent notice	Recommendations /Restrictions		
		Shear Strength	Subdivision Filling		Natural Topography Unworked	Natural Topography earthworked												Foundations	
			Y/N	Depth (m)		Y/N	Depth (m)											Conventional shallow	Specific Design
661	409	101	N		N	1.0-2.0	Y	N			Y	N				Y			
662	455	87-200	N		N	1.0	Y	N			Y	N				Y			
663	497	98-149	N		N	1.0	Y	N			Y	N				Y			
664	512	200+	N		N	0-1.0	Y	N			Y	N				Y			
665	460	200+	Y	0-1.0	Y		Y	N			Y	N				Y			
666	381	200+	Y	1	Y		Y	N			Y	N				Y			
667	404	200+	Y	1	Y		Y	N			Y	N				Y			
751	652	sand	Y	0-1.0	Y		Y	N			Y	N				Y			
752	575	61-200+	N		N		Y	N			Y	N				Y			
753	611	sand	N		N		Y	N			Y	N				Y			
754	642	200+	N		N		Y	N			Y	N				Y			
755	554	200+	N		N		Y	N			Y	N				Y			
756	511	sands	N		N		Y	N			Y	N				Y			
757	575	200+	N		N		Y	N			Y	N				Y			
758	561	sands	N		N		Y	N			Y	N				Y			
759	637	sands	N		N		Y	N			Y	N				Y			
760	684	200+	Y	0-3.0	N		Y	N			Y	N				Y			
761	657	200+	Y	0-5.0	N		Y	N			Y	N				Y			
762	725	200+	N		N		Y	N			Y	N				Y			
763	591	sands	N		N		Y	N			Y	N				Y			
764	610	sands	N		N		Y	N			Y	N				Y			
765	601	sands	Y	0-5.0	N		Y	N			Y	N				Y			
766	610	200+	Y	0-5.0	N		Y	N			Y	N				Y			
767	922	sands	N		N		Y	N			Y	N				Y			
768	786	sands	N		N		Y	N			Y	N				Y			
769	661	sands	N		N		Y	N			Y	N				Y			
770	604	sands	N		N		Y	N			Y	N				Y			
771	689	sands	N		N		Y	N			Y	N				Y			
772	660	sands	N		N		Y	N			Y	N				Y			
773	560	sands	N		N		Y	N			Y	N				Y			
774	535	sands	N		N		Y	N			Y	N				Y			
775	547	sands	N		N		Y	N			Y	N				Y			
776	560	sands	N		N		Y	N			Y	N				Y			
1065	1032	150+	Y	2.5-3.2	Y		N	Y			Y	N				Y			

Scala penetrometer tests in sands described in report by S & L Consultants Ltd of 16 March 2013



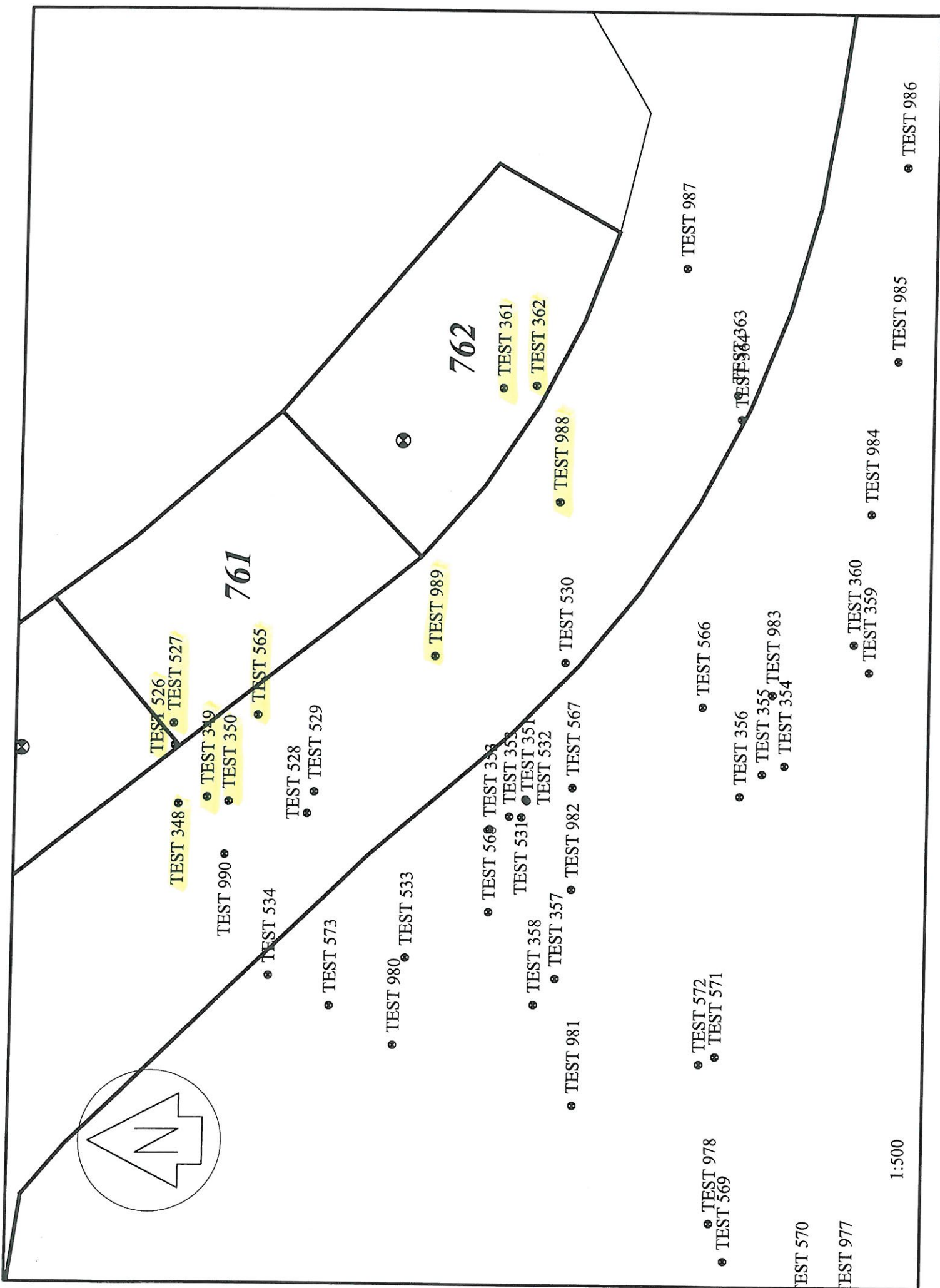
SUMMARY OF GEOTECHNICAL DATA FOR INDIVIDUAL LOTS

INFRASTRUCTURE DEVELOPMENT CODE

G3
VERSION 1/1

Appendix 3 Test Results

Coffey Geotechnical 2008.



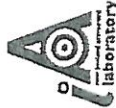


SPECIALISTS MANAGING THE EARTH

141 Cameron Road
TAURANGA 3110
www.coffey.com

FIELD DENSITY TEST RESULTS

NZS 4407:1991 Test 4.2.1, NZS 4402:1986 Test 2.1, NZGS 8-2001



Tests / comments indicated ^{NE} are outside the scope of the laboratory's accreditation

Michael

M.J.J. Packard Approved Signatory

JOB NO
PROJECT
CLIENT
MATERIAL

13685

Stage 3 The Lakes, Slate Highway 29, Tauriko
Grasshopper Farms Limited

Compacted Fill

DATE	TEST NO	TEST LOCATION			FIELD TESTS										FIELD DENSITY GAUGE READINGS										Oven Dried Water Content			Solid Density (Assumed) t/m ³	COMMENTS ^{NE}
		Surveyed by client			Soil Class	Vane Shear Strengths kPa <i>Note: ++'s indicate UTP</i>						BS or Depth mm	Wet Density t/m ³	Dry Density t/m ³	Water Content %	Air Voids ^{NE} %	Dry Density t/m ³	Water Content %	Air Voids ^{NE} %										
		Northing m	Easting m	RL m		Individual Values			Average																				
						243+	243+	243+		243+	243+									243+									
7.1.08	345	800748.1	368442.3	47.2	ML	243+	243+	243+	243+	243+	243+	250	1.74	1.21	43.0	1.2	1.22	42.3	1.5	2.60									
	346	800692.6	368357.7	41.6	ML	243+	243+	243+	243+	243+	243+	250	1.71	1.29	32.0	8.7	1.22	40.5	4.0	2.60									
	347	800685.4	368360.9	41.1	ML	243+	243+	243+	243+	243+	243+	250	1.66	1.18	41.0	6.4	1.13	46.4	3.7	2.60									
	348	800697.0	368180.8	15.4	SM							250	1.53	1.25	22.5	20	1.20	28.2	16	2.40	SAND								
	349	800694.0	368181.5	14.4	SM	185	172	199	156	178	178	250	1.66	1.19	39.5	3.7	1.25	32.1	7.5	2.40									
	350	800691.7	368181.1	13.7	ML	194	202	243+	243+	221+	221+	250	1.65	1.20	38.0	8.3	1.14	45.4	4.7	2.60									
	351	800680.4	368181.6	16.4	ML	226	185	243+	223	219+	219+	250	1.76	1.33	32.5	5.6	1.29	36.6	3.1	2.60									
	352	800662.1	368179.7	15.4	ML	243+	243+	243+	223	238+	238+	250	1.73	1.27	36.5	5.2	1.20	43.8	1.1	2.60									
	353	800664.2	368178.4	14.4	SM							250	1.34	1.06	26.0	28	1.03	29.2	27	2.40									
	354	800633.0	368185.4	17.6	ML	243+	243+	243+	223	238+	238+	250	1.66	1.19	40.0	7.0	1.15	44.8	4.6	2.60									
	355	800635.4	368184.4	17.1	ML	243+	243+	243+	223	238+	238+	250	1.70	1.20	42.0	3.5	1.22	39.9	4.6	2.60									
	356	800637.7	368182.1	15.4	ML	165	185	223	243+	204+	204+	250	1.65	1.19	39.5	7.6	1.20	38.2	8.3	2.60									
	357	800656.9	368182.6	15.0	ML	172	165	165	182	176	176	250	1.63	1.12	45.5	6.0	1.18	38.0	10	2.60									
	358	800659.2	368159.8	13.8	ML	243+	243+	243+	243+	243+	243+	250	1.72	1.25	37.5	5.3	1.20	42.6	2.5	2.60									
	359	800624.2	368195.3	20.1	ML	182	213	243+	243+	220+	220+	250	1.66	1.23	35.0	10	1.17	41.3	6.5	2.60									
	360	800625.9	368198.3	19.4	ML	213	215	223	243+	224+	224+	250	1.71	1.22	40.5	3.7	1.23	39.1	4.5	2.60									
	361	800663.6	368225.1	26.2	ML	185	177	194	243+	200+	200+	250	1.67	1.23	35.5	9.1	1.20	38.4	7.6	2.60									
	362	800660.1	368225.4	25.3	ML	221	194	185	228	207	207	250	1.68	1.26	33.5	9.4	1.23	37.0	7.3	2.60									
	363	800638.7	368244.6	24.8	ML	243+	243+	243+	243+	243+	243+	250	1.66	1.19	39.5	7.1	1.16	43.4	5.1	2.60									
	364	800638.3	368222.0	23.6	SM	243+	243+	243+	243+	243+	243+	250	1.51	1.08	40.5	12	1.02	48.4	8.2	2.40									
Date	14.1.08				Checked <i>md</i>																								

Checked

14.1.08

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NZS 4407:1991 Test 4.2.1, NZS 4402:1986 Test 2.1, NZGS 8-2001

Tests / comments indicated ^{NE} are outside the scope of the laboratory's accreditation

Black


M.J. Packard Approved Signatory

JOB NO

PROJECT

M.J. Packard Approved Signatory

Compacted Fill

Stage 3 The Lakes, State Highway 29, Tauriko
Grasshopper Farms Limited

Date	15.1.08	Checked
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NZS 4407:1991 Test 4.2.1, NZS 4402:1986 Test 2.1, NZGS 8-2001

JOB NO.
PROJECT
CLIENT

13685
Stage 3 The Lakes, State Highway 29, Tauriko
Grasshopper Farms Limited

M.J. Packard Approved Signatory

Date 22.1.08

Checked	OKW / MOP
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SPECIALISTS MANAGING THE EARTH

141 Cameron Road
TAURANGA 3110
www.coffey.com

FIELD DENSITY TEST RESULTS

NZS 4407:1991 Test 4.2.1, NZS 4402:1986 Test 2.1, NZGS 8-2001



Tests / comments indicated ^{NE} are outside the scope of the laboratory's accreditation

[Signature]

JOB NO

13685

PROJECT
CLIENT

Stage 3 The Lakes, State Highway 29, Tauriko
Grasshopper Farms Limited

MATERIAL

Compacted Fill

M.J. Packard Approved Signatory

DATE	TEST NO	TEST LOCATION			FIELD TESTS					FIELD DENSITY GAUGE READINGS								Oven Dried Water Content				Solid Density (Assumed) t/m ³	COMMENTS ^{NE}
		Surveyed by client			Soil Class	Vane Shear Strengths kPa				BS or Depth mm	Wet Density t/m ³	Dry Density t/m ³	Water Content %	Air Voids ^{NE} %	Dry Density t/m ³	Water Content %	Air Voids ^{NE} %						
		Northing m	Easting m	RL m		Note: ++s Indicate UTP																	
						Individual Values kPa																	
07.04.08	972	800587.9	368203.4	16.6	ML	214+	214+	214+	214+	214+	250	1.86	1.44	29.5	2.3	1.43	30.0	1.9		2.60			
	973	800576.8	368194.5	15.7	ML	214+	214+	214+	214+	214+	250	1.83	1.36	35.0	0.2	1.32	38.6	0		2.60			
	974	800574.6	368175.6	14.7	ML	214+	214+	214+	214+	214+	250	1.79	1.34	33.0	3.8	1.36	31.6	4.8		2.60			
	975	800589.3	368152.6	13.8	ML	214+	214+	214+	214+	214+	250	1.71	1.23	39.5	4.3	1.12	52.7	0		2.60			
	976	800591.5	368125.1	12.2	ML	214+	214+	214+	214+	214+	250	1.74	1.25	39.0	3.1	1.23	41.5	1.9		2.60			
	977	800625.6	368128.3	11.8	ML	214+	214+	214+	214+	214+	250	1.82	1.35	34.5	0.9	1.41	29.3	4.5		2.60			
	978	800640.2	368136.9	13.3	ML	214+	214+	214+	214+	214+	250	1.84	1.40	31.5	2.1	1.28	43.7	0		2.60			
	979	800644.4	368110.6	11.1	ML	214+	214+	214+	214+	214+	250	1.81	1.38	31.5	3.4	1.36	33.2	2.4		2.60			
	980	800674.0	368155.5	17.2	ML	214+	214+	214+	214+	214+	250	1.82	1.38	31.5	3.2	1.38	31.9	2.9		2.60			
	981	800654.9	368149.2	14.8	ML	214+	214+	214+	214+	214+	250	1.84	1.35	36.5	0	1.27	45.3	0		2.60			
	982	800655.4	368172.1	18.8	ML	214+	214+	214+	214+	214+	250	1.77	1.31	35.5	3.2	1.28	37.8	2.1		2.60			
	983	800634.4	368192.8	21.0	ML	214+	214+	214+	214+	214+	250	1.76	1.29	36.5	3.2	1.25	41.2	0.5		2.60			
	984	800624.3	368212.1	22.9	ML	214+	214+	214+	214+	214+	250	1.78	1.32	34.5	3.3	1.26	41.9	0		2.60			
	985	800621.7	368228.4	24.9	ML	214+	214+	214+	214+	214+	250	1.72	1.28	34.5	6.8	1.22	40.3	3.5		2.60			
	986	800621.1	368249.0	28.2	ML	214+	214+	214+	214+	214+	250	1.69	1.24	36.5	7.0	1.22	38.7	5.9		2.60			
	987	800644.4	368238.0	27.5	ML	214+	214+	214+	214+	214+	250	1.76	1.33	32.0	6.4	1.32	32.7	5.9		2.60			
	988	800657.4	368213.1	24.7	ML	214+	214+	214+	214+	214+	250	1.87	1.42	31.5	0.9	1.43	30.8	1.2		2.60			
	989	800670.3	368196.7	22.3	ML	214+	214+	214+	214+	214+	250	1.85	1.37	35.0	0	1.35	37.3	0		2.60			
	990	800692.1	368175.5	19.3	ML	214+	214+	214+	214+	214+	250	1.75	1.38	27.0	10	1.32	32.9	5.9		2.60			
Date	23.04.08	Checked			This report must be used in accordance with the terms and conditions of the contract.																		

Date 23.04.08

Checked C.K.W./M.P.

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Report No 8092 Sheet 1 of 1

Appendix 4 Borehole Logs

S & L Consultants Ltd 2008 and 2013



BH 661&663

Site: The Lakes (2012) Ltd., Stage 2 I, The Lakes Subdivision, Pyes Pa

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 27/2/2013

RL 18.0 (661) 16.5 (663) m Moturiki

Logged By: N.I

Description of Soil	Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)		
BH 661						50	100	150
TOPSOIL 200 mm	Fill			not found				
SILT; clayey; slightly sandy; hard; dry; friable; mixed orange brown, light grey and dark brown FILL								
SILT; sandy; very stiff; moist; friable; brown		0.5			179			
SILT; very stiff; saturated; slightly cohesive; light grey		1.0			101			
SAND (f-m); medium dense; saturated; grey		1.5						
SILT; very stiff; saturated; slightly cohesive; light grey					162			
SAND (f-m); medium dense; saturated; light grey		2.0						
End of borehole 2.0 m								
BH 663								
TOPSOIL 100 mm	Fill			not found				
SAND (f-m) silty; dense; dry; brown orange brown and dark brown mottles FILL								
SILT; clayey; very stiff; moist; moderately plastic; orange brown		0.5						
		1.0			149			
		1.5						
becomes stiff; slightly sandy					115			
End of borehole 2.0 m		2.0			98			

EXCAVATION METHOD: 150mm Diameter Machine Auger



BH 662A&B

Site: The Lakes; Stage 2 I

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 8/2012

Logged By: MWH

Description of Soil	Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)						
						50	100	150				
BH 662A												
TOPSOIL				not found								
SILT; slightly sandy; very stiff to hard; dry; friable; mixed brown FILL		0.5			utp							>
SILT; slightly clayey; stiff; moist; slightly friable; light brown					134							
					112							
			1.0		87							
End of borehole 1.0 m												
		1.5										
		2.0										
BH 662B												
TOPSOIL				not found								
SILT; slightly sandy; very stiff to hard; dry; friable; mixed brown FILL		0.5			200+							>
SILT; slightly sandy; very stff; slightly cohesive; light brown becomes very moist becomes sandy					200+							>
					159							
			1.0		132							
End of borehole 1.0 m												
		1.5										
		2.0										

EXCAVATION METHOD: 50mm Diameter Hand Auger



BH 664A&B

Site: The Lakes; Stage 2 I

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 8/2012

Logged By: MWH

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)													
BH 664A							50	100	150											
TOPSOIL			0.5		not found	utp														
SILT; clayey; very stiff; dry; friable; mixed light brown yellow																				
SILT; stiff; friable; sl. moist; brown becomes light brown orange			1.0				200+													
End of borehole 1.0 m			1.5																	
BH 664B																				
TOPSOIL			0.5		not found	200+														
SILT; slightly sandy; very stiff; dry; friable; brown grey																				
			1.0				200+													
End of borehole 1.0 m			1.5																	
			2.0																	

EXCAVATION METHOD: 50mm Diameter Hand Auger

EXCAVATION METHOD: 50mm Diameter Hand Auger



BH 667&751

Site: The Lakes (2012) Ltd., Stages 2 I and 2N, The Lakes Subdivision, Pyes Pa



Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 27/2/2013

RL 14.0 m Moturiki Datum

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)		
BH 667							50	100	150
TOPSOIL 100 mm				R	not found	utp			
SAND (f-m) silty; dense; dry; brown orange brown and dark brown mottles FILL			0.5						
			1.0	R					
				R					
			1.5						
			2.0						
SAND (f-m) silty; dense; dry; brown orange brown mottles									
End of borehole 2.0 m									
BH 751									
TOPSOIL 100 mm				10	not found				
SILT; clayey; slightly sandy; hard; dry; friable; mixed orange brown, light grey and dark brown FILL				R					
			0.5						
				6					
				7					
				6					
			1.0	9					
				11					
				7					
				6					
				11					
			1.5	10					
				7					
SAND (f-m) silty; medium dense; dry; brown orange brown mottles									
End of borehole 2.0 m									

EXCAVATION METHOD: 150mm Diameter Machine Auger

Site: The Lakes (2012) Ltd., Stage 2N, The Lakes Subdivision, Pyes Pa

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 27/2/2013

RL 13.0 (752) 14.0 (753) m Moturiki

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)		
BH 752							50	100	150
TOPSOIL 100 mm		FILL	0.5		not found	utp			
SILT; clayey; slightly sandy; hard; dry; friable; mixed orange brown, light grey and dark brown FILL									
SAND (f-m); medium dense; dry; orange brown			1.0			139			
SILT; clayey; very stiff; moist; moderately plastic; orange brown becomes stiff; wet; low plasticity			1.5			88			
becomes slightly sandy			2.0			61			
End of borehole 2.0 m						71			
BH 753									
TOPSOIL 100 mm		FILL	0.5		not found				
SILT; clayey; slightly sandy; hard; dry; friable; mixed orange brown, light grey and dark brown FILL									
SAND (f-m) silty; medium dense; dry; light grey brown			0.5						
			7						
			7						
			6						
SILT; stiff; very moist; low plasticity; yellow brown			1.0						
SAND (f-m); loose; slightly moist; light grey brown			3						
			2						
			2						
SILT; stiff; wet; slightly cohesive; light grey			1.5			74			
			3						
SAND (f-m); loose; moist; grey brown			2.0						
			2						
End of borehole 2.0 m									

EXCAVATION METHOD: 150mm Diameter Machine Auger



BH 754&756A

Site: The Lakes; Stage 2N

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 8/2012

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
BH 754							50	100	150																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
TOPSOIL			0.5		not found	utp																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

EXCAVATION METHOD: 50mm Diameter Hand Auger



BH 755A&757

Site: The Lakes (2012) Ltd., Stage 2N, The Lakes Subdivision, Pyes Pa

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 27/2/2013

RL 13.0 (755) 14.5 (757) m Moturiki

Logged By: N.I

Description of Soil	Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)				
						50	100	150		
BH 755 A										
TOPSOIL 100 mm		0.5		not found	200+					
SILT; sandy; hard; dry; friable; light yellow brown										
SAND (f-m) silty; loose; dry light yellow brown										
becomes light brown grey										
SILT; sandy; stiff; wet; low plasticity; light brown grey										
SAND (f-m); loose; wet; light brown grey										
End of borehole 2.0 m										
BH 757										
TOPSOIL 200 mm		0.5	6	not found	utp					
SAND (f-m); medium dense; dry; light grey			11							
			7							
			8							
SILT; hard; moist; slightly cohesive; light grey		6								
End of borehole 2.0 m										

EXCAVATION METHOD: 150mm Diameter Machine Auger

Site:The Lakes; Stage 2N

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 27/2/2013

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)		
BH 755B							50	100	150
TOPSOIL 300 mm	Fill			0	not found	193			
				1					
				1					
				3					
SAND (f-m) silty; medium dense; moist; pumiceous; light brown; dark brown and light grey mottles FILL			0.5	6					
			12						
			8						
			8						
SILT; slightly sandy; very stiff; moist; slightly cohesive; light yellow				8	not found	200+			
becomes sandy; hard				8					
				8					
End of borehole 1.0 m			1.0						
			1.5						
			2.0						
BH 756B									
TOPSOIL 200 mm	Fill			0	not found	193			
				1					
				3					
				3					
SAND (f-m) silty; medium dense; moist; pumiceous; light brown; dark brown and light grey mottles FILL			0.5	6					
			8						
			8						
			5						
SILT; slightly sandy; very stiff; moist; slightly cohesive; light yellow				5	not found	utp			
				5					
End of borehole 1.0 m			1.0						
			1.5						
			2.0						

EXCAVATION METHOD: 50mm Diameter Hand Auger

Site: The Lakes (2012) Ltd., Stage 2N, The Lakes Subdivision, Pyes Pa

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 27/2/2013

RL 15.0 (758) 22.0 (761) m Moturiki

Logged By: N.I

Description of Soil	Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)			
						50	100	150	
BH 758									
TOPSOIL 200 mm			11	not found	utp				
SAND (f-m); dense; dry; light yellow			R						
becomes medium dense		0.5							
			8						
			7						
			7						
		1.0							
			4						
			6						
			6						
GRAVEL (c) sandy (f-c); medium dense; slightly moist; orange brown		1.5	6						
			5						
End of borehole 2.0 m		2.0							
BH 761									
TOPSOIL 200 mm				not found	utp				
SILT; clayey; hard; dry; friable; orange brown									
SAND (f-m) silty; medium dense; dry; light brown		0.5							
			7						
			5						
		1.0	5						
			5						
			5						
			8						
SAND (f-m); dense; dry; pumiceous; light grey		1.5	9						
			8						
			8						
End of borehole 2.0 m		2.0							

EXCAVATION METHOD: 150mm Diameter Machine Auger

Site: The Lakes; Stage 2N

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 8/2012

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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EXCAVATION METHOD: 50mm Diameter Hand Auger



BH 762


Site: Grasshopper; The Lakes; Stage 2N

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 8/2012

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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EXCAVATION METHOD: 50mm Diameter Hand Auger



BH 763&764

Site: The Lakes (2012) Ltd., Stage 2N, The Lakes Subdivision, Pyes Pa

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 27/2/2013

RL 17.0 (763) 16.0 (764) m Moturiki

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)			
							50	100	150	
BH 763										
TOPSOIL 200 mm				not found	149					
SAND (f-c); dense; dry; grey brown orange brown mottles		0.5	11							
			11							
			11							
becomes medium dense			5							
			5							
SILT; clayey; very stiff; moist; moderately plastic; orange brown		1.0	4							
			3							
			2							
SAND (f-m) silty; medium dense; moist; grey brown			5							
			5							
		1.5	5				142			
becomes wet			4							
becomes saturated										
End of borehole 2.0 m			2.0							
BH 764										
TOPSOIL 150 mm			4	not found	78					
			3							
SAND (f-m) silty; dense; slightly moist; orange brown black speckles		0.5	13							
becomes very moist			R							
			3							
SILT; slightly sandy; stiff; wet; slightly cohesive; light grey		1.0	1							
			2							
			1							
			3							
			1							
		1.5	1							
SAND (f-m) silty; medium dense; saturated; brown			7							
End of borehole 2.0 m		2.0								

EXCAVATION METHOD: 150mm Diameter Machine Auger

EXCAVATION METHOD: 50mm Diameter Hand Auger

Site: The Lakes (2012) Ltd., Stage 2N, The Lakes Subdivision, Pyes Pa

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 27/2/2013

RL 17.0 (766) 19.0 (767) m Moturiki

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)				
BH 766							50	100	150		
TOPSOIL 100 mm		F III		9	not found	utp					
SILT; clayey; slightly sandy; hard; dry; friable; mixed orange brown and light grey; dark brown mottles FILL			R								
				0.5							
SAND (f-m) silty; dense; slightly moist; light grey brown			1.0	11			utp				
				12							
								9			
								10			
								9			
				1.5				9			
								10			
				2.0							
End of borehole 2.0 m											
BH 767											
SAND (m-c) gravelly (f); medium dense; dry; pumiceous; light brown grey				4	not found						
				8							
				7							
				4							
becomes dense			0.5	4							
				9							
				13							
				R							
becomes moist			1.0	R							
				1.5							
				2.0							
End of borehole 2.0 m											
EXCAVATION METHOD: 150mm Diameter Machine Auger											

EXCAVATION METHOD: 150mm Diameter Machine Auger



BH 771&773

Site: The Lakes; Stage 2N

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 8/2012

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)		
							50	100	150
BH 773		Fill		10	not found				
SAND (f-m) silty; moist; dense; light greyish brown dark brown mottles FILL				11					
SAND (f) silty; moist; dense; pumiceous; light grey (f-c)				8					
medium dense				7					
gravelly; saturated; loose				4					
				2					
				2					
				3					
				1.0					
				1.5					
				2.0					
BH 771				2					
TOPSOIL				3					
SAND (f) silty; moist; dense; pumiceous; light grey				3					
becomes grey				4					
becomes dense				5					
				6					
				8					
				9					
				1.0					
				1.5					
				2.0					
End of borehole 1.0 m									

EXCAVATION METHOD: 50mm Diameter Hand Auger

BH 772&774

Site: The Lakes (2012) Ltd., Stage 2N, The Lakes Subdivision, Pyes Pa

Sheet: 1 Of: 1

Job No. 20302

Date Excavated: 27/2/2013

RL 19.5 (772) 18.5 (774) m Moturiki

Logged By: N.I

Description of Soil		Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)		
							50	100	150
BH 772									
SAND (m-c) dense; dry; pumiceous; light grey rare pumice gravels	•••••		6	not found					
			6						
			11						
			R						
		0.5							
		1.0							
			R						
		1.5							
		2.0							
		End of borehole 2.0 m							
BH 774									
SAND (f-m); medium dense; dry; light yellow orange brown orange mottles	•••••		12	not found					
			R						
		0.5							
		1.0							
			4						
			4						
			3						
			3						
		1.5	5						
			3						
			4						
		2.0							
becomes medium dense									
becomes moist									
becomes wet									
End of borehole 2.0 m									
EXCAVATION METHOD: 150mm Diameter Machine Auger									

Site: The Lakes; Stage 2N

Sheet: 1 Of: 1

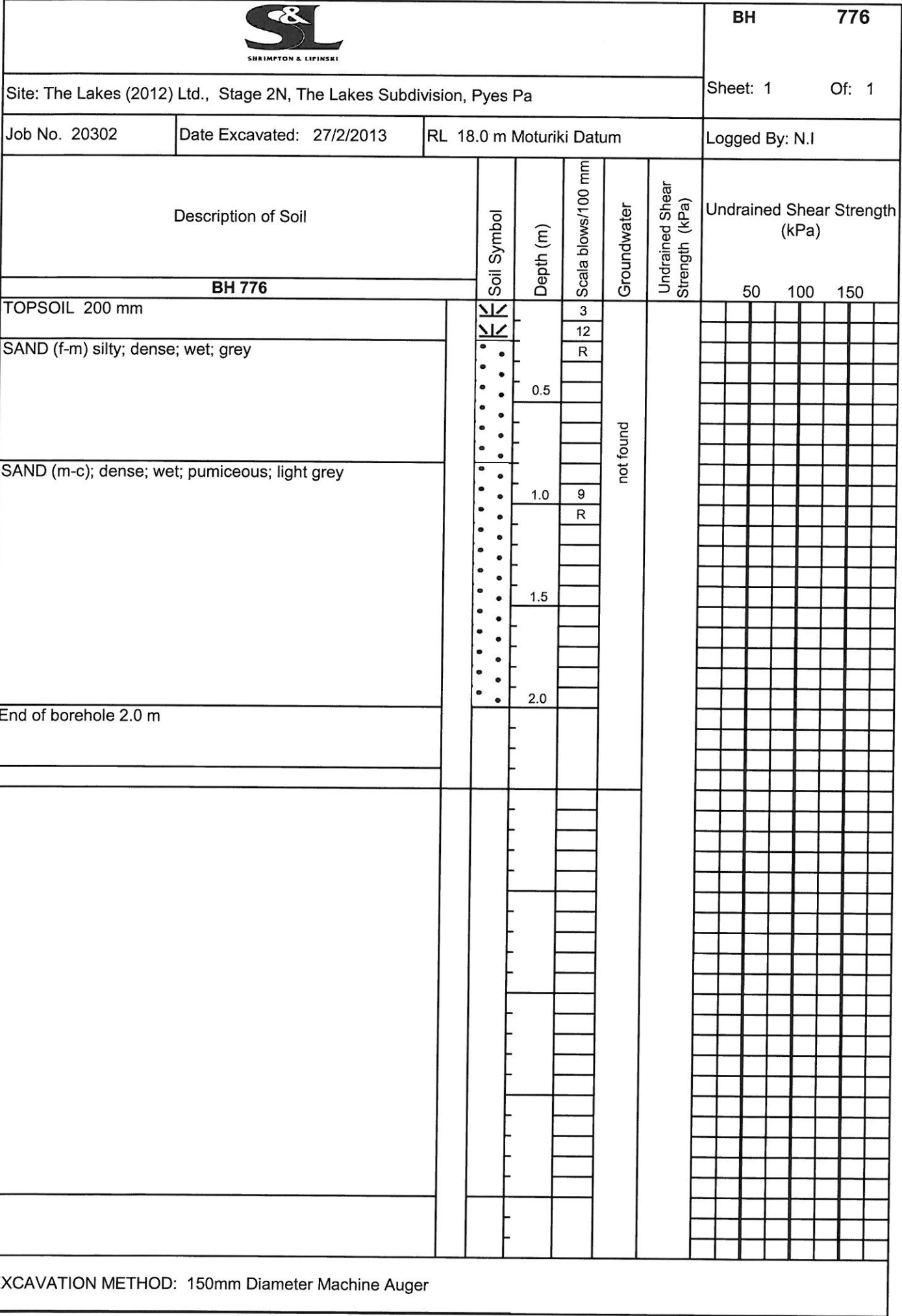
Job No. 20302

Date Excavated: 27/2/2013

Logged By: N.I

Description of Soil	Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa)		
						50	100	150
BH 775								
TOPSOIL 200 mm			1					
SAND (f-m); medium dense; slightly moist; light grey orange and brown mottles FILL			4					
SAND (f-m) silty; medium dense; moist; pumiceous; light brown		0.5	12					
			7					
becomes mixed light brown and light grey			5					
			4					
			6					
			4					
			3					
		1.0	3					
			2					
SILT; sandy; stiff; moist; slightly cohesive; pumiceous; light yellow			3		92			
			1					
			2		83			
SAND (f-m) silty; loose; moist; pumiceous; light yellow		1.5	2					
			2		83			
			2					
					95			
		2.0			59			
End of borehole 2.0 m								

EXCAVATION METHOD: 50mm Diameter Hand Auger



Appendix 5 Coffey Geotechnical Report - Lot 1065 (2008)

9 December 2008

Attention: Mr J Kingsford
PowerCo
PO Box 10-116
Mount Maunganui

Email. jon.kingsford@powerco.co.nz

Dear Jon

**RE: Geotechnical Investigation Report for Proposed Substation
Kennedy Road, Grasshopper Farms, Tauranga**

1 INTRODUCTION AND SCOPE

Further to your instructions and in accordance with our agreed services proposal dated 15 August 2008, we have now completed our investigations into the subsurface conditions at the above site where it is proposed to establish a substation housing electrical equipment and a large transformer.

The scope of this report is specifically limited to the development of geological model for the site to enable an assessment to be made of the ground suitability for the proposed construction including foundation bearing capacity and settlement characteristics.

2 LANDFORM

Prior to recent earthworks development associated with Stage 3 of the Grasshopper Farms residential subdivision, the site was positioned over the toe of a fluvial terrace surface that dipped gently from RL12 metres (Moturiki Datum) at the eastern boundary onto a low-lying valley floor (RL7 metres) at the western boundary. The terrace deposits are typically underlain by firm to stiff in-situ volcanic ash and reworked volcanic sediments (silts and sands) while the valley floor is underlain by weak fibrous peat deposits and recent alluvium.

Earthworks have been completed, which involved the cleaning out of any peat from within the boundaries of the former lower-lying western part of the site and backfilling with engineer certified Filling. The balance of the site was stripped of Topsoil and filled with engineer certified Filling to achieve a finished ground surface elevation at approximately RL11.5 metres (Moturiki Datum). The western edge of the embankment currently sits on or just inside the lot boundary but is to be extended by Grasshopper Farms within the next few months.

3 DEVELOPMENT PROPOSAL

We understand that the site is to maintain its current level to support the construction of a proposed single level residential type building structure occupying the majority of the building footprint and that the footprint will be confirmed pending receipt of this report.

The building is to house a large transformer weighing 35,300kg sitting on a reinforced concrete foundation measuring 2.5 x 4.5 metres in area. No other significant heavy structures or unusual loading conditions are proposed to our knowledge.

4 SITE INVESTIGATIONS

The subsurface conditions within the site were investigated by drilling a series of 5 hand auger boreholes in conjunction with in-situ shear vane tests to depths of up to 5 metres below the current ground surface. These tests were followed by putting down a series of 8 Cone Penetrometer Tests (CPT's) using a Geoprobe rig supplied by Perry Drilling Limited.

The test locations are presented on the appended site plan and a copy of soil test results together with detailed descriptions and depths of strata encountered are appended.

5 SUBSURFACE MODEL

The geological conditions below the site, as encountered at our borehole and CPT locations and giving consideration to the local geological setting are presented on the appended long section and summarised as follows:

- Filling was encountered at all borehole locations and comprised clean compacted ash and pumice that returned vane shear strengths (corrected) exceeding 150 kPa and thereby meeting the project earthfill specification. CPT cone resistances within the Filling ranged from $q_c = 1$ to 16 MPa and averaging 2 to 4 MPa.
- Four of the boreholes terminated in dense Fill materials at depths of between 1.3 and 2.5 metres. Fill depths across the site have therefore been determined from the remaining two boreholes (borehole 05 and 06) and CPT data where they ranged from 0.5 to 3.5 metres (average 2.3 metres). The Fill depth generally increased from east to west.
- As observed in boreholes 05 and 06, the fill was underlain by variable clayey silts (reworked volcanics) with thin organic lenses, which were well consolidated returning vane shear strengths (corrected) of 150 to 180 kPa. CPT data shows that these deposits extend to depths of 6 to 10 metres (average 8 metres) and returned cone resistances of $q_c = 1$ to 2 MPa.
- These were underlain by medium dense to dense sands with cone resistances of 10 to 20 MPa but with inter-bedded 1 to 2 metre thick silt lenses ($q_c = 1$ to 2 MPa) to depths of 20 metres.
- Standing groundwater levels were recorded in the open CPT holes on completion at depths of between 3.6 and 4.7 metres below the current ground surface.

6 EVALUATION AND RECOMMENDATIONS

6.1 Liquefaction

Liquefaction is an occurrence in predominantly loose saturated sandy and low plasticity silty soils that are subject to intense cyclic (earthquake) loading involving the reversal of shear stresses. The process involves the transfer of effective stresses to the pore water resulting in a total loss of strength, re-compaction of the soil grains to a more dense state and subsequent strain or settlement as excess pore water pressures are released.

At this site, the weaker reworked volcanics that were encountered below the water table were typically of a cohesive nature such that they would have a low potential to exhibit liquefaction based on grain size criteria. The sand layers that are typically susceptible to the liquefaction process were predominantly medium dense to dense such that they would resist the typical cyclic stress ratios produced during the design 500 year return period earthquake event. Any potentially liquefiable loose sand layers are generally of limited thickness (less than 1 metre).

Based on this and the fact that the site also contains a dense / very stiff crust of unsaturated Filling, any surf manifestations associated with liquefaction of any deeper thin loose soil layers should be minimal and should not warrant further design considerations.

6.2 Fill Induced Settlements

The placement of a compacted fill raft across the site has increased the loading conditions on the underlying natural soils such that they could have exhibited some settlement. The most settlement prone materials were however over-excavated from below the recently constructed fill embankment to expose a relatively stiff subgrade.

Preliminary fill induced settlement predictions were completed based on available CPT information by calculating stress increases below a superimposed 3.5 metre deep embankment load and adopting correlations with soil modulus following the method of Schmertmann.

Settlements predicted by this method ranged from 96 to 209mm, the average value being approximately 150mm.

The embankment has been in place for several months and it is our experience with the bedded fluvial volcanic soils that dissipation of excess pore water pressures occurs rapidly such that t_{90} or the time at which the majority of the settlement has occurred is typically no more than 6 months. We also note that a temporary 2 to 3 metre high stockpile of soil was recently placed across the western part of the site for storage purposes, which would have also had a pre-load effect on the underlying subgrade.

The potential for ongoing fill induced settlements affecting the proposed building construction are therefore considered negligible.

6.3 Foundation Settlement

The proposed 35.3 tonne transformer is to sit on an 11.25 m² pad foundation producing a foundation load of 35.3 kPa. The potential for settlement of this foundation was assessed following the CPT based soil modulus correlation method described above with results summarised as follows:

Estimated Foundation Settlements due to a Net Allowable Foundation Load of 35.3 kPa	
CPT #	Settlement (mm)
01	17
02	22
03	14
04	19
05	14
06	33
07	29
08	43

Results show that where fill depths exceed 2 metres, predicted settlements range from 14 to 22mm, which are relatively low and expected to be within the structural designers tolerances. Greater settlements of up to 43mm are predicted across the eastern part of the site where fill depths are reduced and therefore positioning of the heavy transformer away from these areas would be advisable to minimise any foundation settlements.

We understand that the remaining building structure will be supported on shallow strip and pad foundations similar to conventional residential buildings. Stress increases associated with foundation loads on these footings should therefore be restricted to the dense / very stiff fill crust such that differential settlements should be negligible.

6.4 Foundation Bearing Capacity

Subject to verification of the structural designers settlement tolerances and assuming that the proposed transformer will be positioned over the deeper stiff crust of engineer certified Filling within the central and western parts of the site, these soils should provide a geotechnical ultimate bearing capacity of 150 kPa for this proposed footing dimension (2.5 x 4.5 metres).

Elsewhere, a geotechnical ultimate bearing capacity of 300 kPa should be available for shallow strip and pad foundations containing a minimum plan dimension of no greater than 500mm.

6.5 Strength Reduction Factor

As required by Section B1/VM1 of the NZ Building Code Handbook, a strength reduction factor of 0.5 or 0.8 must be applied to any recommended ultimate soil capacity in conjunction with its use in factored design load cases for static and earthquake overload conditions respectively.

7 LIMITATION

This report has been prepared solely for the use of our client, Maunsell Limited, their professional advisers and the relevant territorial authorities in relation to the specific project described herein. No liability is accepted in respect of its use for any other purpose or by any other person or entity. All future users of this information should seek professional geotechnical advice to satisfy themselves as to its ongoing suitability for their intended use.

The opinions, recommendations and comments given in this report result from the application of normal methods of site investigation. As factual evidence has been obtained solely from boreholes and CPT's, which by their nature only provide information about a relatively small volume of subsoils, there may be special conditions pertaining to this site which have not been disclosed by the investigation and which have not been taken into account in the report.

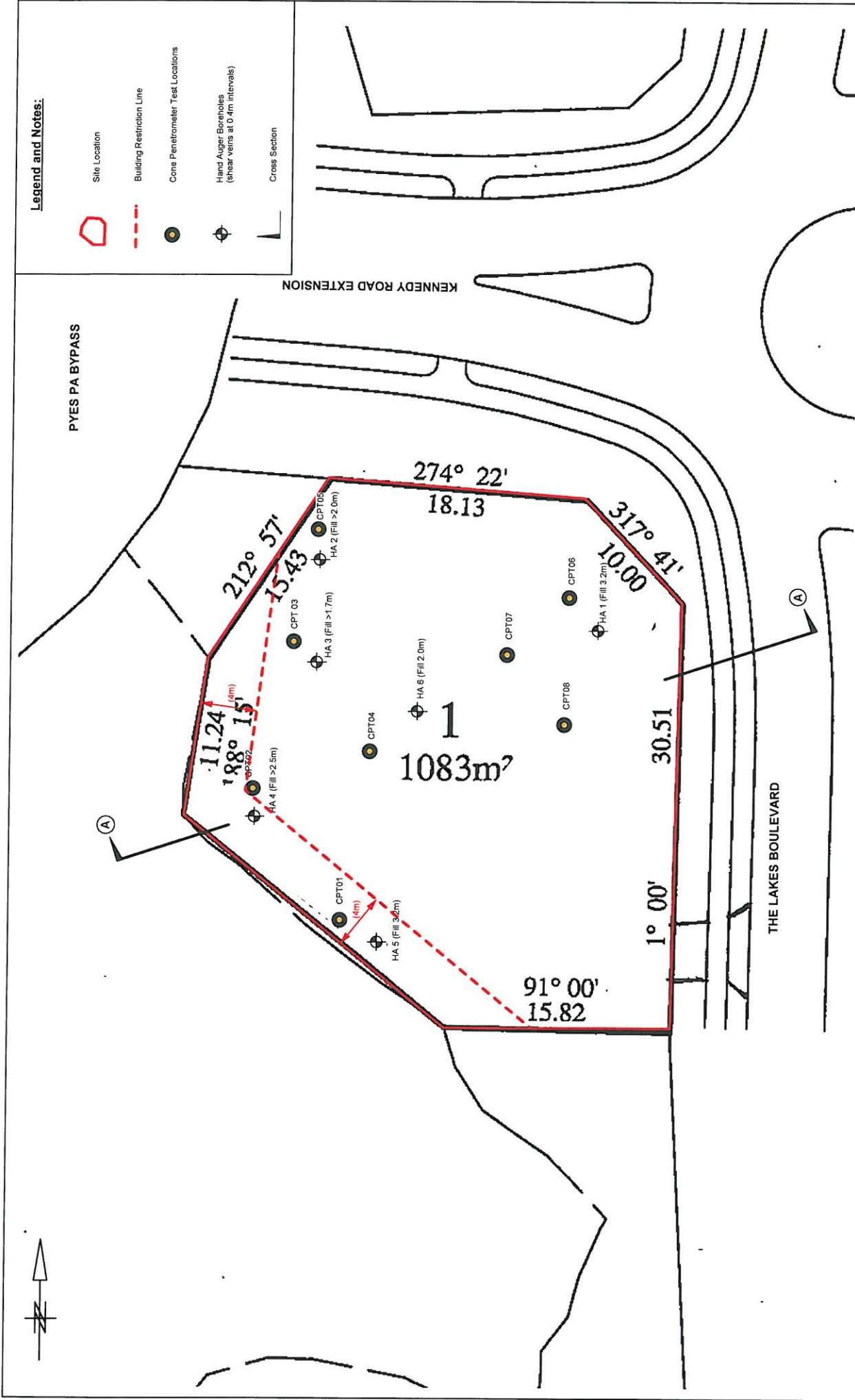
If variations in the subsoils occur from those described or assumed to exist then the matter should be referred back to us immediately.

For and on behalf of Coffey Geotechnics (NZ) Limited

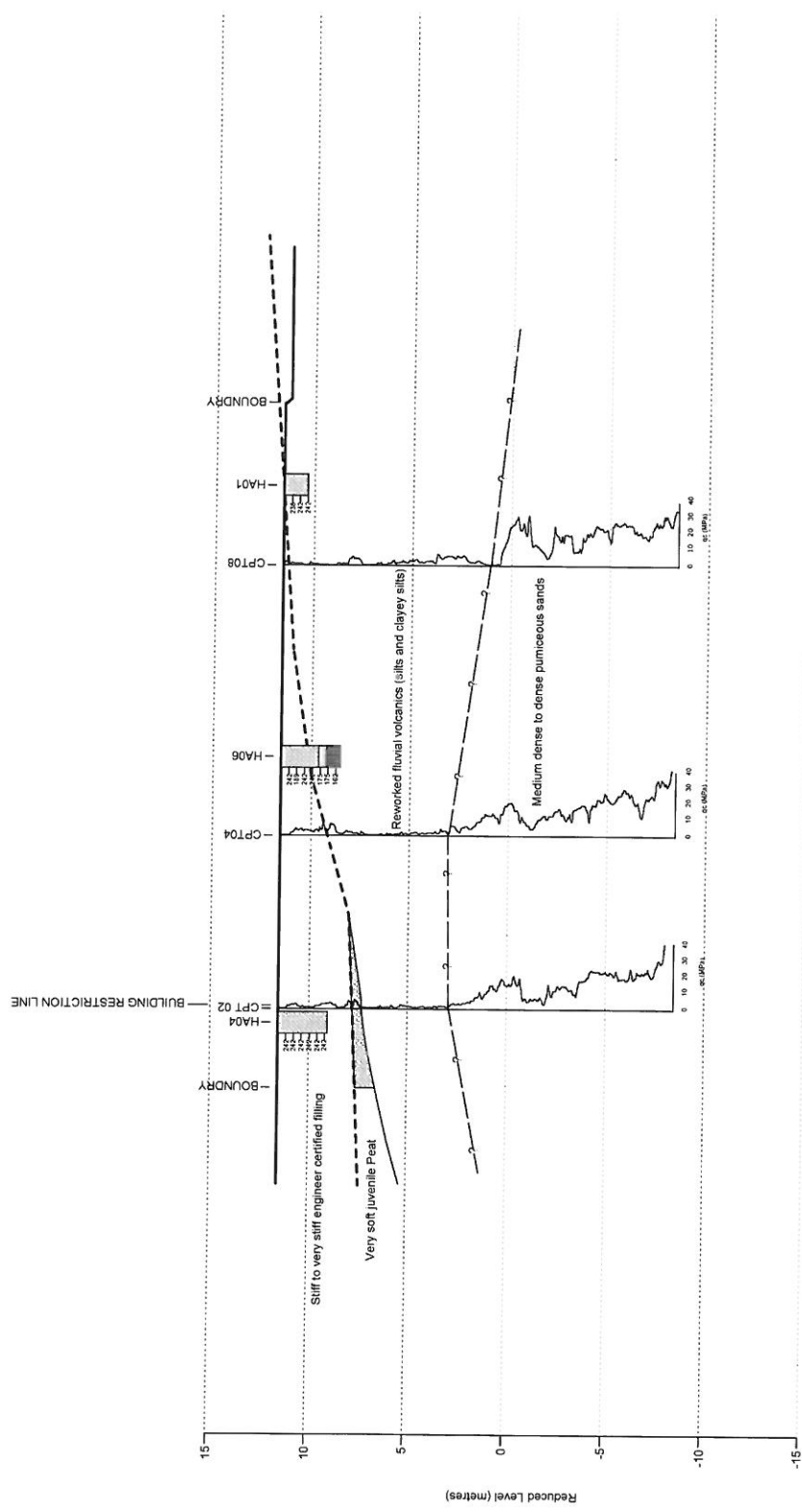


DJ MORTON

Principal Geotechnical Engineer, MIPENZ (Geotechnical), CPEng



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Engineering Log - Hand Auger

Client: **Power Co**
Principal:
Project: **Kennedy Road Substation**
Hand Auger Location: **Refer to site plan**

Hand Auger No. **HA1**
Sheet 1 of 1
Project No: **14078**
Date started: **29.10.2008**
Date completed: **29.10.2008**
Logged by: **MA**
Checked by: **MW**

Vane No: 963/iiiivii		Easting: m		Slope: -90°		R.L. Surface: m	
Hole diameter: 50 mm		Northing: m		Bearing:		Datum:	
drilling information				material substance			
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material Soil type; colour, structure. Grading; bedding; plasticity, sensitivity. Secondary and minor components, additional information.
Fill	Ground water not observed			0.5		ML	Sandy SILT; light brown/ orange, slightly plastic, hard with minor angular gravel and firm pumiceous sand.
				1.0			
				1.5			Borehole HA1 terminated at 1.2 metres.
				2.0			
				2.5			
				3.0			
classification symbols and soil description based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005				vane shear (kPa) ● remoulded X peak >>X peak greater than 200kPa UTP unable to penetrate		water ▽ 10/1/98 water level on date shown ▶ water inflow ◀ water outflow	
				moisture D dry M moist W wet S saturated		consistency/ density index VS very soft S soft F firm St stiff VSt very stiff H hard	
				VL very loose L loose MD medium dense D dense VD very dense			

Engineering Log - Hand Auger

Client: **Power Co**
Principal:
Project: **Kennedy Road Substation**
Hand Auger Location: **Refer to site plan**

Hand Auger No. **HA2**
Sheet 1 of 1
Project No: **14078**
Date started: **29.10.2008**
Date completed: **29.10.2008**
Logged by: **MA**
Checked by: **MW**

Vane No: 963/iiivii		Easting: m		Slope: -90°		R.L. Surface: m					
Hole diameter: 50 mm		Northing: m		Bearing:		Datum:					
drilling information				material substance							
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material Soil type; colour, structure. Grading; bedding; plasticity, sensitivity. Secondary and minor components, additional information.	moisture condition	consistency/ density index	vane shear (remoulded peak) kPa	structure and additional observations
Fill	Ground water not observed			0.5		ML	Sandy SILT; Light brown/ orange, slightly plastic with minor angular gravel and pumiceous firm sand.	D			
				1.0		SM	Pumiceous SAND; light brown/ orange with fine gravel and inclusions of orange brown silt.	M			
				1.5							
				2.0							
				2.5			Borehole HA2 terminated at 2 metres.				
				3.0							
classification symbols and soil description based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005				vane shear (kPa) ● remoulded X peak >>X peak greater than 200kPa UTP unable to penetrate		water ▽ 10/1/98 water level ▽ on date shown ▽ water inflow ▽ water outflow		moisture D dry M moist W wet S saturated		consistency/ density index VS very soft VL very loose S soft L loose F firm MD medium dense St stiff D dense VSt very stiff VD very dense H hard	

Engineering Log - Hand Auger

Client: **Power Co**

Principal:

Project: **Kennedy Road Substation**

Hand Auger Location: **Refer to site plan**

Hand Auger No. **HA3**

Sheet 1 of 1
Project No: **14078**

Date started: **25.11.2008**

Date completed: **25.11.2008**

Logged by: **MA**

Checked by: **MW**

Vane No: 963/iiivii		Easting: m		Slope: -90°		R.L. Surface: m					
Hole diameter: 50 mm		Northing: m		Bearing:		Datum:					
drilling information				material substance							
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material Soil type; colour, structure. Grading; bedding; plasticity, sensitivity. Secondary and minor components, additional information.	moisture condition	consistency/ density index	vane shear (remoulded peak) kPa	structure and additional observations
Fill	Ground water not observed			0.5			SILT; brown, low plasticity.	M		>>X	
							Pumiceous SAND; light grey.				
				1.0			SILT; brown, low plasticity.			>>X	
							Fine to medium grained pumiceous SAND; white.			>>X	
				1.5			SILT; brown, low plasticity.			>>X	
				2.0			Borehole HA3 terminated at 1.7 metres.				Hard surface encountered, unable to auger.
				2.5							
				3.0							
classification symbols and soil description based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005				vane shear (kPa) ● remoulded X peak >>X peak greater than 200kPa UTP unable to penetrate		water 10/1/98 water level on date shown water inflow water outflow		moisture D dry M moist W wet S saturated		consistency/ density index VS very soft VL very loose S soft L loose F firm MD medium dense St stiff D dense VSt very stiff VD very dense H hard	

Engineering Log - Hand Auger

Client: **Power Co**
Principal:
Project: **Kennedy Road Substation**
Hand Auger Location: **Refer to site plan**

Hand Auger No. **HA4**
Sheet 1 of 1
Project No: **14078**
Date started: **25.11.2008**
Date completed: **25.11.2008**
Logged by: **MA**
Checked by: **MW**

Vane No: 963/iiivii		Easting: m		Slope: -90°		R.L. Surface: m										
Hole diameter: 50 mm		Northing: m		Bearing:		Datum:										
drilling information				material substance												
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material Soil type; colour, structure. Grading; bedding; plasticity, sensitivity. Secondary and minor components, additional information.	moisture condition	consistency/ density index	vane shear (remoulded /peak) kPa	structure and additional observations					
Fill	Ground water not observed			0.5			SILT; brown.	M								
				1.0			Fine to medium grained SAND; grey.			>>X						
				1.5			SILT; brown.			>>X						
				2.0			Fine to medium grained SAND; grey.			>>X						
				2.5			SILT; brown.			>>X						
				3.0			Medium grained pumiceous SAND; white.			>>X						
											Borehole HA4 terminated at 2.5 metres.					Hard surface encountered, unable to auger.
classification symbols and soil description based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005				vane shear (kPa) ● remoulded X peak >>X peak greater than 200kPa UTP unable to penetrate		water ▽ 10/1/98 water level on date shown ▴ water inflow ▾ water outflow		moisture D dry M moist W wet S saturated		consistency/ density index VS very soft VL very loose S soft L loose F firm MD medium dense St stiff D dense VSt very stiff VD very dense H hard						

Engineering Log - Hand Auger

Client: **Power Co**

Principal:

Project: **Kennedy Road Substation**

Hand Auger Location: **Refer to site plan**

Hand Auger No. **HA5**

Sheet 1 of 1
Project No: **14078**

Date started: **29.10.2008**

Date completed: **29.10.2008**

Logged by: **MA**

Checked by: **MW**

Vane No: 963/iiivii		Easting: m		Slope: -90°		R.L. Surface: m					
Hole diameter: 50 mm		Northing: m		Bearing:		Datum:					
drilling information				material substance							
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material Soil type; colour, structure. Grading; bedding; plasticity, sensitivity. Secondary and minor components, additional information.	moisture condition	consistency/ density index	vane shear (remoulded peak) kPa	structure and additional observations
Fill				1		ML	Sandy SILT; light brown/ orange, slightly plastic with minor angular gravel and pumiceous firm sand.	D			
				2		SM	Pumiceous fine to coarse SAND; light brown/ pale orange, fine to medium gravel with orange brown silt inclusions.	M			
				3			Becomes more silty.				
Natural				4		ML	Firm to medium sandy SILT; grey/ light brown speckled black and dark brown, cream streaked, lenses of organic material, very stiff.	MW			
				5		ML	SILT; light grey/ light brown with black/ brown streaks, very stiff.	W			
				6		ML	SILT; white with orange streaks, non plastic, very stiff.				
							Borehole HA5 terminated at 5 metres.				
classification symbols and soil description based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005				vane shear (kPa) ● remoulded X peak XX peak greater than 200kPa UTP unable to penetrate		water ▽ 10/1/98 water level on date shown ▶ water inflow ◀ water outflow		moisture D dry M moist W wet S saturated		consistency/ density index VS very soft S soft F firm St stiff VSt very stiff H hard VL very loose L loose MD medium dense D dense VD very dense	

Engineering Log - Hand Auger

Client: **Power Co**

Principal:

Project: **Kennedy Road Substation**

Hand Auger Location: **Refer to site plan**

Hand Auger No. **HA6**

Sheet 1 of 1

Project No: **14078**

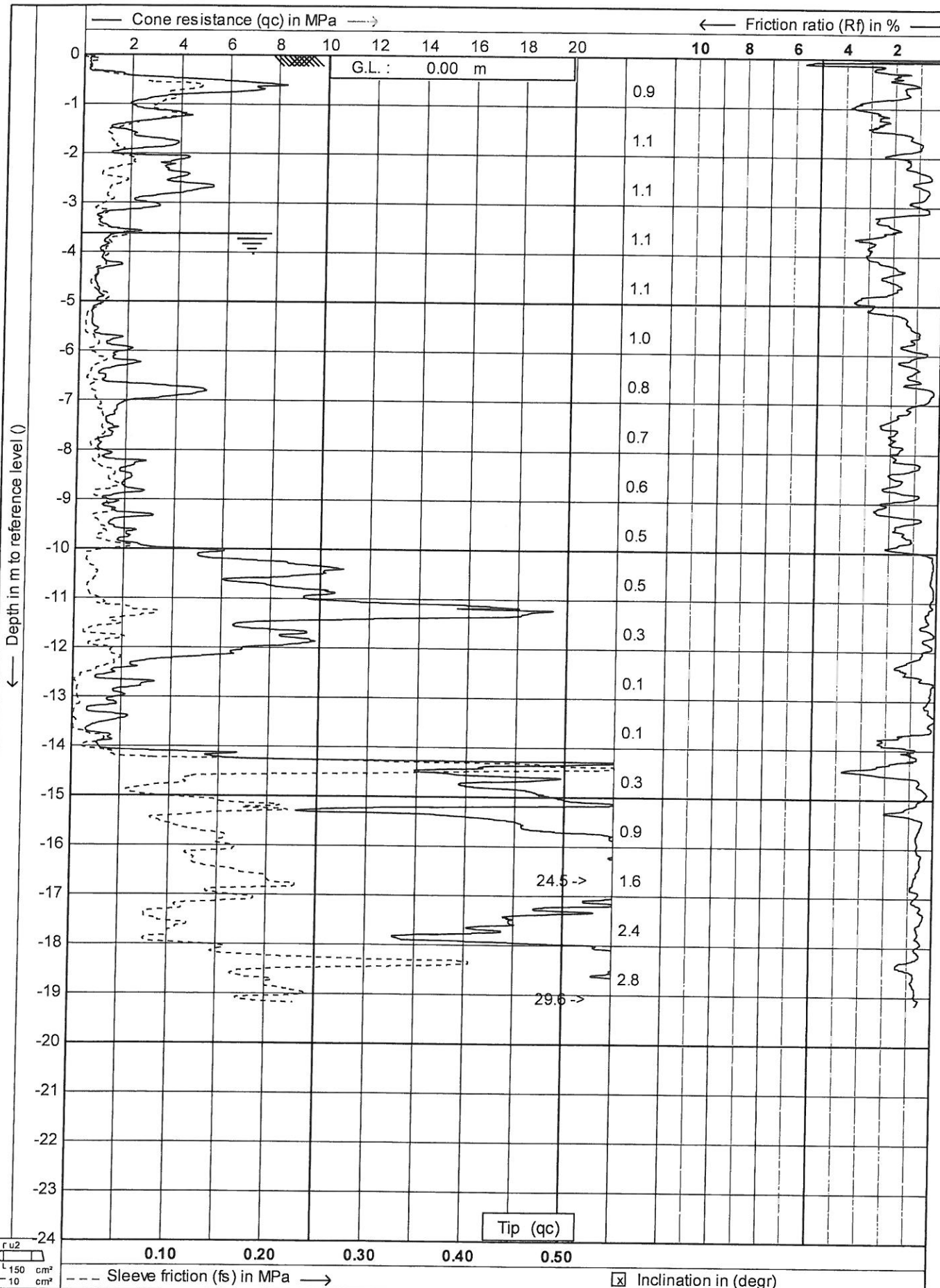
Date started: **23.10.2008**

Date completed: **23.10.2008**

Logged by: **MA**

Checked by: **MW**

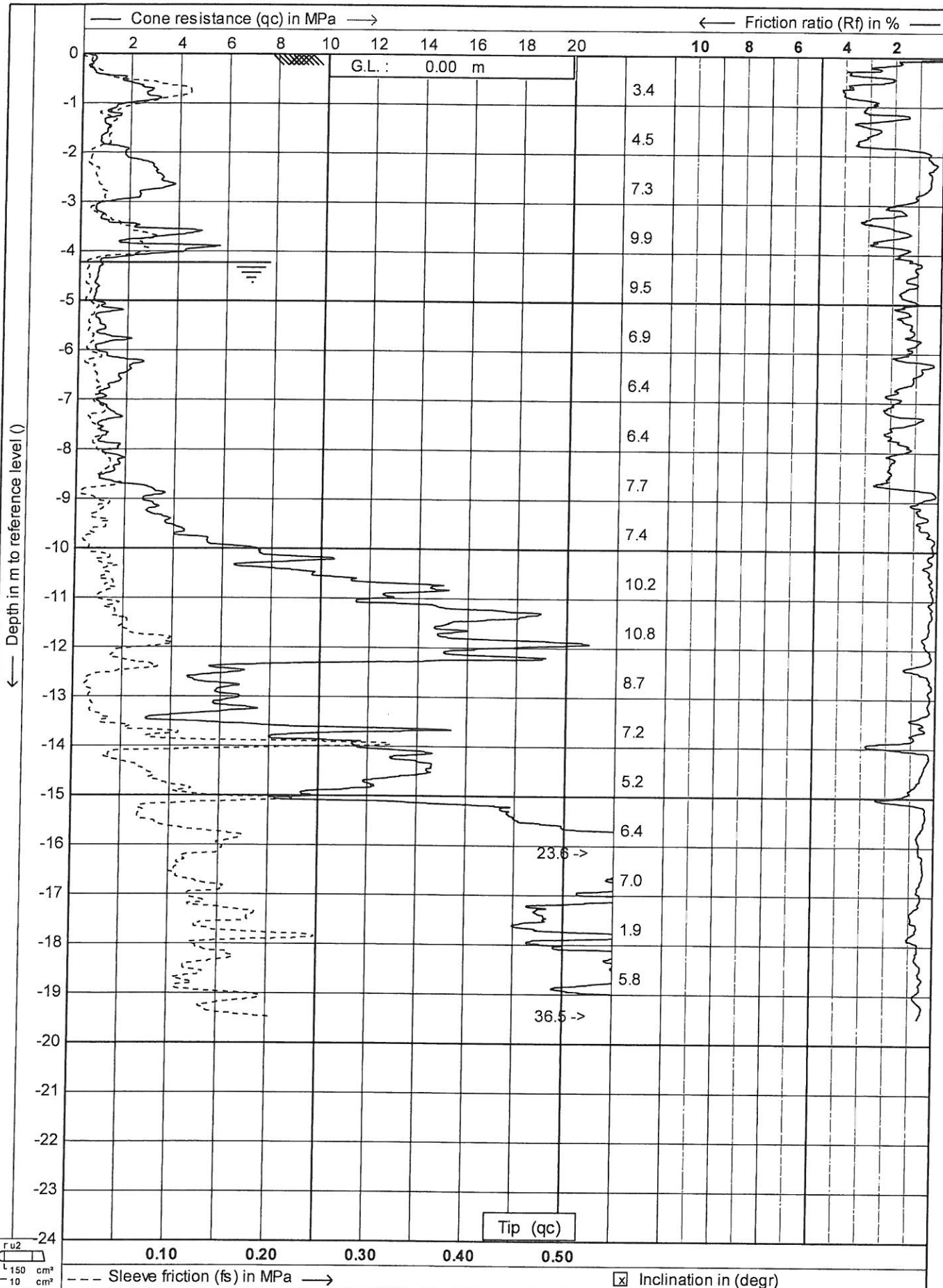
Vane No: 963/iiivii		Easting: m		Slope: -90°		R.L. Surface: m	
Hole diameter: 50 mm		Northing: m		Bearing:		Datum:	
drilling information				material substance			
stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material Soil type; colour, structure. Grading; bedding; plasticity, sensitivity. Secondary and minor components, additional information.
Fill	Ground water not observed			0.5		ML	Sandy SILT; light/ brown orange, slightly plastic with minor angular gravel and pumiceous firm sand.
				1.0			
Natural				1.5			
				2.0		ML	SILT, grey brown, slightly plastic, very stiff.
				2.5		MH	Clayey SILT; grey/ brown and pale orange/ brown, moderately plastic, stiff to very stiff.
				3.0			
				3.5			
				4.0			Borehole HA6 terminated at 3 metres.
classification symbols and soil description based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005				vane shear (kPa) ● remoulded X peak XX peak greater than 200kPa UTP unable to penetrate		water ▽ 10/1/98 water level on date shown ▶ water inflow ◀ water outflow	
moisture D dry M moist W wet S saturated		consistency/ density index VS very soft S soft F firm St stiff VSt very stiff H hard		VL very loose L loose MD medium dense D dense VD very dense			



CPTask V6.1.4a



Test according A.S.T.M. Standard D 5778-95		Date	: 24-9-2008
Project : Kennedy Road - Powerco Substation		Cone no.	: C10CFIIP.E60
Location: Tauriko Lakes - Tauriko		Project no.	: 02CGL11
		CPT no.	: 01
			1/14



Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

Location: Tauriko Lakes - Tauriko

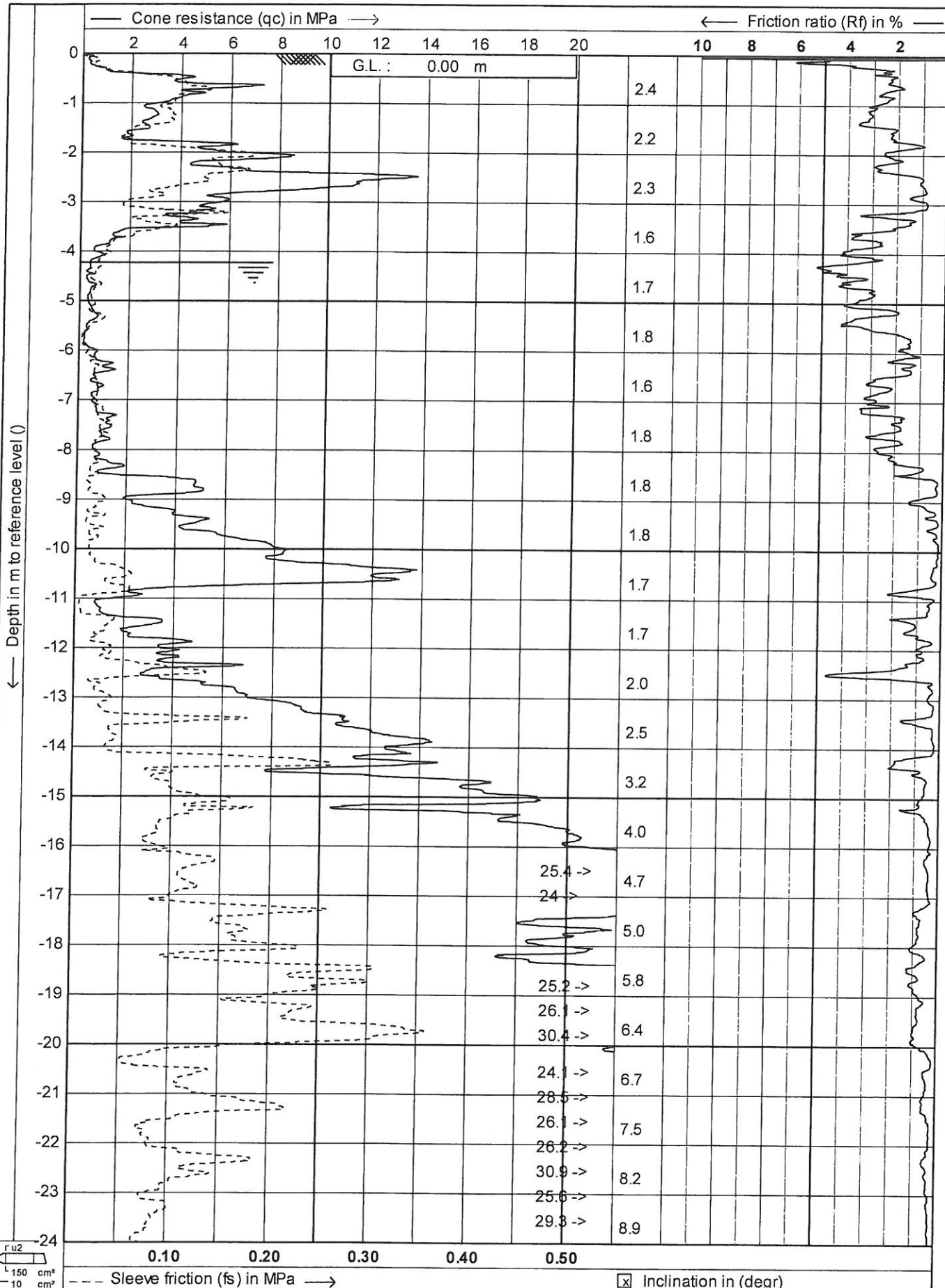
Date : 24-9-2008

Cone no. : C10CFIP.E60

Project no. : 02CGL11

CPT no. : 02a

1/14



Test according A.S.T.M. Standard D 5778-95

Project : **Kennedy Road - Powerco Substation**

Location: **Tauriko Lakes - Tauriko**

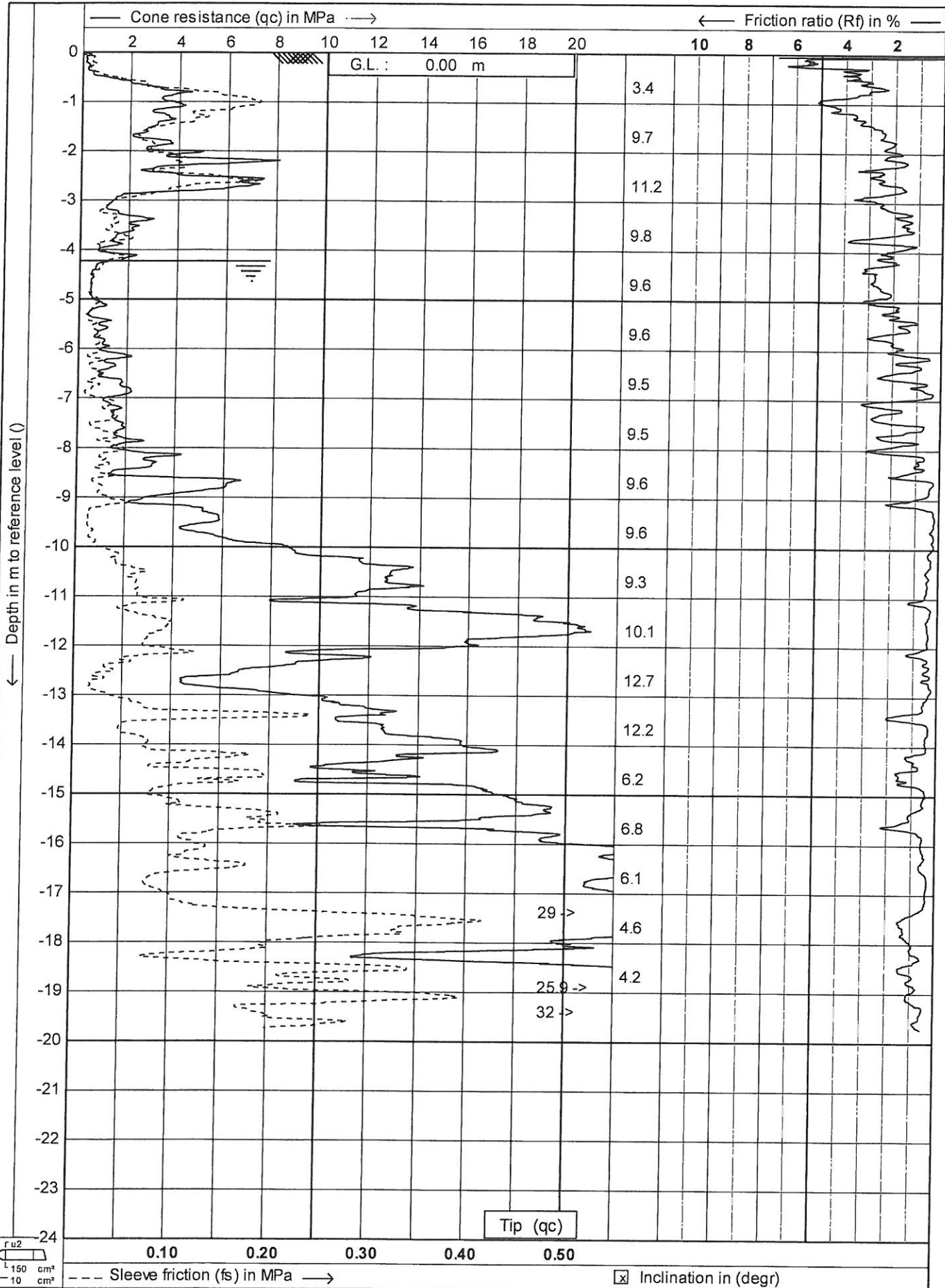
Date : **24-9-2008**

Cone no. : **C10CFIIP.E60**

Project no. : **02CGL11**

CPT no. : **03**

1/28



Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

Location: Tauriko Lakes - Tauriko

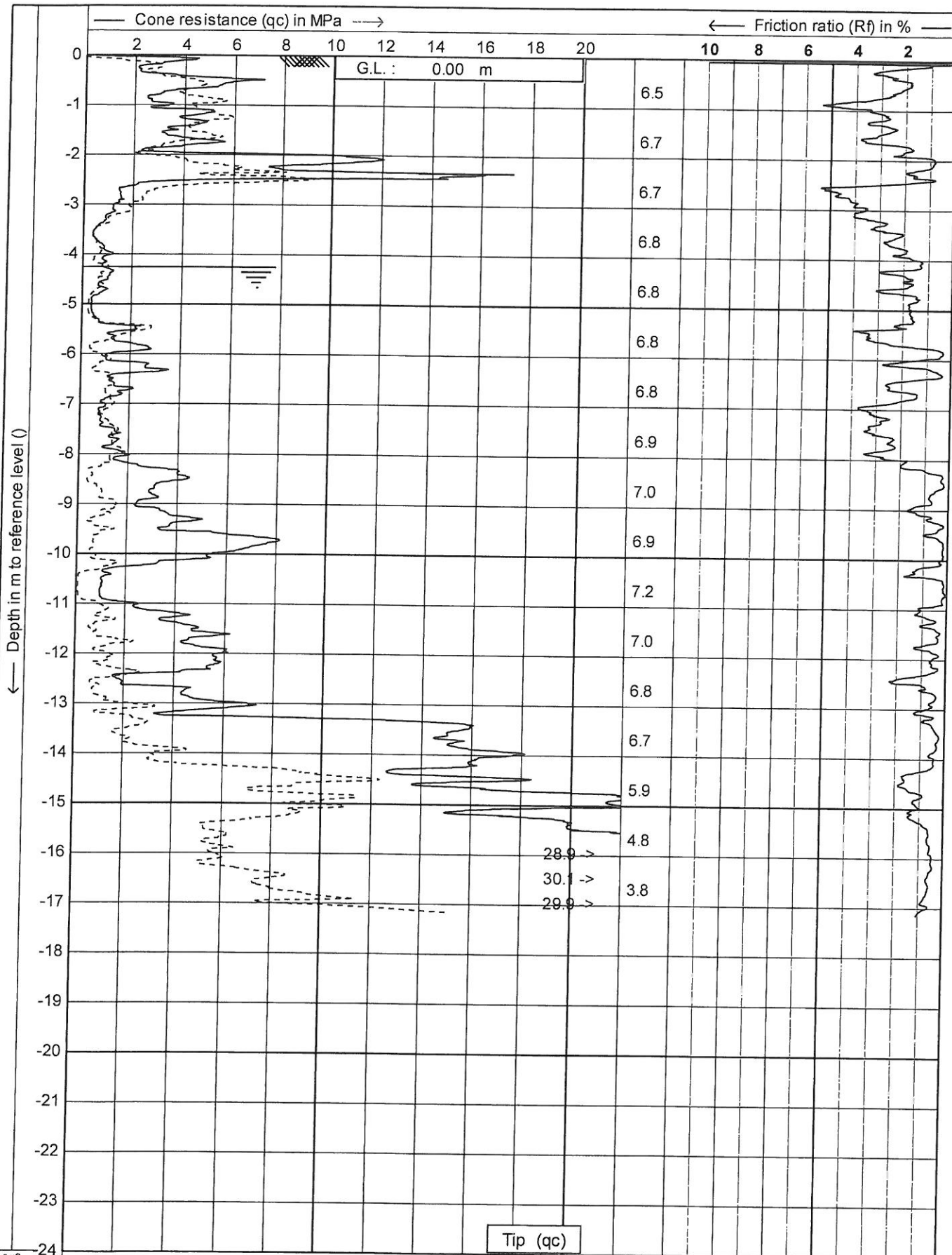
Date : 25-9-2008

Cone no. : C10CFIIP.E60

Project no. : 02CGL11

CPT no. : 04

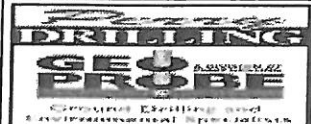
1/14



150 cm²
10 cm²

--- Sleeve friction (fs) in MPa →

☒ Inclination in (degr)



Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

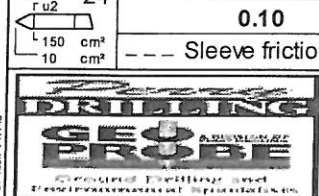
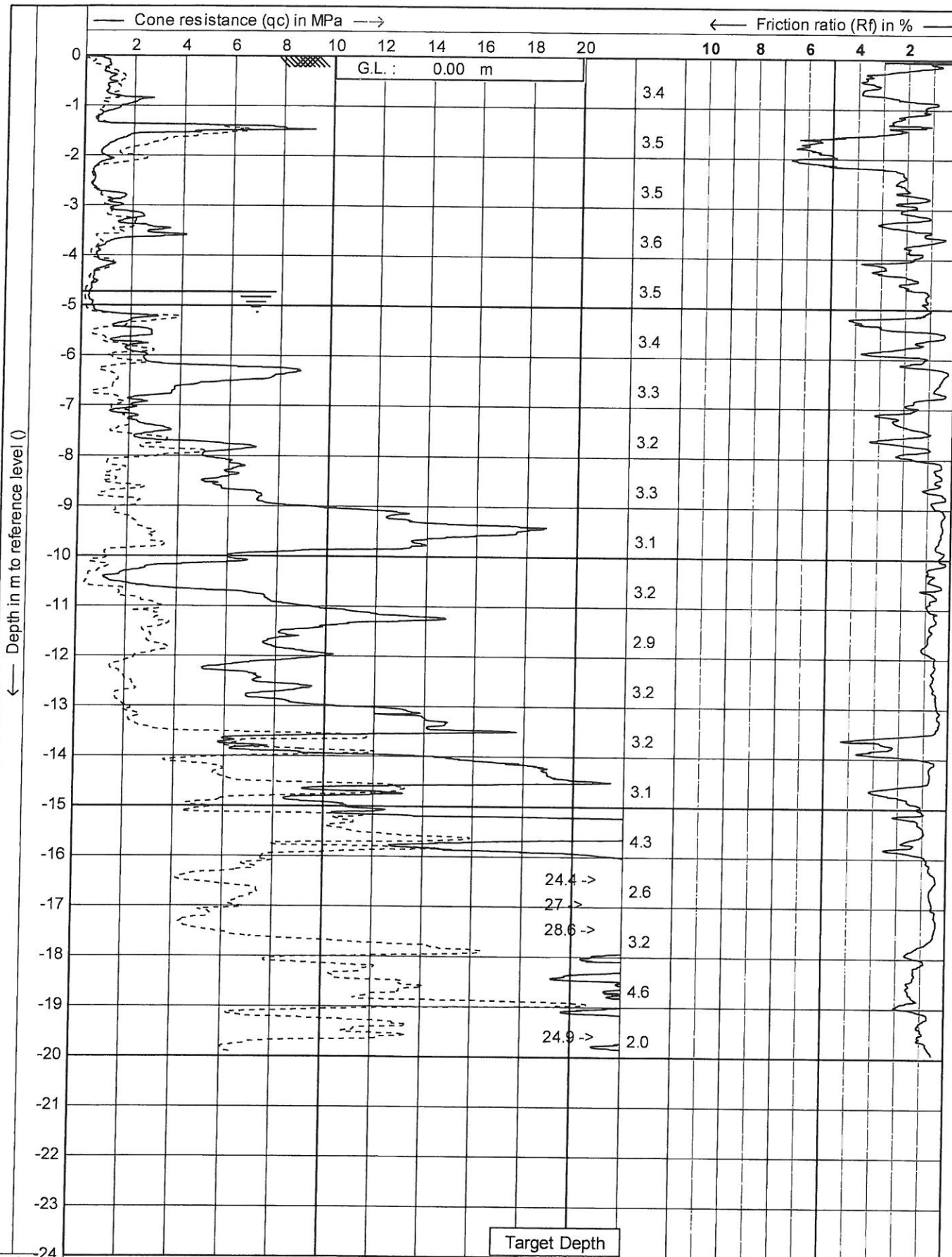
Location: Tauriko Lakes - Tauriko

Date : 25-9-2008

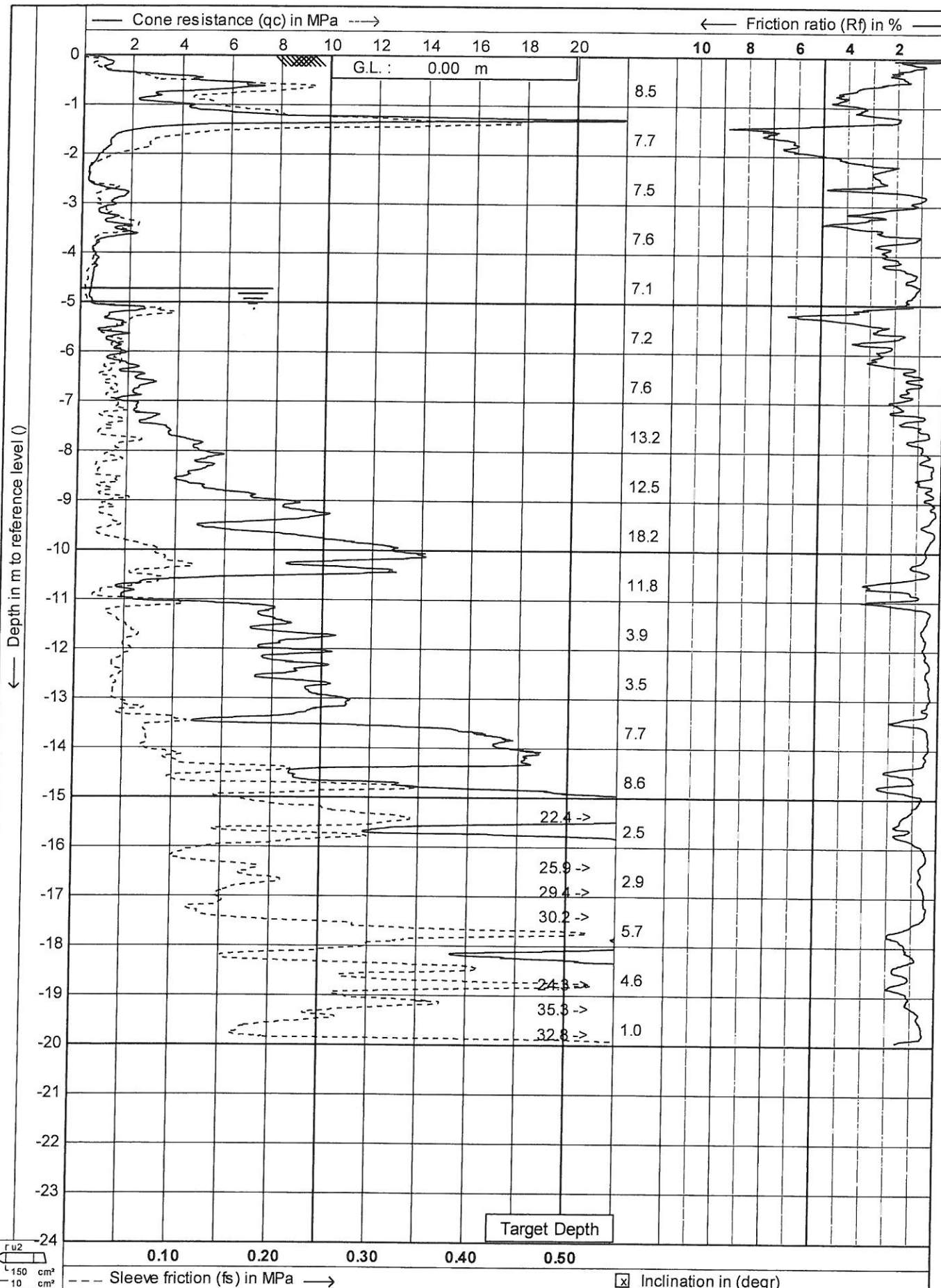
Cone no. : C10CFIP.E60

Project no. : 02CGL11

CPT no. : 05



Test according A.S.T.M. Standard D 5778-95		Date : 25-9-2008
Project : Kennedy Road - Powerco Substation		Cone no. : C10CFIIP.E60
Location: Tauriko Lakes - Tauriko		Project no. : 02CGL11
		CPT no. : 06
		1/14



Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

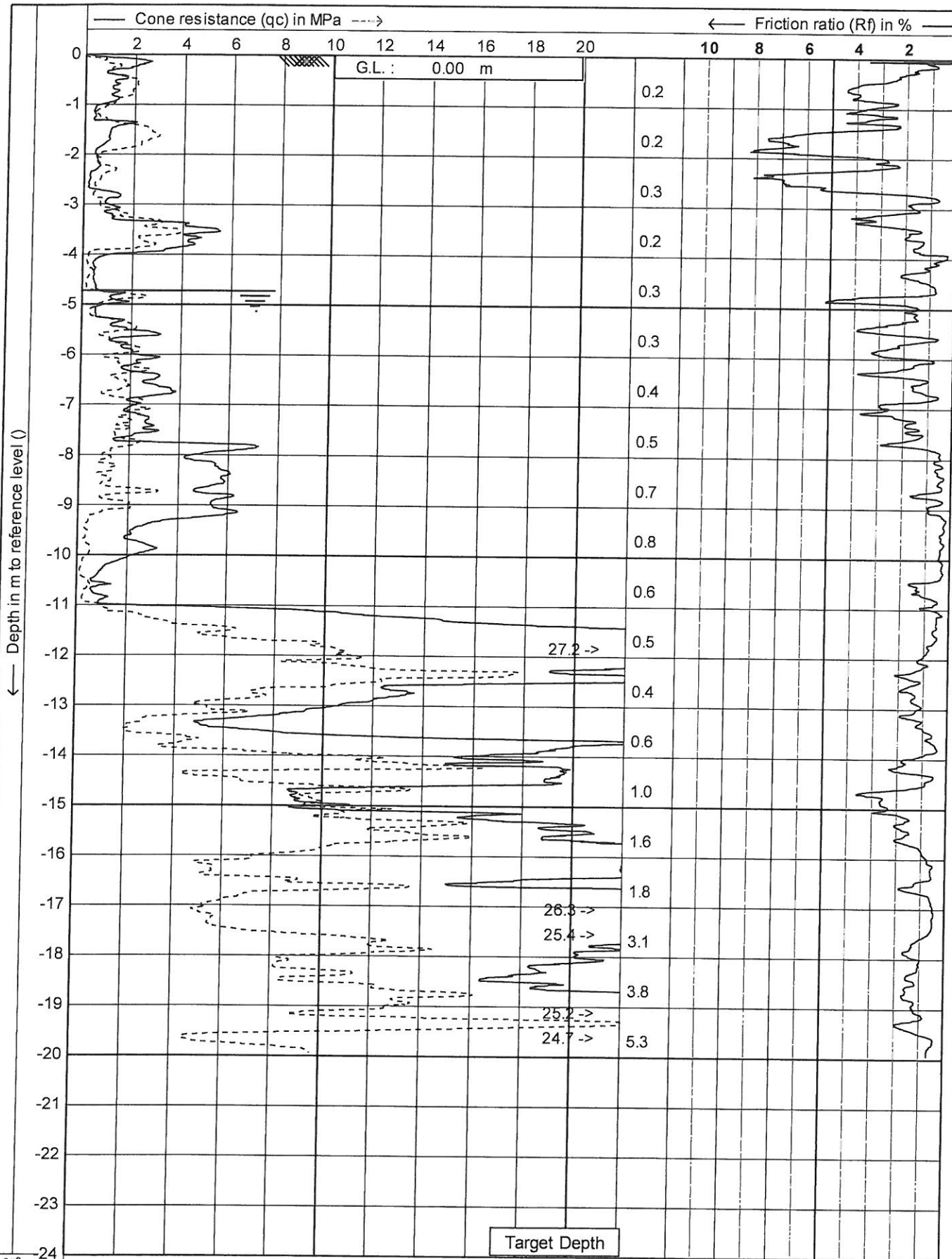
Location: Tauriko Lakes - Tauriko

Date : 25-9-2008

Cone no. : C10CFIP.E60

Project no. : 02CGL11

CPT no. : 07



150 cm²
10 cm²

--- Sleeve friction (fs) in MPa -->

☒ Inclination in (degr)



Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

Location: Tauriko Lakes - Tauriko

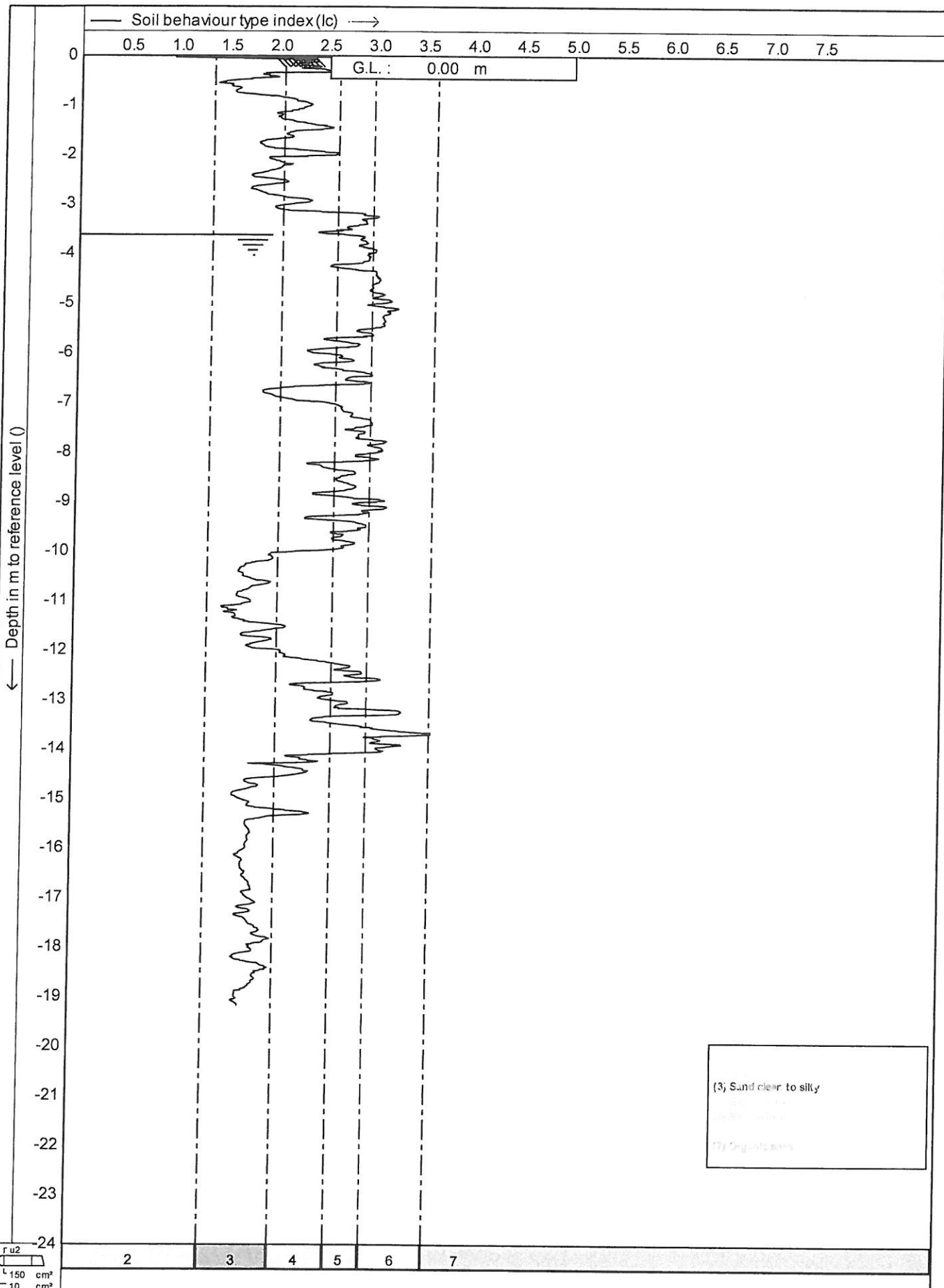
Date : 25-9-2008

Cone no. : C10CFIIP.E60

Project no. : 02CGL11

CPT no. : 08

1/14



(3) Sand clear to silty

(4) Silty sand

(5) Clayey sand

(6) Silty clay

(7) Clayey clay

Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

Location: Tauriko Lakes - Tauriko

Date : 24-9-2008

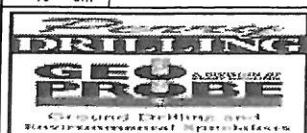
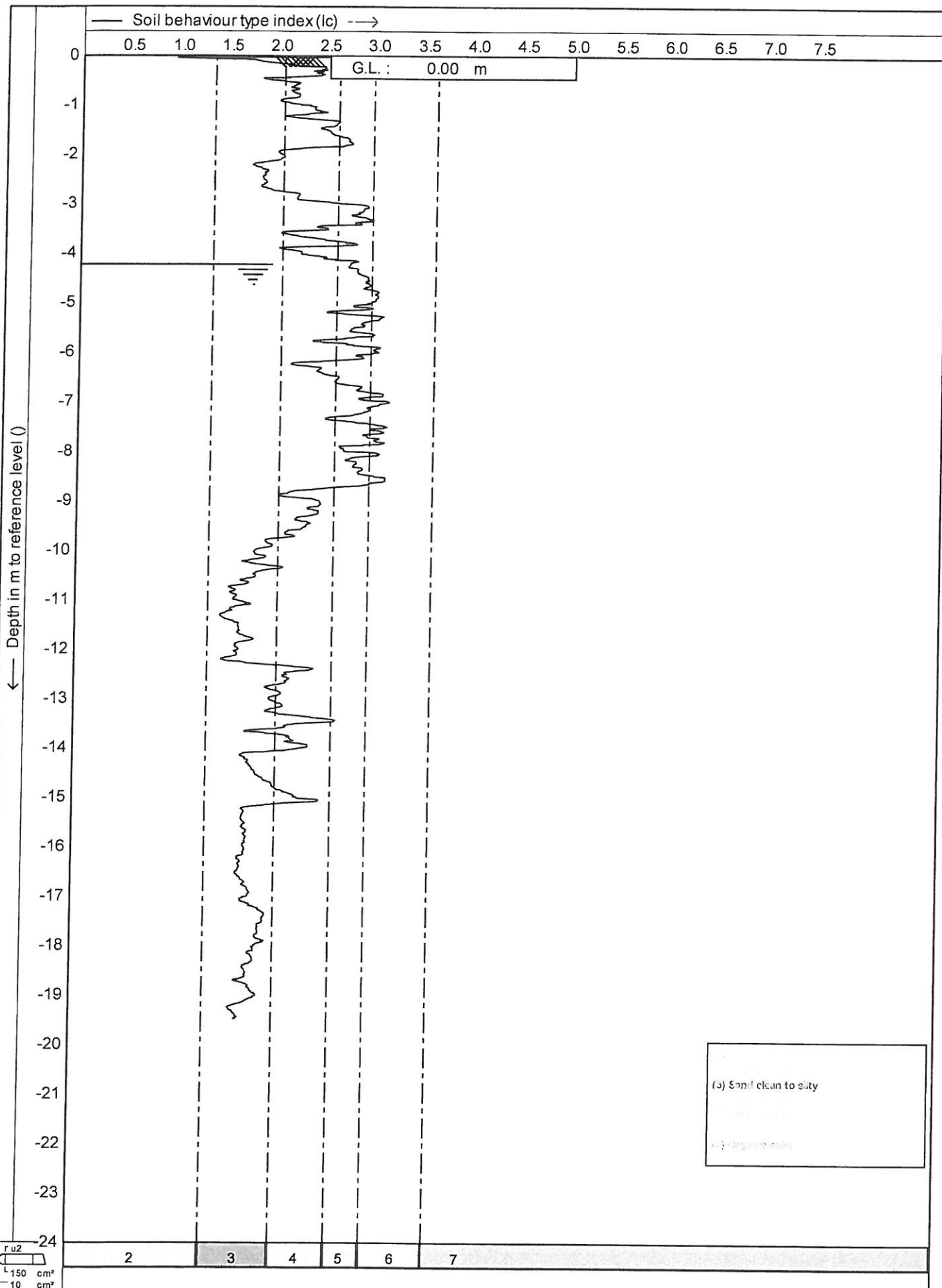
Cone no. : C10CFIP.E60

Project no. : 02CGL11

CPT no. : 01

9/14





Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

Location: Tauriko Lakes - Tauriko

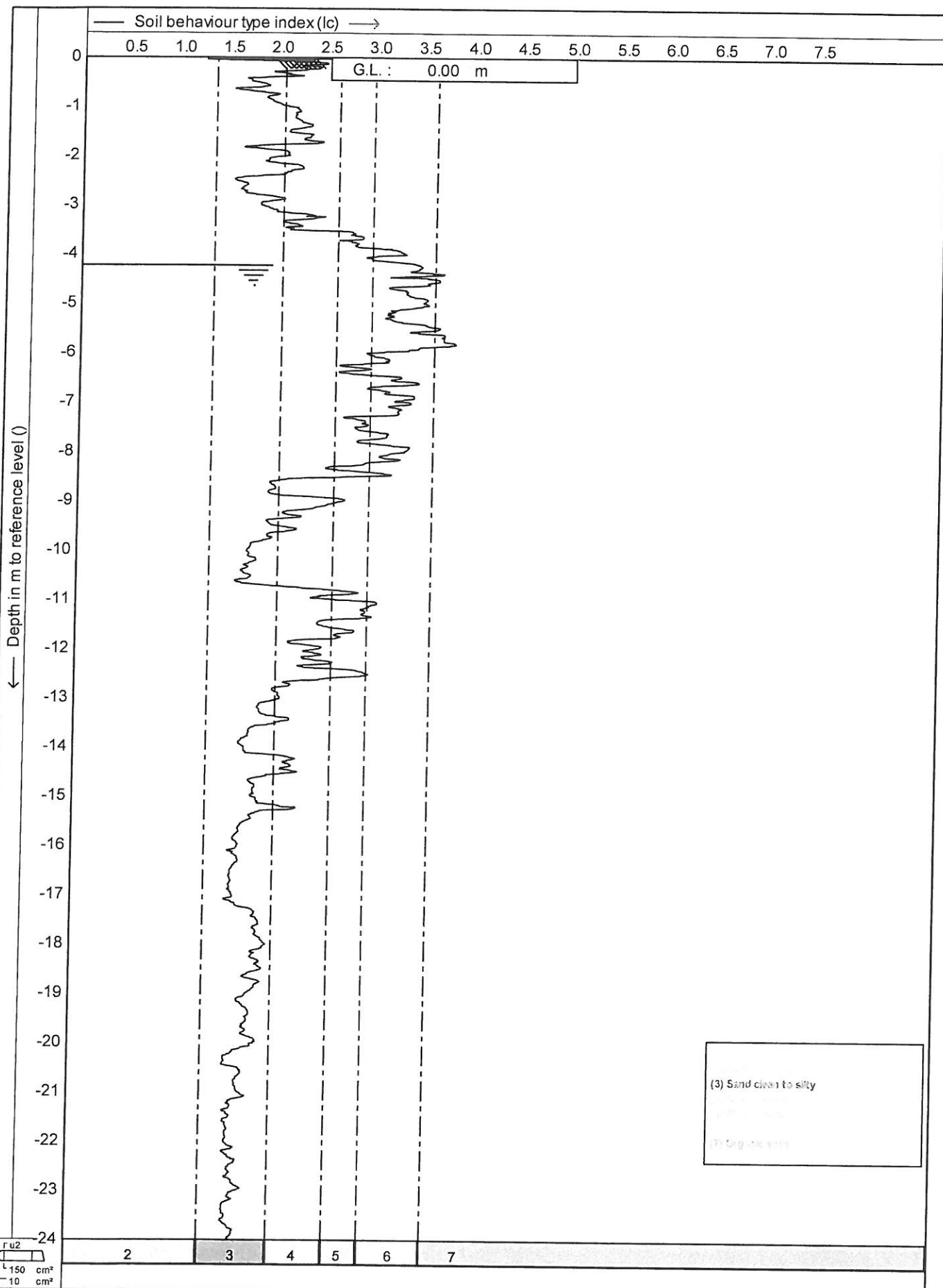
Date : 24-9-2008

Cone no. : C10CFIIP.E60

Project no. : 02CGL11

CPT no. : 02a

9/14



Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

Location: Tauriko Lakes - Tauriko

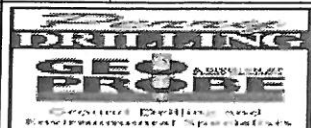
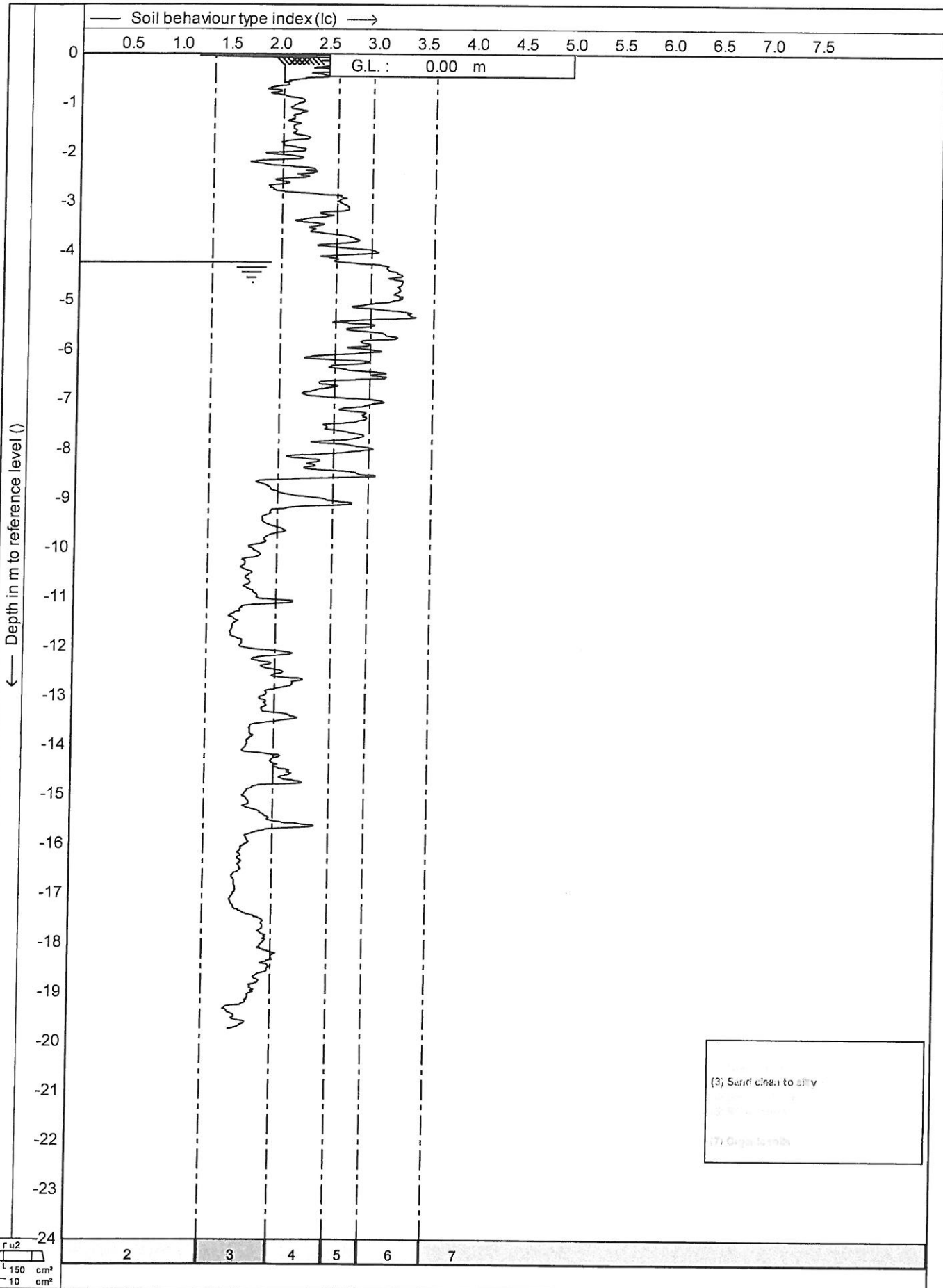
Date : 24-9-2008

Cone no. : C10CFIIP.E60

Project no. : 02CGL11

CPT no. : 03

17/28



Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

Location: Tauriko Lakes - Tauriko

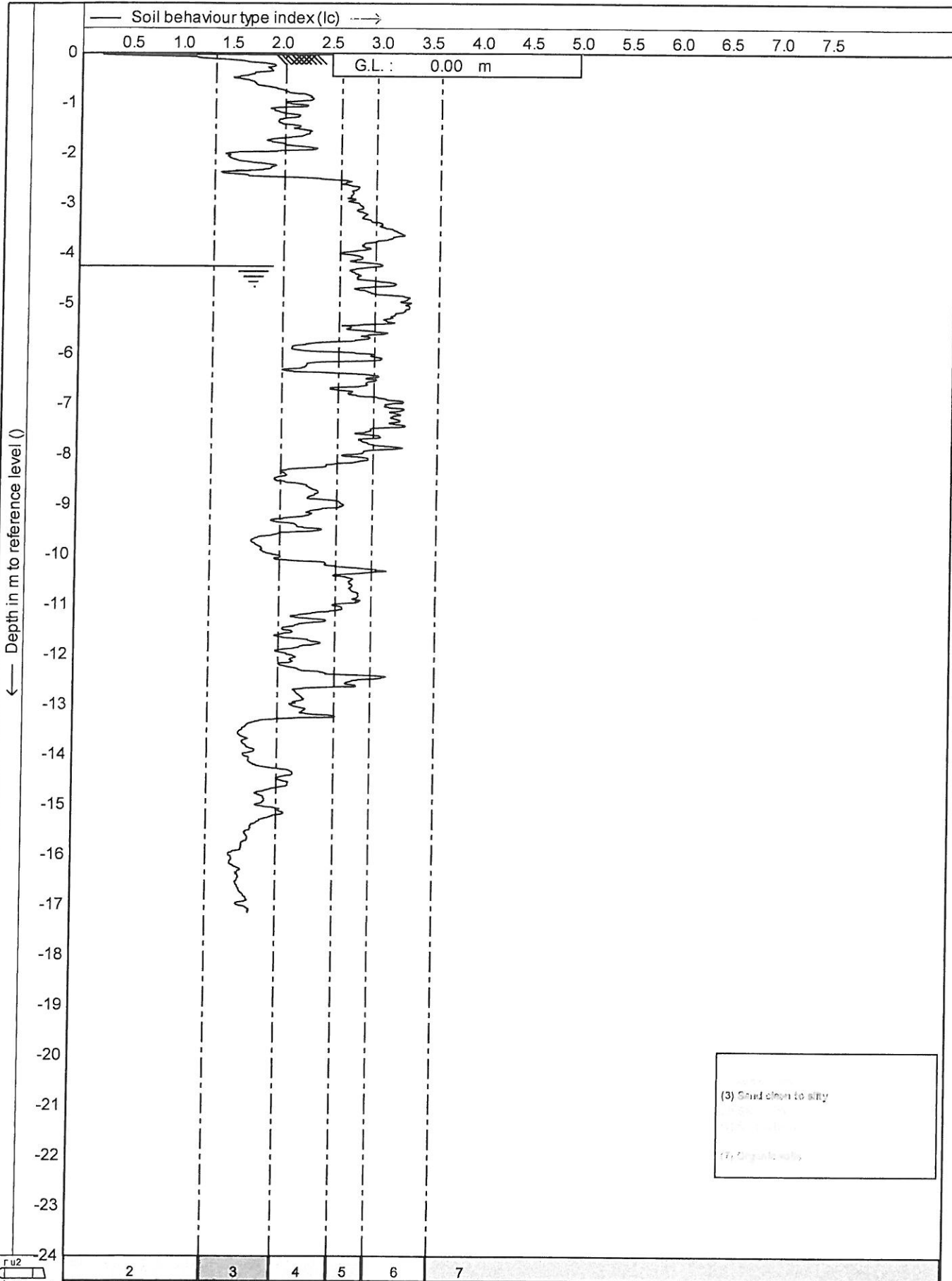
Date : 25-9-2008

Cone no. : C10CFIP.E60

Project no. : 02CGL11

CPT no. : 04

9/14



Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

Location: Tauriko Lakes - Tauriko

Date : 25-9-2008

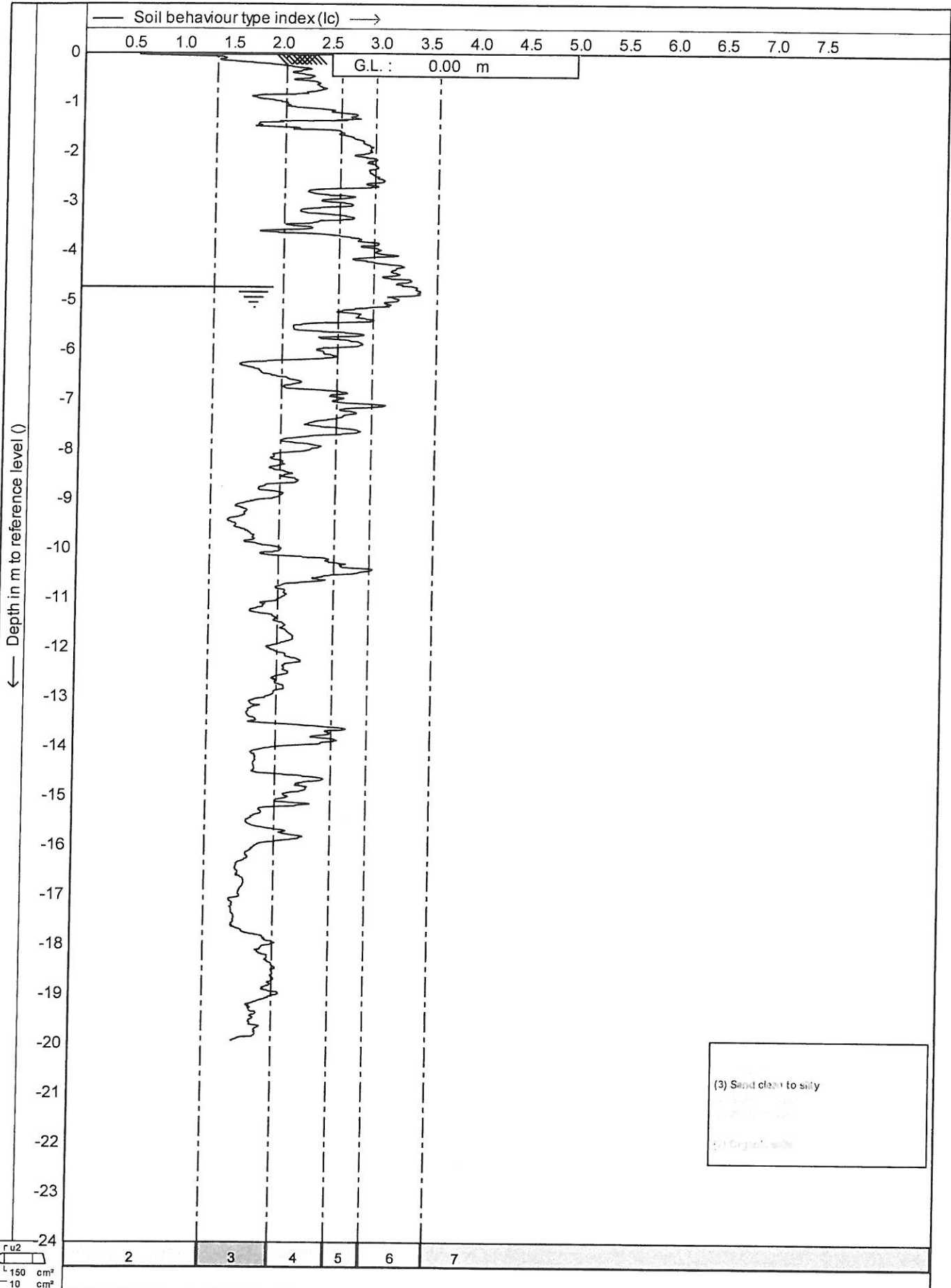
Cone no. : C10CFIP.E60

Project no. : 02CGL11

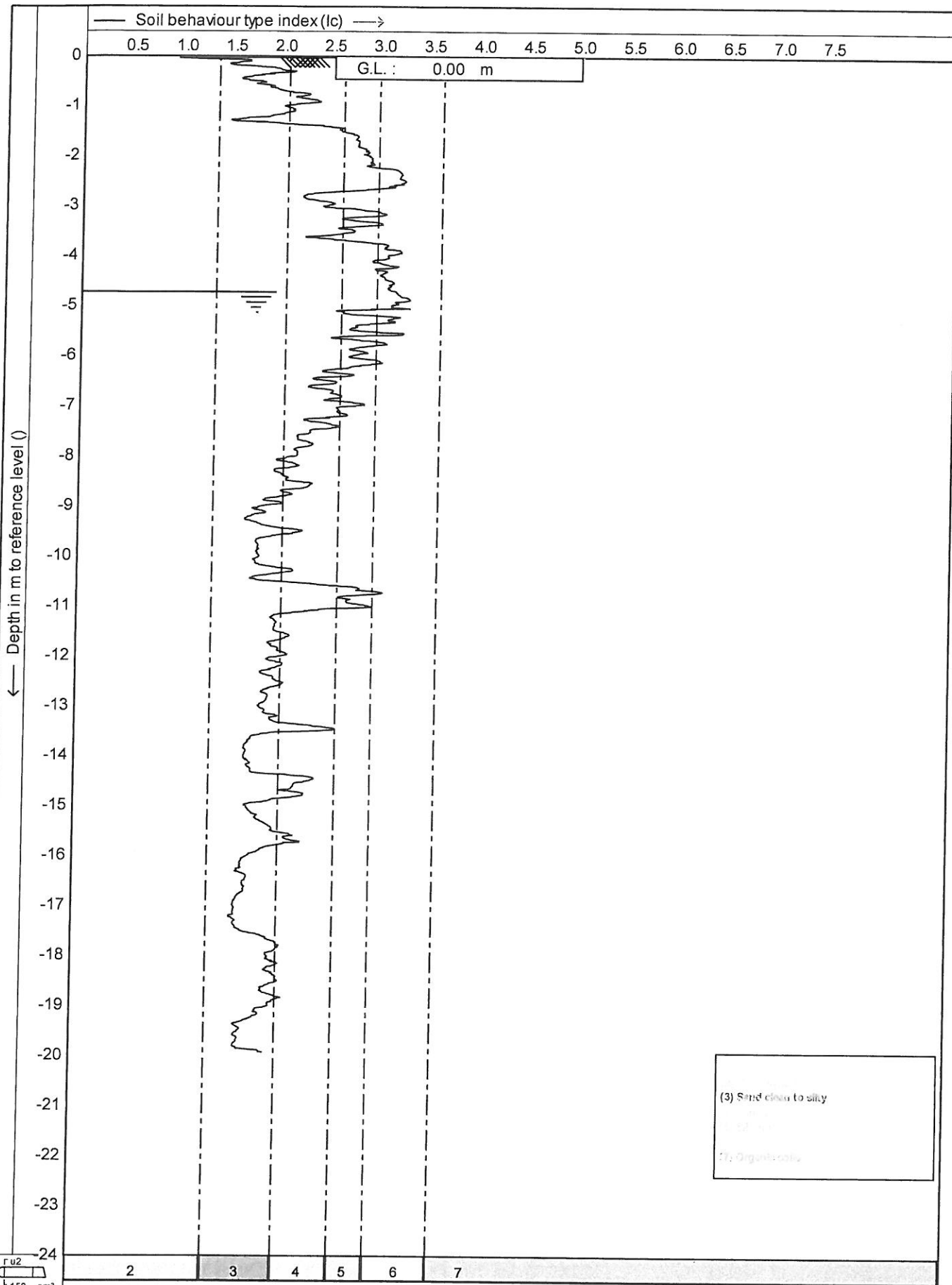
CPT no. : 05

9/14





Test according A.S.T.M. Standard D 5778-95		Date : 25-9-2008	
Project : Kennedy Road - Powerco Substation		Cone no. : C10CFIIP.E60	
Location: Tauriko Lakes - Tauriko		Project no. : 02CGL11	
		CPT no. : 06	9/14



Test according A.S.T.M. Standard D 5778-95

Project : Kennedy Road - Powerco Substation

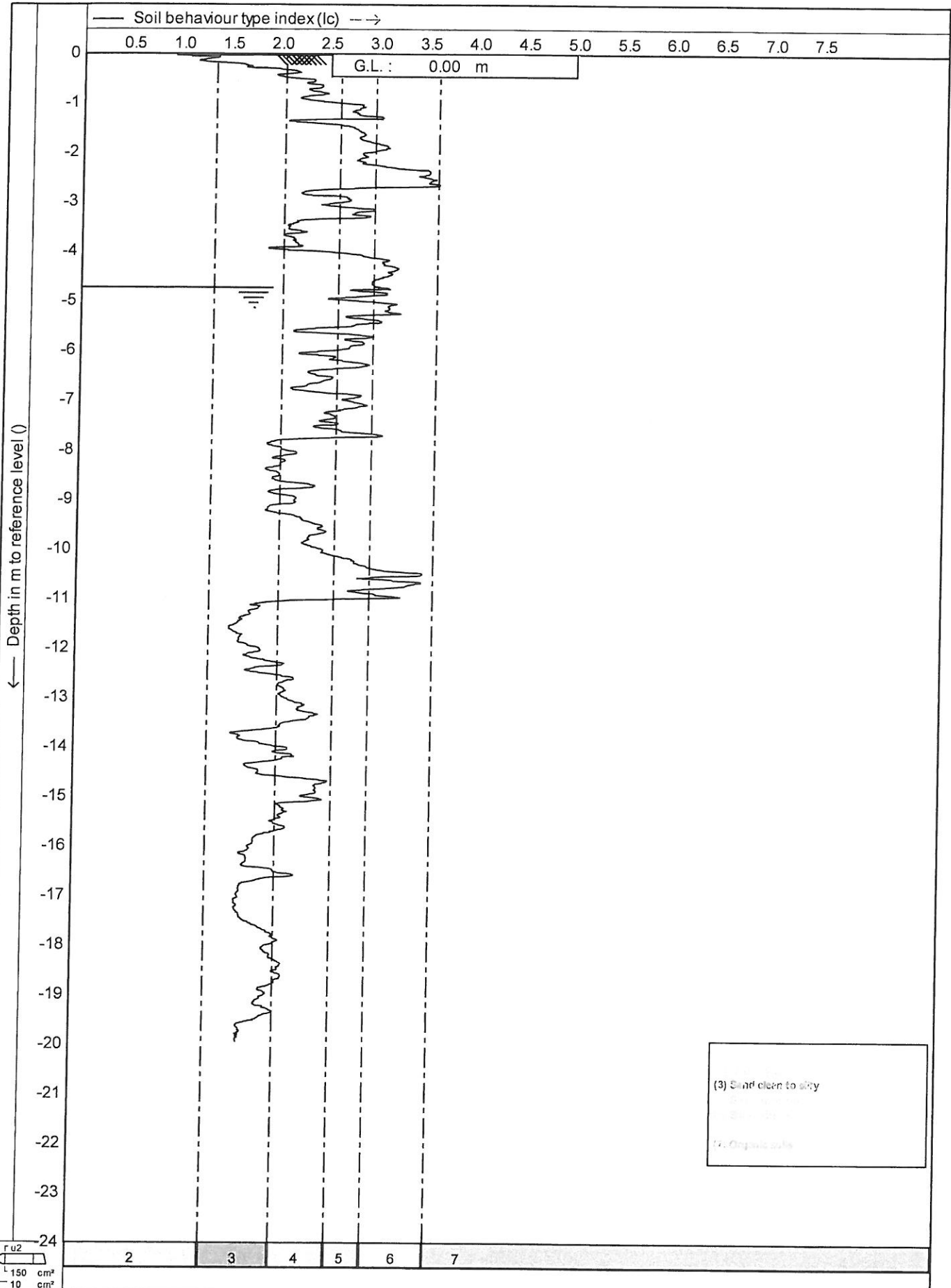
Location: Tauriko Lakes - Tauriko

Date : 25-9-2008

Cone no. : C10CFIIP.E60

Project no. : 02CGL11

CPT no. : 07



Test according A.S.T.M. Standard D 5778-95		Date : 25-9-2008	
Project : Kennedy Road - Powerco Substation		Cone no. : C10CFIIP.E60	
Location: Tauriko Lakes - Tauriko		Project no. : 02CGL11	
		CPT no. : 08	9/14

17 April 2014

Venture Developments
Unit 23
38 Ashley Place
Papamoa
TAURANGA 3118

Civil
Civil

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

FORM G2; Code of Practice for Development of the TDC

1 Ellesmere Close, The Lakes, Lot 754, DP 463737

I hereby confirm that;

- 1) I am a professional person, appropriately qualified with experience in geotechnical engineering to ascertain the suitability of the land for building development and was retained as the Soils Engineer to the above development.
- 2) An appropriate level of site investigation and construction supervision has been carried out under my direction.
- 3) In my professional opinion, not to be construed as a guarantee, I consider that;
 - a) N/A.
 - b) N/A.
 - c) The completed works give due regard to all land slope and foundation stability considerations.
 - d) The filled ground is suitable for the erection thereon of residential buildings not requiring specific design in terms of NZS 3604:2011 and related documents.
 - e) The original ground not affected by filling is suitable for the erection thereon of residential buildings not requiring specific design in terms of NZS 3604:2011 and related documents.
- 4) This professional opinion is furnished to the Council and the owner for their purpose alone, on the express condition that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection for any dwelling.

Yours faithfully



Bruce Cameron
Civil Engineer, CPEng, MIPENZ, BE Civil, NZCE
14013524/1 Ellesmere Close

CIVIL LIMITED
PO Box 9408
Tauranga

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Fax: 07 577 6693