Tauranga City

LIM

Land Information Memorandum

Land Information Memorandum

This Land Information Memorandum has been prepared for:

Applicant	**Bower Real Estate**
Client	**K Steward & A Burr**
Property Address	**16 Okataina Street** **Tauranga**
Legal Description	**Lot 2 DP 514907** **1/2 Share of Lot 3 DP 514907** **1/4 Share of Lot 973 DP 507200**
Application Date	**2 April 2026**

This Land Information Memorandum has been prepared for the purposes of Part 6 of the Local Government Official Information and Meetings Act 1987. It is based on a search of Council records only. Additional information relevant to the property may be held on Council's property file or within other Council systems; however, is not included in this Land Information Memorandum. 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. This Land Information Memorandum has been prepared for the applicant only. The Council accepts no responsibility or liability for any use of this report by third parties or for any reliance placed on its contents by persons other than the applicant. This Land Information Memorandum is valid only if reproduced in full and applies only as at the date of issue.

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

Contents

Services Information

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

Service Record

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

Note:

1. Please note that the existence of a watermain along a property frontage does not necessarily mean that a connection is available. This may need to be provided at the applicant's expense.
2. If the land is supplied with drinking water by Tauranga City Council as a Water Supply Authority, any conditions (generally set out in Tauranga City Council's Supply of Water Bylaw 2019 applicable to that supply are included in this Land Information Memorandum.
3. If the land is supplied with drinking water by a networked supplier other than the WSA, any conditions that are applicable to that supply are included in this Land Information Memorandum.
4. If the land is supplied with drinking water by the owner of the land, any information Council has about the supply is included in this Land Information Memorandum.
5. Any information notified to the territorial authority by a drinking-water supplier under Section 206(1) Water Services Act 2021 is included in this Land Information Memorandum.
6. Water services legislation is transitioning from the Water Services Act 2021 to the local Government (Water Services) Act 2025 and associated amendments. Some information in this Land Information Memorandum may reflect the previous legislative framework and may be subject to change or reinterpretation under the new Act.

Rating and Valuation Details

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

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

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

Valuation Details

Valuation Reference	**06862 046 32**
Capital Value	**$955,000**
Land Value	**$455,000**
Improvement Value	**$500,000**

Rating Details

Current Annual Rates	**$4,110.18**
Balance Owing	**$Nil**

Water Meter Details

Water Meter On Property	**Yes**
Meter Type	**Individual Meter**
Water Rates Owing	**$83.46**

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

Note:

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

Infrastructure Funding and Financing (IFF) Levy Details

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

IFF Levy Details

Current Annual IFF Levy	**$86.98**
Balance Owing	**$Nil**

Building Information

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

This Land Information Memorandum provides a summary of key building-related information and does not include all documents held by Council. It is recommended that the property file is viewed together with this Land Information Memorandum to satisfy any due diligence requirements. The property file may be ordered at the following link: Order a LIM or Property File.

Building Permits and Consents: Information related to Permits (issued prior to 1993) and Consents (issued after 1 January 1993) is listed below. Plans and other associated documents, where held by Council, are available on the property file. Where Council holds an as-built drainage plan, it will be attached to the building appendix of this Land Information Memorandum.

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.

Granny Flats: From 15 January 2026, a small standalone dwelling may be constructed without a building consent, if all exemption conditions are met under Schedule 1A of the Building Act 2004. Further information is available at the following link: Guidelines on Building a Granny Flat.

Permits and Consents

Building Consents

Date Issued	Description of Work	BC Number	CCC Issued
18/12/18	New Dwelling. 3 Bedrooms, 2 Bathrooms, Double Garage	182234	Yes

Compliance Schedule	**N/A**
Requisitions	**None**

City Planning

The Operative Tauranga City Plan

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

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

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

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

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

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

To view the Operative Tauranga City Plan please click here.

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

Development Contributions

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

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

Transportation Strategy & Planning and Reserve Management Plans

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

Relevant Planning Information

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

Zone: Operative Tauranga City Plan	**Medium Density Residential**
Identified Plan Areas	**None Known**
Utilities/Designations	**None**
Protected Heritage/Notable or Groups of Trees, or Protected Buildings	**None Known**
Archaeological or Heritage Sites	**None Known**

Certificates, Notices, or Orders Affecting the Land

Description	**Date Issued**
Consent Notice	30/03/17*

Resource Consents *(Resource Management Act 1991)*

Description	**Date Granted**	**RC Number**
Subdivision and Land Use Consent	21/12/12	21332
Change Conditions of RC21332	11/04/14	21332-04
Change Conditions of RC21332	13/07/15	21332-08
Resource Consent – 2-Lot Subdivision	25/07/17	25903

Comments:

*Lots 2 and 3 DP 514907being a subdivision of Lot 237 DP 507200.

Land Development

The following information relates to land development and landform characteristics. It is based on information held by council and may include reports, assessments, and other documentation relevant to site development. This information may not reflect the current on-site conditions, or any work undertaken that is not known to council.

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

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

Comments:

Consent Notice

Refer Consent Notice dated 30 March 2017 together with Geotechnical Completion Report by Coffey Services (NZ) Limited, reference GENZTAUC13086AP-AK, dated 17 February 2017.

Documentation Relevant to the Subject Property

Refer the following documentation:

1. Retaining Wall Design report by The Engineer Limited, dated 27 March 2018.
2. Retaining Wall Review Report by CHS Engineers Limited, reference 062/18, dated 11 December 2018.
3. Geotechnical Plan Review by Coffey Services (NZ) Limited, reference 773-TRGGE226846, dated 9 February 2019.
4. Addendum to Geotechnical Plan Review by Coffey Services (NZ) Limited, reference 773-TRGGE226846AB, dated 22 February 2019.

Natural Hazards

This information relates to nation-wide, city-wide, or region-wide studies and may not reflect the on-site situation or natural hazard investigations and mitigation done on a site-specific property level. It is recommended that hazards identified in this section of the Land Information Memorandum be considered both individually and in combination, as their cumulative effects may influence the overall level of risk.

Flooding

Flood hazard information referenced here includes modelling produced at a nation-wide scale by Earth Sciences New Zealand (ESNZ). The national tool provides consistent flood hazard data across New Zealand and is zoomable to street level, but not to individual properties. For property-specific flood hazard information that may affect this property please refer to the following section of this Land Information Memorandum titled, “Natural Hazards Relevant to the Subject Property”. The modelling produced by ESNZ is available to view at the following link: Flood Hazard Modelling.

Microzoning for Earthquake Hazards

The Council has received reports and results that assessed Tauranga City's liquefaction vulnerability during earthquakes.

Different properties face varying probability levels of liquefaction damage. The maps assess natural ground conditions only and don't consider recent human activities like earthworks, ground improvements, or foundation design that may reduce liquefaction risk. Detailed, site-specific studies by qualified practitioners may take precedence over these city-wide assessments.

Liquefaction information may affect property use and development, including building consent requirements (Building Act 2004, NZ Standard AS/NZ 1170, TCC Infrastructure Development Code Chapter 10.10.6), subdivision consents (Resource Management Act), and infrastructure design.

Further information and reports are available at: Earthquakes and Liquefaction.

Landslide Susceptibility

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

Shallow Groundwater

Council has received an assessment of shallow groundwater conditions in Tauranga City. The assessment analysed groundwater monitoring data from 2015-2021 across 97 monitoring sites and developed predictive models for future conditions under sea level rise.

Shallow groundwater occurs close to the surface throughout Tauranga's low-lying areas. Groundwater levels fluctuate with tides, rainfall, and seasonal variations. In some areas, groundwater sits less than 1 meter below ground surface. The assessment forecasts that rising groundwater levels will occur as sea levels rise.

Development Implications: This information may affect property use and development, including building consent requirements (Building Act 2004), subdivision consents (Resource Management Act), and infrastructure design. Site-specific geotechnical investigations may be required to assess local groundwater conditions and mitigation measures.

The full technical report and spatial datasets are available at: Groundwater.

Bay of Plenty Regional Council

Further information regarding natural hazards held by the Bay of Plenty Regional Council that may be relevant to this property can be found at the below links. Further enquiries may also be made by contacting the Bay of Plenty Regional Council on 0800 884 880.

Bay of Plenty Regional Council – Natural Hazards
Bay Hazards
Bay Explorer

Natural Hazards Relevant to the Subject Property

The following information relates to natural hazards identified at a site-specific scale. It is based on information held by Council and may not reflect the current on-site conditions or any hazard investigations or mitigation measures that have occurred since, or that are not known to Council.

Further information about natural hazards held by Tauranga City Council can be found at the following link: Tauranga City Council – Natural Hazards and may also be identified on Council's mapping website, Mapi.

Council is not aware of any natural hazards identified at a site-specific scale for this property.

Additional Information

Licences Affecting the Land or Buildings

None

Signed for and on behalf of the Council:

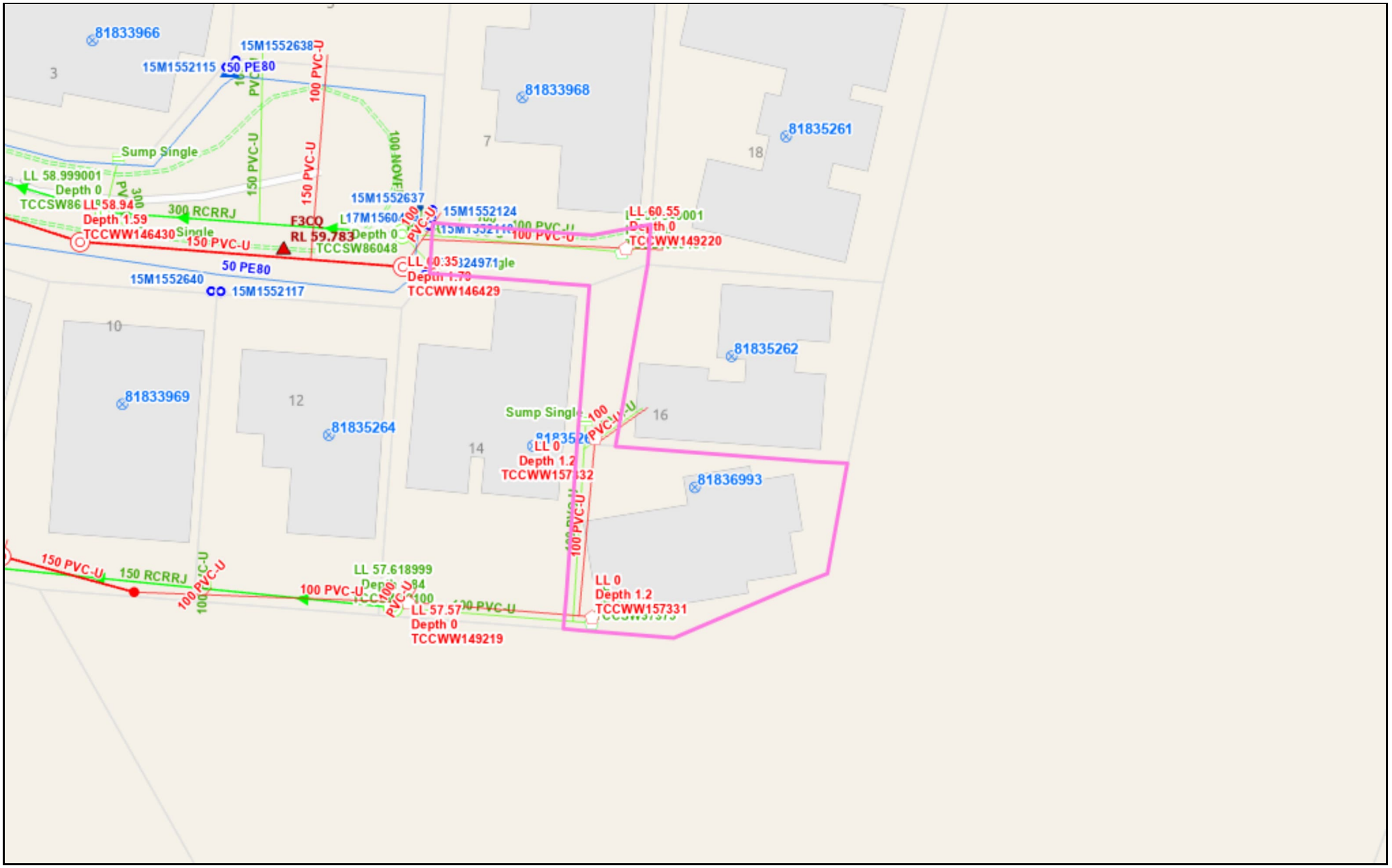
Position held: Senior LIM & Property Files Officer

Date: 20 April 2026

Tauranga City

Services Plan

Tauranga City



Produced by - Tauranga City Council

Printed 20/04/2026

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Services Plan

0 5 10 m
Meters

Scale 1: 500 @A4

N

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

Tauranga City

Services Key

Water

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

Stormwater

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

Wastewater

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

Other

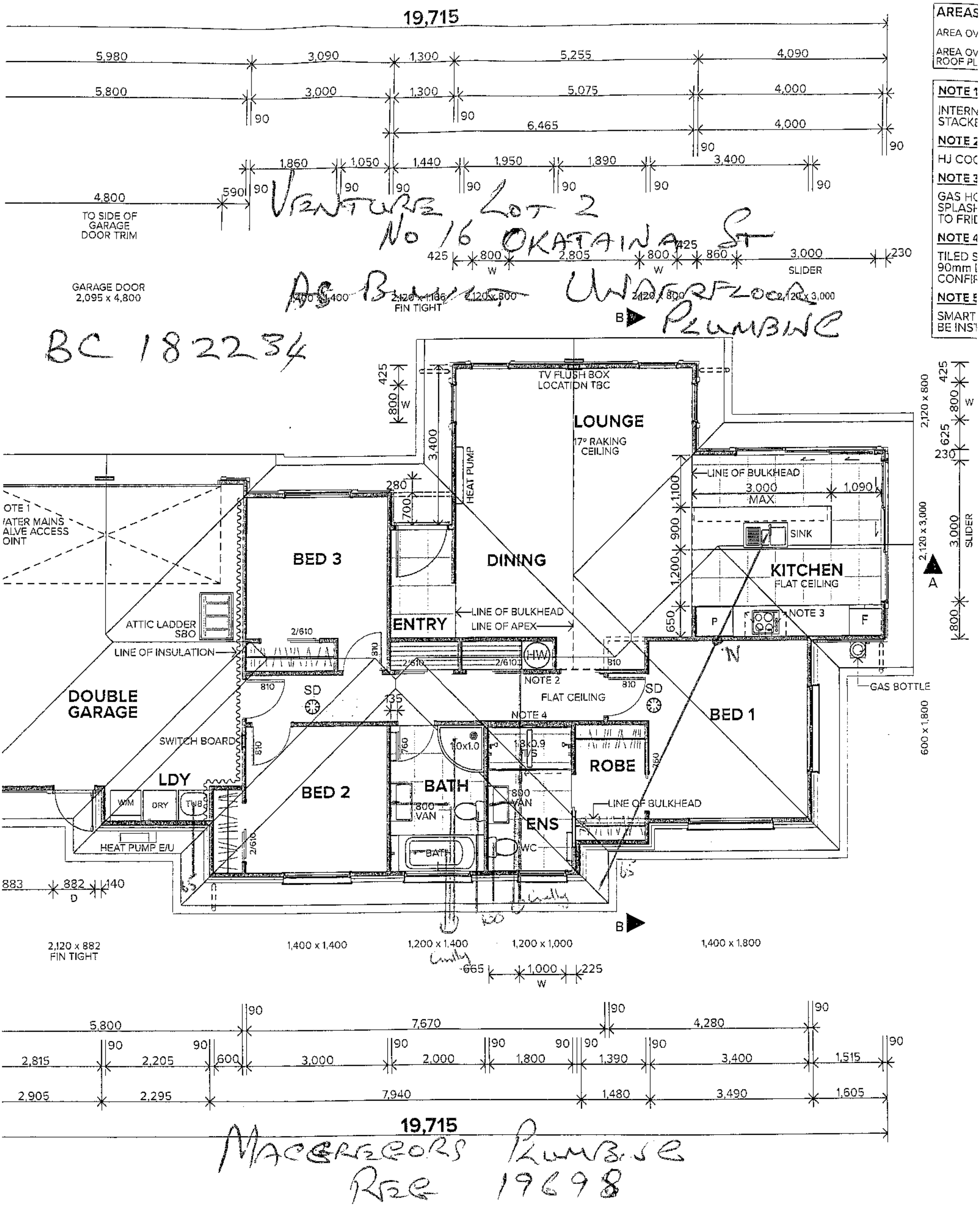
- Abandoned assets and lines
- Private assets and lines
- Geotech Utility Buffer

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

Tauranga City

Building Information

Tauranga City


19,715
Venture Lot 2
No 16 Okataina St
As Built Underfloor Plumbing
BC 182234
AREAS
NOTE 1
NOTE 2
NOTE 3
NOTE 4
NOTE 5
GARAGE DOOR
2,095 x 4,800
TO SIDE OF GARAGE DOOR TRIM
LOUNGE
17° RAKING CEILING
TV FLUSH BOX LOCATION TBC
HEAT PUMP
DINING
ENTRY
KITCHEN
FLAT CEILING
SINK
LINE OF BULKHEAD
LINE OF APEX
BED 3
BED 2
BED 1
BATH
ENS
ROBE
LDY
DOUBLE GARAGE
ATTIC LADDER SBO
LINE OF INSULATION
SWITCH BOARD
HEAT PUMP E/U
GAS BOTTLE
FLAT CEILING
WATER MAINS VALVE ACCESS POINT
SLIDER
19,715
Macgregors Plumbing
Reg 19698

Drainage as built plan

0705

Date: 13/3/19

Lot or Street No: LA02

Suburb: The Lakes

Street Name: 16 Orataina st

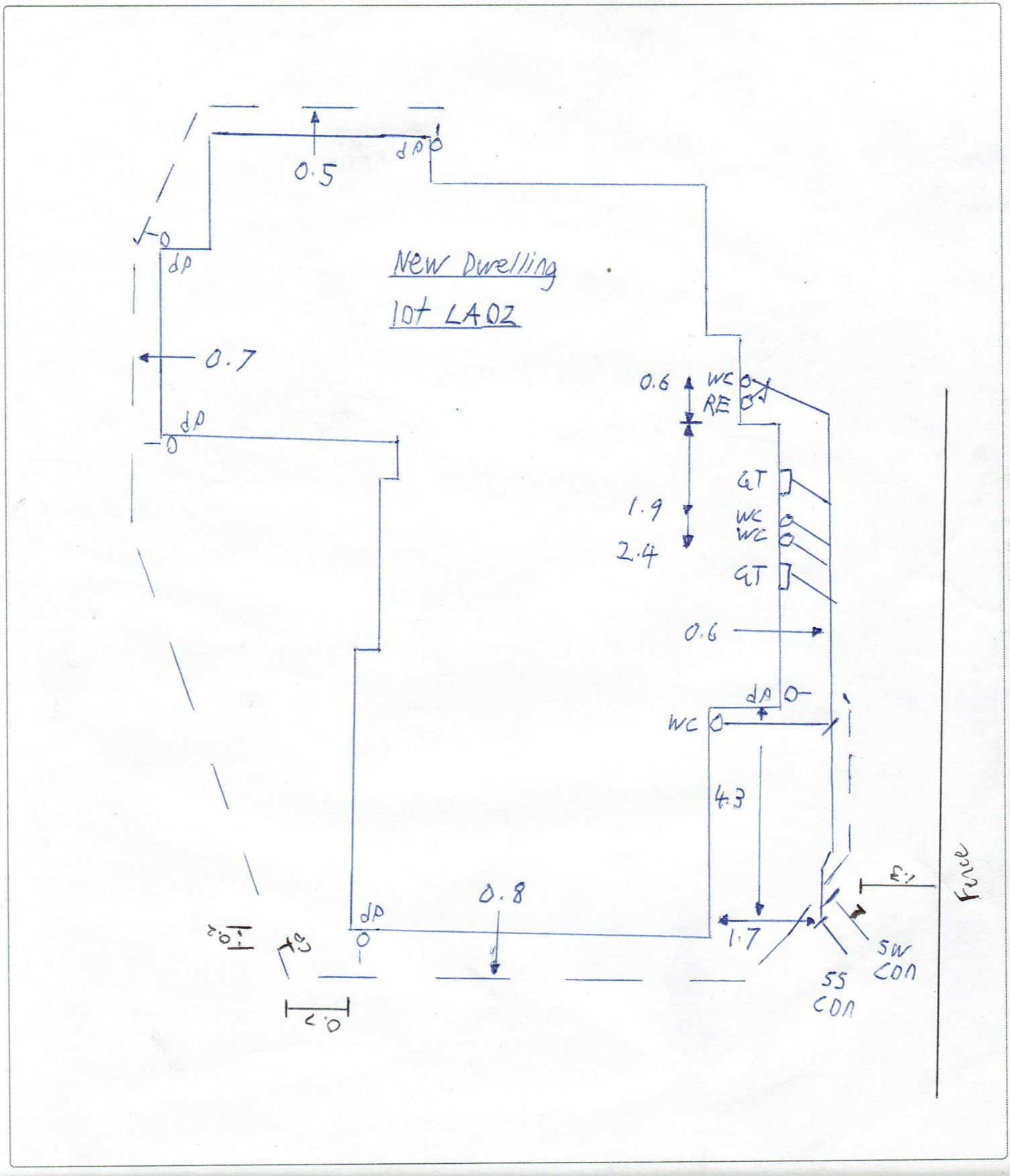
Consent No: BC182234

Owner/Developer: Venture developments

Drainlayer: James Elliston

Registration No: 18782

BAY DRAINAGE & EARTHWORX
James Elliston
M 027 552 1637
E james@baydrainage.co.nz



Planning Information

Tauranga City

TAURANGA CITY COUNCIL

CONSENT NOTICE PURSUANT TO SECTION 221 RESOURCE MANAGEMENT ACT 1991

TCC Reference: RC21332

IN THE MATTER OF Plan DP 507200

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, the Tauranga City Council hereby certifies that by way of resolutions passed under delegated authority on the 21st of December 2012, 24th of July 2013, 7th of November 2013, 28th of January 2014, 11th of April 2014, 16th of March 2015 and the 19th of May 2016 the following conditions were imposed on the subdivision consent for Lot 1004 DP 501173:

That a Consent Notice be registered on the Certificate of Title advising the owner and subsequent owners thereof, of the following requirements to be complied with on a continuing basis:

For Lots 236 to 239 (inclusive) and 413 to 503 (inclusive), requiring that:

a) *All development within these Lots, including but limited to the design and construction of any building or structure requiring a Building Consent in accordance with the Building Act 2004, shall be undertaken in accordance with the requirements and recommendations in the Geotechnical Completion Report prepared by Coffey Geotechnics (NZ) Limited entitled 'The Lakes - Stages 3G, 3H & Lots 236-239 (Stage D) – Geotechnical Completion Report', referenced GENZTAUC13086AP-AK (Revision 'Final') and dated the 17th of February 2017. Tauranga City Council reference TL9666.*

For Lots 413, 441 & 442, 444 to 455 (inclusive), 457, 458, 460, and 493 to 503 (inclusive), requiring that:

b) *These Lots contain building restriction areas labelled F to N (inclusive), RR to RZ (inclusive) and SA to SL (inclusive) as shown on the survey plan and within the Geotechnical Completion Report prepared by C Geotechnical Completion Report prepared by Coffey Geotechnics (NZ) Limited entitled 'The Lakes - Stages 3G, 3H & Lots 236-239 (Stage D) – Geotechnical Completion Report', referenced GENZTAUC13086AP-AK (Revision 'Final') and dated the 17th of February 2017 (see plan number 13086AP-AK within Appendix A). All buildings or structures requiring a Building Consent in accordance with the Building Act 2004, shall be located outside of the identified building restriction areas unless a specific design is certified by a Category 1 geo-professional.*

For Lots 236 to 239 (inclusive), 413, 458 to 460 (inclusive), and 493 to 503 (inclusive), requiring that:

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

For Lots 238 and 239, requiring that:

d) Any new dwelling being constructed, or any existing dwelling being extended greater than 25% of the existing floor area, that is above the ground floor level (i.e. being second and/or third storey), shall be designed and constructed to achieve an internal road-traffic design sound level of 40dBL$_{Aeq(24h)}$ inside all habitable rooms with the ventilating windows open.

At the time of building consent application an acoustic design report shall be provided to Council from a suitably qualified and experienced acoustics expert demonstrating compliance with the abovementioned sound level requirement. If this cannot be achieved, then:

The windows of all habitable rooms shall be constructed with glazing that includes a laminated pane that is at least 6.38 millimetre thick and covers the glazed area, and a ventilation system shall be installed to either:

Consist of an air conditioning unit(s) provided that the noise level generated by the unit(s) must not exceed 40dBL$_{Aeq(30s)}$ in the largest habitable room (excluding bedrooms) and 35dBL$_{Aeq(30s)}$ in all other habitable rooms; when measured 1 metre from any grille or diffuser, or

- *A system capable of providing a least 15 air changes per hour in the largest habitable room (excluding bedrooms) and at least 5 air changes per hour in all other habitable rooms, and*
- *The noise level generated by the system must not exceed 40dBL$_{Aeq(30s)}$ in the largest habitable room (excluding bedrooms) and 35dBL$_{Aeq(30s)}$ in all other habitable rooms; when measured 1 metre from any grille or diffuser, and*
- *The internal air pressure must be no more than 10 Pa above ambient air pressure due to the mechanical ventilation, and*
- *Where a high air flow rate setting is provided, the system must be controllable by the occupants to be able to alter the ventilation rate with at least three equal progressive stages up to the high setting.*

The above requirements do not apply if it can be demonstrated by way of prediction or measurement by a suitably qualified and experienced acoustic expert that the road-traffic noise level from State Highway 36 is less than 55 dBL$_{Aeq(24h)}$ on all facades of any addition, extension or alteration, or new dwelling which fronts State Highway 36.

For Lots 237 to 239 (inclusive), requiring that:

e) An acoustic fence constituting a close board timber fence with battens over the joins as illustrated within Figure 2 of the Hegley Acoustics Consultant's report dated 2 June 2015 shall be maintained on the boundary of the lot in the location as shown within Figure 1 of the Hegley Acoustics Consultants report dated 2 June 2015 (Tauranga City Council Objective reference A1424053). The fencing shall be maintained at all times to ensure its acoustic integrity is maintained.

For Lots 493 to 503 (inclusive), requiring that:

f) The disposal of wastewater effluent from the site shall be by way of privately-owned on-site pumped connection to Council's reticulated wastewater infrastructure.

All costs associated with the installation, operation, maintenance and replacement of this pumped system shall be met by the landowner.

DATED at Tauranga this **30th** day of **March 2017**

……

Authorising Officer
Tauranga City Council

The Lakes 2012 Limited
C/- Harrison Grierson Consultants Limited
PO Box 1199
Tauranga 3140

Attention: David Needham

RESOURCE MANAGEMENT ACT 1991
SUBDIVISION AND LAND USE RESOURCE CONSENT DECISION – RC21332

Tauranga City Council resolves:

That pursuant to Sections 104,104B and 104D of the Resource Management Act 1991:

The Non-Complying Subdivision being a 859 lot subdivision (inclusive of one large lot) and 33 access lots, with an alternative Stage K subdivision option layout that will create 857 lots (large lot inclusive) and 34 access lots, along with 22 roads, 19 reserves and service infrastructure to be vest in Council on land that is potentially contaminated and zoned Greenbelt, Passive Open Space, Large Lot Residential and Suburban Residential

And;

The Land Use Activity application for future residential development on proposed lots 508 to 512 and 562 to 564 to develop in accordance with the Suburban Residential permitted activity conditions

By The Lakes 2012 Limited on land comprising the balance of The Lakes Stage 2 and Stage 3 legally described as Pt Lots 9, 10 and 11 DP 364444 and Pt Lot 103 DP 40802, is granted consent.

That pursuant to Section 113 of the RMA – the reasons for the decision are as per the recommendation:

The proposed activity will not be contrary to the purposes and principles of the RMA.

The actual and potential adverse effects of the proposal on the environment are considered to be less than minor.

The proposal will be reasonably consistent with the relevant objectives and policies of the Tauranga District Plan and Proposed Tauranga City Plan.

The proposal will be reasonably consistent with the relevant objectives and policies of the Regional Policy Statement and Proposed Regional Policy Statement.

There were no principle issues in contention.

That pursuant to Sections 108 and 220 of the RMA, this consent is subject to the following conditions:

1. *The proposal shall proceed in accordance with the application submitted including:*

   - *The Assessment of Environmental Effects prepared by Harrison Grierson Consultants Limited entitled "The Lakes – Balance Stage 2 and Stage 3", referenced 1520-132631-01, dated October 2012;*

   - *Further Information prepared by Harrison Grierson Consultants Limited entitled "RC21332 – The Lakes – Stage 2/3 Further Information Response", referenced 1520-132631-01, dated 23 November 2012;*

   - *Further Information prepared by Harrison Grierson Consultants Limited entitled "Stage 2/3 at The Lakes", referenced 1520-132631-01, dated 16 December 2012;*

   - *The Landscape Design Company Report dated 26 November 2012;*

   - *The Shrimpton & Lipinski Report entitled "Pyes Pa West Urbanisation Development, Tauranga – Geotechnical Assessment Report' referenced 16944, dated October 2003;*

   - *The Coffey Geotechnics Report entitled "Geotechncial Assessment Report – Suitability of Site for Residential Subdivision The Lakes Subdivision – Stages 2 & 3, Tauriko, Tauranga", referenced GENZTAUC13086AD, dated 17 August 2012;*

   - *The Archaeology Report prepared by Heritage Consultants entitled "Preliminary Archaeological Survey and Assessment of Effects – Proposed Residential Subdivision and Roading Development", dated April 2003;*

   - *The Emails received by Council from David Needham sent at;*

     - *3:41pm on 26 November 2012;*
     - *8:30am on 27 November 2012;*
     - *11:23am on 28 November 2012;*
     - *11:08am on 28 November 2012;*
     - *10:14am on 18 December 2012;*
     - *2:54pm on 19 December 2012;*
     - *9:51am on 21 December 012;*

   - *The Scheme Plans prepared by Harrison Grierson Consultants Limited entitled "Proposed Subdivision of Part Lots 10 & 11 DP 364444 & Pt Lot 103 DP 408042" referenced;*

     - *132631-23-RC100, rev 4, dated 17 December 2012;*
     - *132631-23-RC101, rev 3, dated 17 December 2012;*
     - *132631-23-RC102, rev 2, dated 23 November 2012;*
     - *132631-23-RC103, rev 2, dated 23 November 2012;*
     - *132631-23-RC104, rev 2, dated 23 November 2012;*
     - *132631-23-RC105, rev 2, dated 23 November 2012;*

- *132631-23-RC106, rev 2, dated 23 November 2012;*
- *132631-23-RC107, rev 3, dated 5 December 2012;*
- *132631-23-RC108, rev 4, dated 14 December 2012;*
- *132631-23-RC109, rev 4, dated 19 December 2012;*
- *132631-23-RC110, rev 3, dated 17 December 2012;*
- *132631-23-RC112, rev 2, dated 23 November 2012;*

And comply with either one of the following Scheme Plan options;

Option A

- *The Scheme Plan prepared by Harrison Grierson Consultants Limited entitled "Proposed Subdivision of Part Lots 10 & 11 DP 364444 & Pt Lot 103 DP 408042 referenced 132631-23-RC111, rev 2, dated 23 November 2012; or*

Option B

- *The Scheme Plans prepared by Harrison Grierson Consultants Limited entitled "Proposed Subdivision of Part Lots 10 & 11 DP 364444 & Pt Lot 103 DP 408042 referenced 132631-23-RC400, rev 2, dated 5 December 2012 (disregarding Lot 951 which has been subject to area increase);*

- *The following Plans prepared by Harrison Grierson Consultants Limited;*

  - *"Plan of Previous Buildings and Proposed Buffer Zone For Contamination Assessment", referenced 132631-23-RC205, rev 1, dated 23 November 2012;*
  - *"Proposed Pedestrian and Shared Pedestrian/Cycleway Network", referenced 132631-23-RC202, rev 2, dated 27 November 2012;*
  - *"Proposed Road Profiles", referenced 132631-23-RC203, rev 2 dated 19 November 2012;*
  - *"Proposed Finish Contours", referenced 132631-23-RC200, rev 1, dated 19 October 2012;*
  - *"Indicative Earthworks Remaining Cut/ Fill Depths", referenced 132631-23-RC201, rev 1, dated 19 October 2012;*
  - *"Bus Tracking Curves 12.5m Rigid Bus", referenced 132631-23-RC204, rev 1, dated 19 October 2012;*
  - *"Proposed Trunk Services Stormwater Plan", referenced 132631-23-RC210, rev 2, dated 18 December 2012;*
  - *"Proposed Trunk Services Sanitary Sewer Plan", referenced 132631-23-RC211, rev 1, dated 19 October 2012;*
  - *"Proposed Trunk Services Potable Water Plan", referenced 132631-23-RC212, rev 1, dated 19 October 2012;*
  - *"Proposed Layout Overlaying City Plan L86", referenced 132631-23-RC300, rev 1, dated 19 October 2012;*
  - *"Proposed Layout Overlaying City Plan L95", referenced 132631-23-RC301, rev 1, dated 19 October 2012;*
  - *"Stage 2 and 3 Developable Areas", referenced 132631-23-RC302, rev 1, dated 19 October 2012;*

Subject to any changes required through compliance with the following conditions

2. *Any staging of subdivision consent by way of s223 / 224 certificates issued on separate survey for this subdivision is appropriate subject to that staging complying with all relevant conditions as listed for that stage within this subdivision consent.*

3. *All matters and works relating to the servicing and accessing of the subdivision, shall be designed, supervised, constructed and certified in accordance with requirements of the Council's' Infrastructure Development Code.*

4. *Prior to any works commencing on the site (exclusive of site clearance or bulk earthworks associated with any Bay of Plenty Regional Council earthworks consent) the consent holder shall submit, to the Council, plans of the proposed activity to and obtain plan approval. Including the following:*
   - *The information and plans required by the Infrastructure Development Code;*
   - *All potential run out areas;*
   - *All flood risk areas;*
   - *Details of any overland flowpaths;*
   - *Details of the works to establish a suitable building platform on each proposed lot;*
   - *Details of the construction of the road to vest and the proposed traffic management measures;*
   - *Details of the construction for all Right of Way lots;*
   - *Details of the sewer extension that is required to service the upstream catchment;*
   - *Details of proposed temporary sanitary sewer pump station;*
   - *Details of design and construction of Detention Ponds and Dams demonstrating the peak flow mitigation required, and how maintenance access is achieved;*
   - *Details of the extent of ponding in extreme rainfall events;*
   - *Details of any culvert upgrade required under proposed roads to vest;*
   - *Details of Fire Fighting system;*
   - *Details of landscaping and planting within Road to vest;*
   - *Details of landscaping and planting of Greenbelt Reserves to vest;*
   - *Details of Recreation Reserves to vest, including development of playgrounds and landscaping (with structural retaining of slopes, accessibility of pathways, featured paving and structural and play equipment to similar standard as illustrated in Photographs received by Council on 18 December 2012)*

5. *All residential lots shall be provided with a separate underground connection to the sanitary sewer, stormwater, water and electricity reticulation system in accordance with the Council's Infrastructure Development Code*

6. *The proposed Right of Way lots 934, 960-991 inclusive (and lot 992 if Scheme Plan Option B prepared by Harrison Grierson Consultants Limited referenced 132631-23-RC400, rev 2, dated 5 December 2012 proceeds) shall be constructed in accordance with the Infrastructure Development Code.*

7. *Prior to the first application for s224 approval, the Kennedy Road Waste Water Pump Station shall be complete and operational.*

8. *All lots with a building platform higher than RL40m Moturiki Datum shall be fed from the Joyce Road water supply.*

9. *Where landscaping is proposed on land to be vested as local purpose Greenbelt reserve or Recreation reserve, the landscaping shall be established and maintained at the consent holders expense. The landscaping shall be maintained for not less than 36 months for Greenbelt and 18 months for Recreation reserve from the date of completion. The date of completion shall be agreed with Council. A maintenance*

bond shall be entered into should vesting occur prior to completion of the maintenance period.

10. *The consent holder shall supply to the Council a set of 'as built' plans of all engineering works in accordance with the Council's Infrastructure Development Code.*

11. *The location of any subsoil drains shall be shown on the as-built drawings submitted to the Council and within the geotechnical completion report required by Condition 16.*

12. *All earthworks design, testing and construction shall be undertaken in accordance with Infrastructure Development Code and the specific requirements of the consent holders appointed Geo-Professional.*

13. *Where earthworks and/or pre-load operations occur over the Council's mains the consent holder shall undertake a CCTV survey of the mains prior to, and upon completion of the earthworks and/or pre-load operations. Monitoring shall continue at regular intervals during the earthworks and pre-load phases of the project as an ongoing check of the condition of the mains and to ensure their serviceability. If damage occurs to the mains during the earthworks and/or pre-load operations the Council will repair the mains at the consent holder's expense, with any payment for repairs or losses arising as a result of the damage shall be paid prior to certification pursuant to Section 224.*

14. *The Consent Holder shall construct a building platform on each proposed lot to avoid the effects of inundation. The platform shall be a minimum of 500mm above the calculated 50 year (2%AEP) storm level.*

15. *Prior to any earthworks which will increase the stormwater runoff into adjoining catchments, the detention dams and/or ponds required to provide peak flow attenuation shall be in operation.*

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

- *Comply with the Council's Infrastructure Development Code QA4 requirements;*
- *Display the position of all designated building platforms and building restriction lines where applicable;*
- *Certify the provision of debris protection bunds where required;*
- *Provide recommendations for the disposal of stormwater;*
- *Provide recommendations for the on going 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;*
- *Determine minimum floor level requirements for lots adjacent to stormwater ponding areas;*
- *Certify that any residual 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;*
- *Comment on removal or amendment of existing land feature/s displayed on Council's GIS.*

17. *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.*

18. *All building line restrictions or designated building platforms shall be clearly identified and dimensioned on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991.*

19. *The consent holder shall, prior to the release of the s223 certificate for the subdivision or any stage of the subdivision, submit to Council's Corporate Information Section three alternative street names for authorisation in accordance with Council's Street Naming Policy (including Iwi consultation), for each proposed new street and lane in the subdivision. The authorised street name signs will be manufactured and erected by the consent holder at the consent holder's expense. All traffic and pedestrian access signage shall be manufactured by an approved certifier and erected by the consent holder at the consent holder's expense.*

20. *All easements required for underground services and rights of way serving lots within the subdivision shall be duly granted or reserved.*

21. *The consent holder shall register an easement in gross in favour of the Council over any stormwater overland flowpath located on private property, including those resulting from overload of the roading primary stormwater system under extreme rainfall conditions.*

22. *The overland flowpath easement shall be shown on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991 and shall be shown as the "Right to Drain Stormwater" and shall be registered on the survey plan under a "Memorandum of Easements in Gross".*

23. *The consent holder shall vest in the Council the following lots as shown on the scheme plan:*

    - *Lots 900-921 inclusive as Road;*
    - *Lots 930, 935, 938, 940, 944, 950 and 952 as Recreation Reserves;*
    - *Lots 933, 943, 945, 948, 949, 951 and Pt Lot 9 DP364444 as Local Purpose: Greenbelt Reserves;*
    - *Lots 931, 936, 937 and 941 as Local Purpose: Accessway Reserves;*
    - *Lot 947 as Local Purpose: Waste Water Reserve;*

    The lots to vest shall be shown on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991.

24. *Prior to vesting of lot 947, the consent holder shall enter into a bond for removal of the temporary waste water pump station and associated Infrastructure. Should modification of the structure plan result in the pump station forming part of the permanent network, then a bond will not be required.*

25. *Pursuant to Section 221 of the Resource Management Act 1991, a consent notice shall be registered on the Certificate of Title of any property that shares a common boundary with any of the following local purpose reserves:*
    - *Accessway*
    - *Recreation*
    - *Drainage*
    - *Waste Water*

- *Stormwater*
- *Greenbelt*

The consent notice shall advise the owners and subsequent owners thereof, of the following requirement to be complied with on a continuing basis: The owners are required to meet the full cost of any fencing along the common boundary between the lot and adjoining land that are intended to be vested in Tauranga City Council as local purpose reserve.

26. *Upon application for the s223 certificate for the subdivision the consent holder shall confirm in writing to Council which property boundaries require a fencing consent notice to be registered on its title.*

27. *Prior to bulk earthworks being undertaken within 100m of the area marked potential "HAIL Site" on the Harrison Grierson Plan entitled "Plan of Previous Buildings and Proposed Buffer Zone For Contamination Assessment", referenced 132631-23-RC205, rev 1, dated 23 November 2012, a site investigation report prepared by a suitably qualified professional in accordance with 'Guideline No.1 – Reporting on Contaminated Sites in New Zealand, Ministry for the Environment' is required to be provided to Council's Manager of Environmental Planning. The site investigation report shall identify and quantify any soil contamination, and any remediation works necessary (if any). Prior to lodgement of s224 application in relation to the above land area, any remediation works required to address contaminated soil shall be undertaken. Note, that a land use consent under the City Plan addressing contaminated soil will be required if the site investigation report determines it to be contaminated.*

28. *That before the commencement of any ground disturbance associated with the proposed development within Stages 3H, 3F and Lot 949 (Local Purpose Reserve:Greenbelt), an authority to modify damage or destroy U14/_1915 and U14_2166 and possible unrecorded subsurface archaeological sites from the New Zealand Historical Places Trust is to be obtained under the provisions of Section 12 of the Historic Places Act 1993. Ngai Tamarawaho Iwi representatives shall also be given 48 hours notice in writing prior to the commencement of earthworks within the abovementioned locations within the subdivision.*

29. *The amalgamation conditions referenced within the Scheme Plans listed within Condition 1 shall be recorded on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991 (LINZ Request: 1114213).*

30. *That a shared cycleway/walkway is to be constructed within the State Highway designation from Pyes Pa Road to link with the Collector Road within the site which is denoted as part of a potential future cycleway/walkway within the Harrison Grierson Plan entitled "Proposed Pedestrian and Shared Pedestrian/Cycleway Network", referenced 132631-23-RC202, rev 2, dated 27 November 2012. The timing and design of construction of the cycleway /walkway within the State Highway (Pyes Pa Bypass) will require approval under s176 of the Resource Management Act 1991. The final approval of construction drawings will be required from New Zealand Transport Agency State Highway Manager: Bay of Plenty.*

31. *The subdivision consent has a term of 15 years to complete from the date in which it has been granted.*

32. *All costs associated with the conditions of this consent, including those required under the Council's' Infrastructure Development Code, shall be met by the consent holder.*

Recommended and Assessed by:

James Jacobs
Intermediate Environmental Planner

Delegated Authorisation by:

Natalie Rutland
Team Leader: Environmental Planning

Date: 21 December 2012

Advice Notes

1. *Under RMA s357, you can object to this consent by serving written notice on the Council within 15 working days of receiving this decision, detailing the reasons for the objection.*

2. *Should the actual processing cost exceed the deposit fee paid at lodgement, if not already accompanying this decision, an invoice may be sent at a later date.*

3. *Development contributions under LGA 2002 –*

   Requirement for development contribution: Pursuant to section 198(1)(a) of the Local Government Act 2002, Council requires that a development contribution provided for and in accordance with Council's Development Contributions Policy (which is subject to change), be made (paid) by the consent holder to Council.

   Calculation and payment: Council's Development Contributions Policy currently provides that the required development contribution (in part in relation to any stage of a staged subdivision) is:

   - calculated in accordance with Council's Development Contributions Policy in force at the time the section 224 completion certificate under the Resource Management Act 1991 is granted by Council; and

   - payable immediately before the section 224 completion certificate is released, and that the certificate will not be released until the contribution is paid in full to Council.

   *To avoid doubt, **granted** means the time when Council has approved the survey plan under section 223 and is satisfied that all or any of the conditions of the subdivision consent have been complied with and that in respect of such conditions that have not been complied with that the appropriate completion certificate and/or consent notice has been issued and/or bond been entered into.*

   Postponement or remission: Council's Development Contributions Policy currently provides that there will be no postponement or remission of development contributions except in exceptional circumstances at the discretion of Council's Chief Executive or in the special circumstances outlined in Council's Development Contributions Policy.

4. *All archaeological sites whether recorded or unrecorded under Part 1 of the Historic Places Act 1993 cannot be destroyed, damaged or modified without the consent of the Historic Places Trust of New Zealand. In the event that an archaeological site(s) and/or koiwi are unearthed, the consent holder is advised to immediately stop work on the part of the site that the archaeological site(s) is located, and contact the Historic Places Trust for advice.*

5. *Construction noise from starting up and operation of construction equipment and all other construction activities on the site of the subdivision are required to meet the limits recommended in Table 1 in NZS6803:1999, and shall be measured and assessed in accordance with, NZS6803P:1984 - "The measurement and assessment of noise from construction, maintenance and demolition work". Adjustments provided in Clause 6.1 of NZS6803P:1984 shall apply for the full duration of the project, and references in the tables to NZS6802 shall read as references to Clause 4.2.2 of NZS6802:1991.*

6. *Where any building or drainage works are required to satisfy conditions of this consent, all consents required under the Building Act 2004 must be obtained prior to the works being carried out.*

7. *Dust management and silt runoff is to be controlled in accordance with the City Plan and the Infrastructure Development Code. The Consent Holder is advised that they are required by Bay of Plenty Regional Councils Land Management Plan to take the appropriate measures to prevent or minimise sediment generation and yield (sediment discharge).*

8. *Noise attenuation treatment within State Highway 36 shall be implemented in accordance with the 'Agreement in respect of the Funding and Construction of Noise Attenuation Barriers along Pyes Pa Bypass (Takitimu Drive Extension)' dated November 2010.*

9. *Where land to be vested is subject to a specified interest that is proposed to remain, the Council may certify that interest on the survey plan, pursuant to section 239(2) of the Resource Management Act 1991.*

10. *The consent provides approvals to both layouts in Stage 3K. Should Tauranga City Council wish the applicant to pursue Option B then they recognise that they will need to confirm this to the applicant and confirm how the consent holder will be compensated for implementing this option. The consent holder is under no obligation under this consent to pursue Option B.*

11. *Acknowledged is an agreement relating to works in Lieu of financial contributions and forward funding of infrastructure for Pyes Pa West between TCC and Grasshopper dated 19 May 2004 and deed of variation of agreement relating to works in lieu of financial contributions and forward funding of infrastructure for Pyes Pa West between TCC and Grasshopper dated 3 March 2006.*

12. *It is considered that the subdivision will be consistent with the Consent Notice 6592047.2 registered on the title of Lot 9 – 11 DP 364444*


NOTES:
1. EXISTING TITLES
PT LOTS 9–11 DP 364444
CT 261821
THE LAKES 2012 LTD 84.8420ha
PT LOT 103 DP 408042
CT 428562
THE LAKES 2012 LTD 19.0621ha
TOTAL 103.9041ha
2. PROPOSED TITLES
LOTS 801–893 & 1–766
(858 RESIDENTIAL LOTS) 51.2799ha
LOTS 900–921
(22 ROADS TO VEST) 18.9272ha
LOTS 930–953
(19 RESERVES TO VEST) 29.4346ha
LOTS 960–991
(32 PRIVATE ACCESS LOTS) 0.8965ha
LOT 790
(LARGE LOT) 3.168ha
STAGE 2N LOTS FROM PARENT
TITLE (1061 & 1065) 0.1331ha
TOTAL 103.9342ha
3. AREAS & DIMENSIONS ARE APPROXIMATE ONLY & ARE SUBJECT TO RESOURCE CONSENT AND LAND TRANSFER SURVEY.
4. REFER SHEETS RC101–RC112 FOR AMALGAMATION CONDITIONS AND MEMORANDUM OF EASEMENTS.
5. STAGING LAYOUT SHOWN IS INDICATIVE ONLY. FINAL NUMBER, SIZE AND SEQUENCE OF STAGES MAY VARY.
PYES PA RD (SH 36)
PYES PA RD
KENNEDY RD
KENNEDY RD
LAKES BLVD
TAKITIMU DRIVE (SH 36)
KEENAN RD
PT 2 DPS 30316
2 DPS 53649
PT 2 DPS 29192
SEC 1 SO 416677
1 DPS 4351
1 DP 370187
2 DPS 84552
2 DPS 69452
1 DPS 33341
1 DP 348694
2 DP 348694
5 DP 348694
6 DP 348694
PT LOT 9 DP 364444
853 DP 414134
445 DP 414134
REFER RC101
REFER RC102
REFER RC103
REFER RC104
REFER RC105
REFER RC106
REFER RC107
REFER RC108
REFER RC109
REFER RC110
REFER RC111
REFER RC112
APPROVED
RC21332
21 DEC 2012
PLAN
HARRISON GRIERSON
ADVISORS AND DESIGNERS
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ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND
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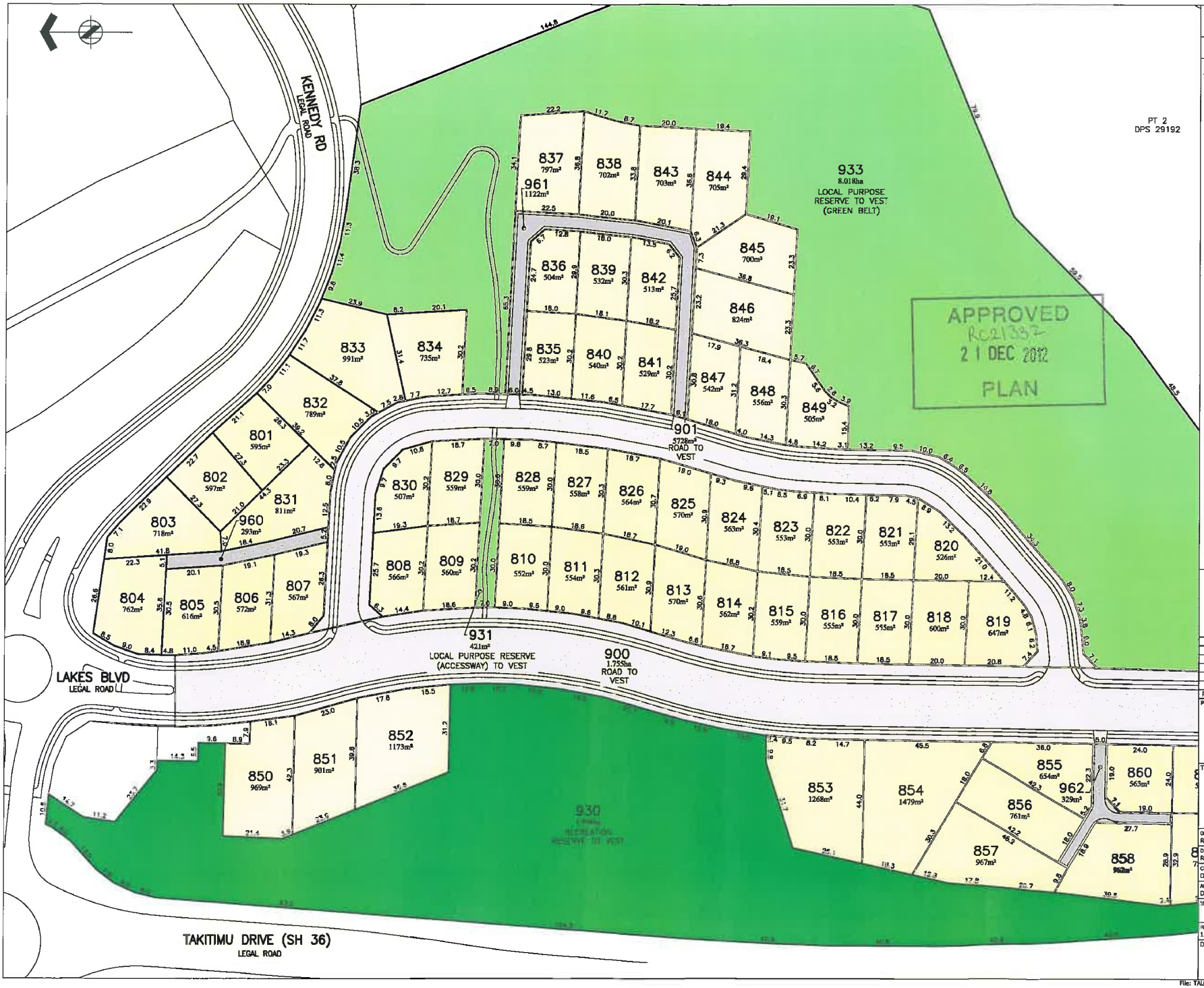
4 LOTS 565 & 946 REMOVED SEE DWGS RC108 - RC110 RJM 14.12.12
3 RESERVE LOTS 932 & 942 REMOVED RJM 5.12.12
2 DETAILS OF REVISIONS DESCRIBED ON FOLLOWING SHEETS RJM 29.11.12
1 ISSUED FOR RESOURCE CONSENT RJM 19.10.12
REF REVISIONS BY DATE
PROJECT:
THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M
TITLE:
PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042
ORIGINATOR: RJM DATE: 10.12 SIGNED: PLOT BY: RJM
DRAWN: RJM DATE: 10.12 SIGNED: PLOT DATE: 17.12.12
CHECKED: DCN DATE: 19.10.12 SIGNED: SURVEY BY:
APPROVED: DCN DATE: 19.10.12 SIGNED: SURVEY DATE:
ISSUE STATUS:
RESOURCE CONSENT
PROJECT No: 1520-132631-01
SCALES: 1:2500 (A1) 1:5000 (A3)
A1
DRAWING No: 132631-23-RC100
REV 4



APPROVED
RC21337
21 DEC 2012
PLAN

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NOTES:

1. AMALGAMATION CONDITIONS
   THAT LOT 960 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 803, 804 AND 805 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 961 HEREON BE HELD AS TO NINE UNDIVIDED ONE NINTH SHARES BY THE OWNERS OF LOTS 836–839 AND 842–846 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 962 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 856–859 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W. RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 960 HEREON	LOT 960 HEREON	LOT 803
			LOT 804
			LOT 805
	LOT 961 HEREON	LOT 961 HEREON	LOT 836
			LOT 837
			LOT 838
			LOT 839
			LOT 842
			LOT 843
			LOT 844
			LOT 845
			LOT 846
	LOT 962 HEREON	LOT 962 HEREON	LOT 856
			LOT 857
			LOT 858
			LOT 859

HG HARRISON GRIERSON
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REF	REVISIONS	BY	DATE
3	LOT 932 REMOVED, LOT 933 AREA INCREASED	RJM	5.12.12
2	ACCESS LOT 961 WIDENED TO 6m	RJM	19.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:
THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:
PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 17.12.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No:	SCALES:	
1520-132631-01	1:3000 (A1) 1:6000 (A3)	A1

DRAWING No: 132631-23-RC101 REV 3

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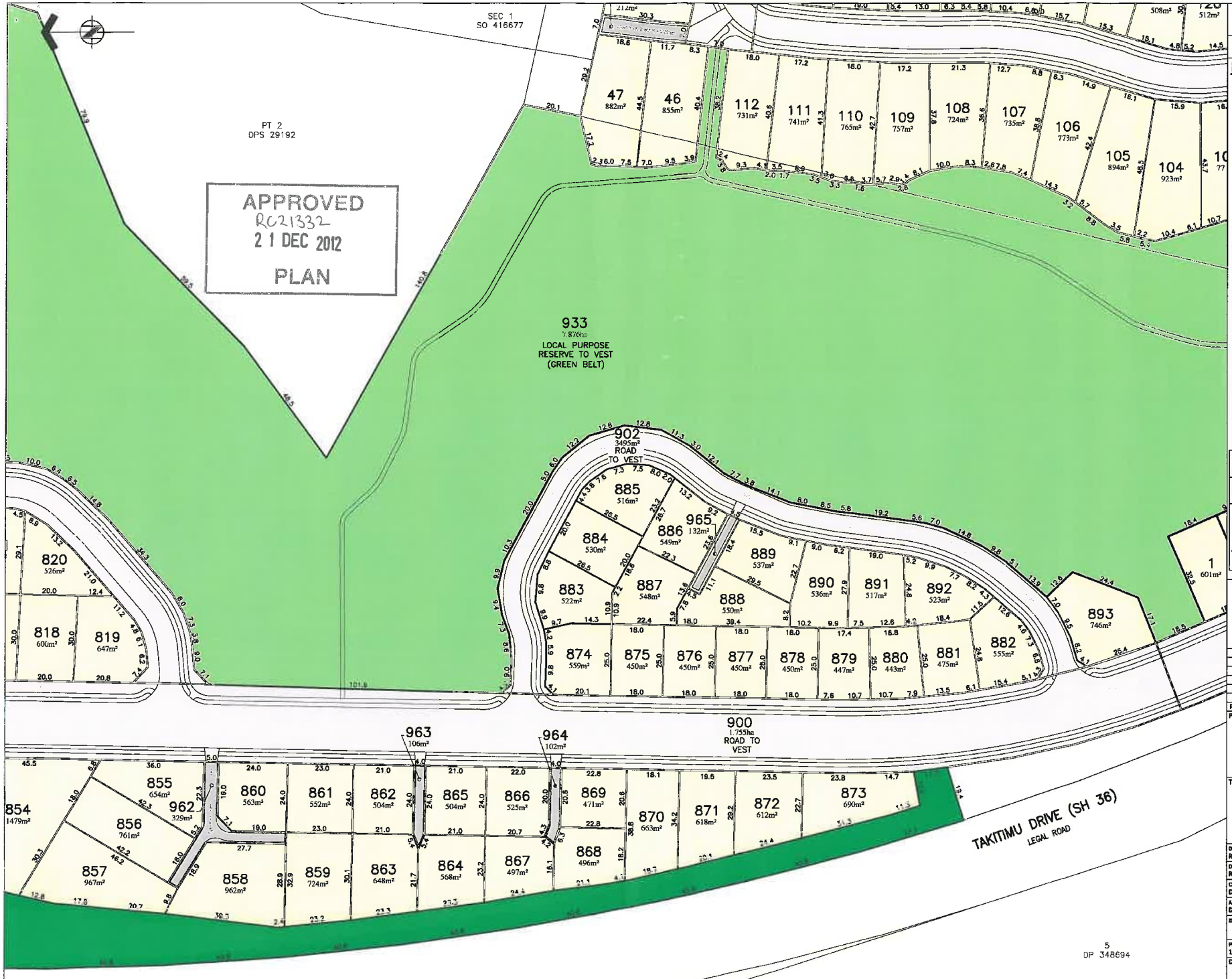

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND
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NOTES:

1. AMALGAMATION CONDITIONS
   THAT LOT 963 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 863 AND 864 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 964 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 867 AND 868 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 965 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 887 AND 888 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 963 HEREON	LOT 963 HEREON	LOT 863
			LOT 864
	LOT 964 HEREON	LOT 964 HEREON	LOT 867
			LOT 868
	LOT 965 HEREON	LOT 965 HEREON	LOT 887
			LOT 888

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REF	REVISIONS	BY	DATE
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF PT LOTS 10 & 11 DP 364444 & PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 23.11.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: **RESOURCE CONSENT**

PROJECT No: 1520-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC102		REV 2

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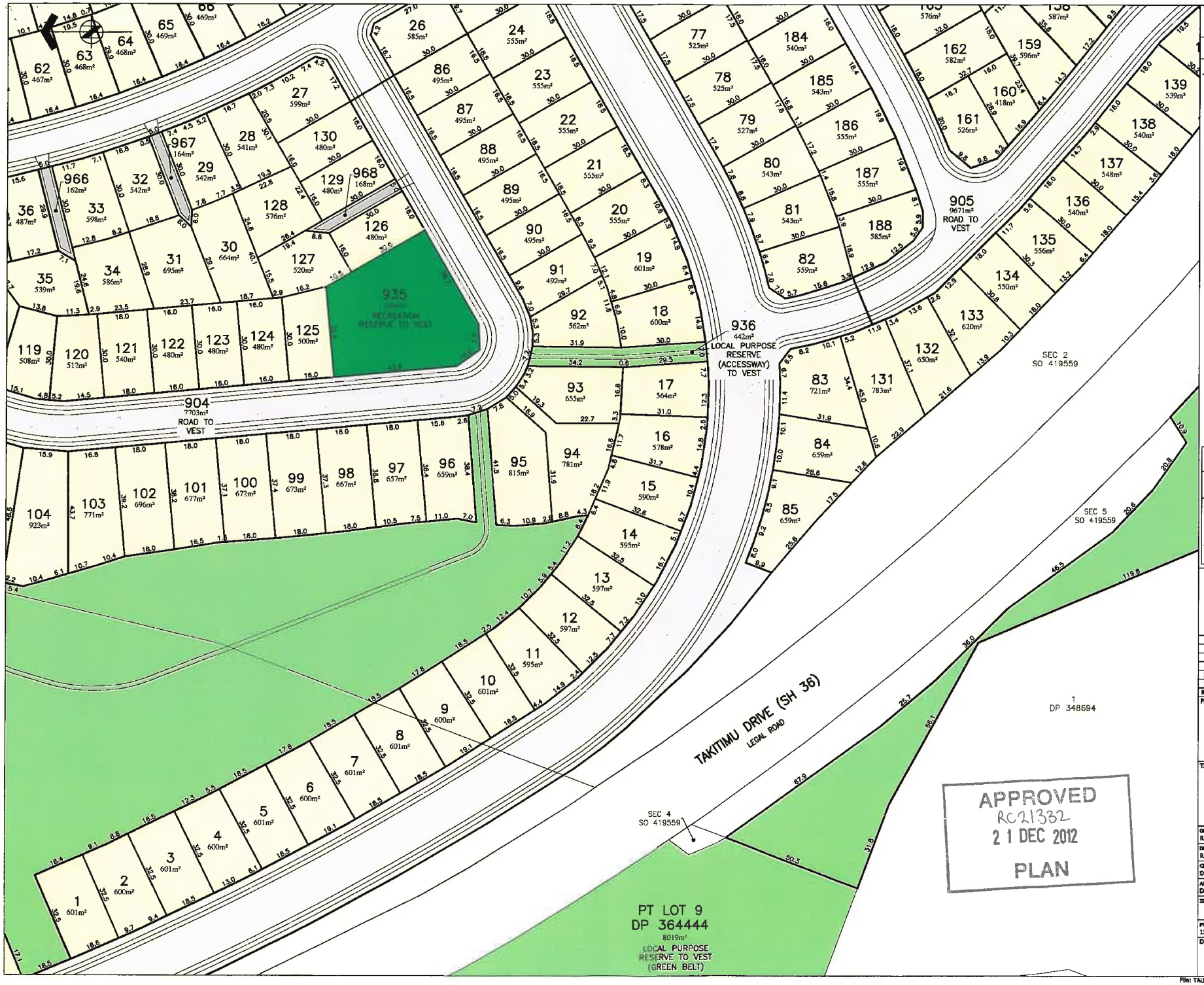

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND
ACENZ
ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
   THAT LOT 966 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 34 AND 35 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 967 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 30 AND 31 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 968 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 127 AND 128 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 966 HEREON	LOT 966 HEREON	LOT 34
			LOT 35
	LOT 967 HEREON	LOT 967 HEREON	LOT 30
			LOT 31
	LOT 968 HEREON	LOT 968 HEREON	LOT 127
			LOT 128

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REF	REVISIONS	BY	DATE
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF PT LOTS 10 & 11 DP 364444 & PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 23.11.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: **RESOURCE CONSENT**

PROJECT No: 1520-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: **132631-23-RC103**
REV **2**

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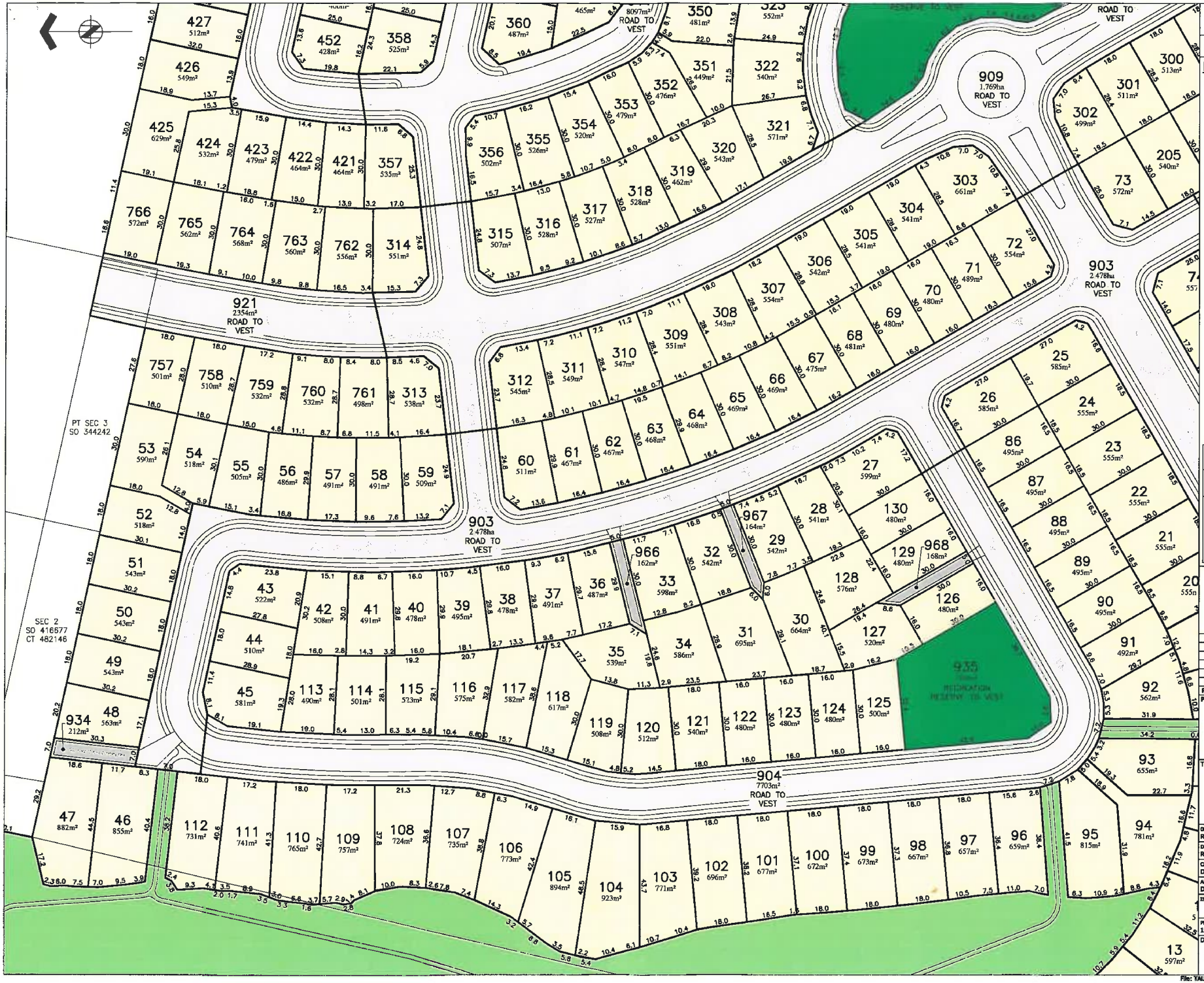

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND — ACENZ — ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

   THAT LOT 934 HEREON BE AMALGAMATED WITH SECTION 2 SO 416677 AND ONE COMPUTER REGISTER BE ISSUED IN ACCORDANCE THEREWITH.

APPROVED
RC21332
21 DEC 2012
PLAN

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 934 HEREON	LOT 934 HEREON	LOT 47
			SEC 2 SO 416577

HARRISON GRIERSON
ADVISORS AND DESIGNERS
Office of Origin: Tauranga
Level 1 Harrison Grierson House
141 Cameron Road Tauranga 3110
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www.harrisongrierson.com

REF	REVISIONS	BY	DATE
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

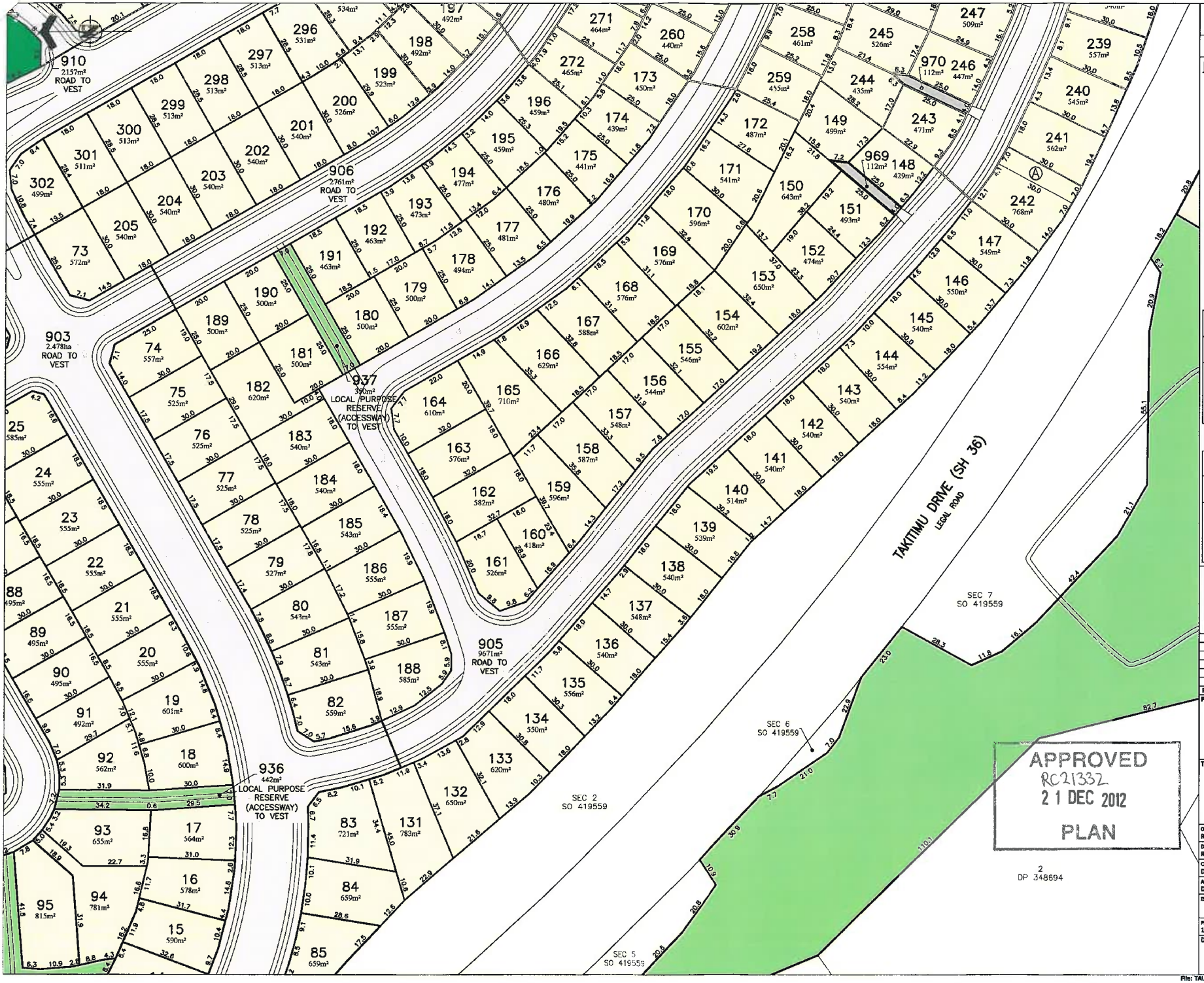
PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 23.11.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC104		REV 2

File: TAURANGA N:\1520\132631_AYCAD\STAGE 2 AND 3\132631-23-RC100.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND
ACENZ

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
THAT LOT 969 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 149 AND 150 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 970 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 244 AND 245 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

PROPOSED MEMORANDUM OF EASEMENTS IN GROSS

PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	A	LOT 242 HEREON	TAURANGA CITY COUNCIL

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W., RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 969 HEREON	LOT 969 HEREON	LOT 149
			LOT 150
	LOT 970 HEREON	LOT 970 HEREON	LOT 244
			LOT 245

HARRISON GRIERSON

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Office of Origin: Tauranga
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REV	REVISIONS	BY	DATE
2	NEW EASEMENT A PROPOSED OVER LOT 242	RJM	19.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF PT LOTS 10 & 11 DP 364444 & PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 23.11.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: **RESOURCE CONSENT**

PROJECT No: 1520-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC105		REV 2

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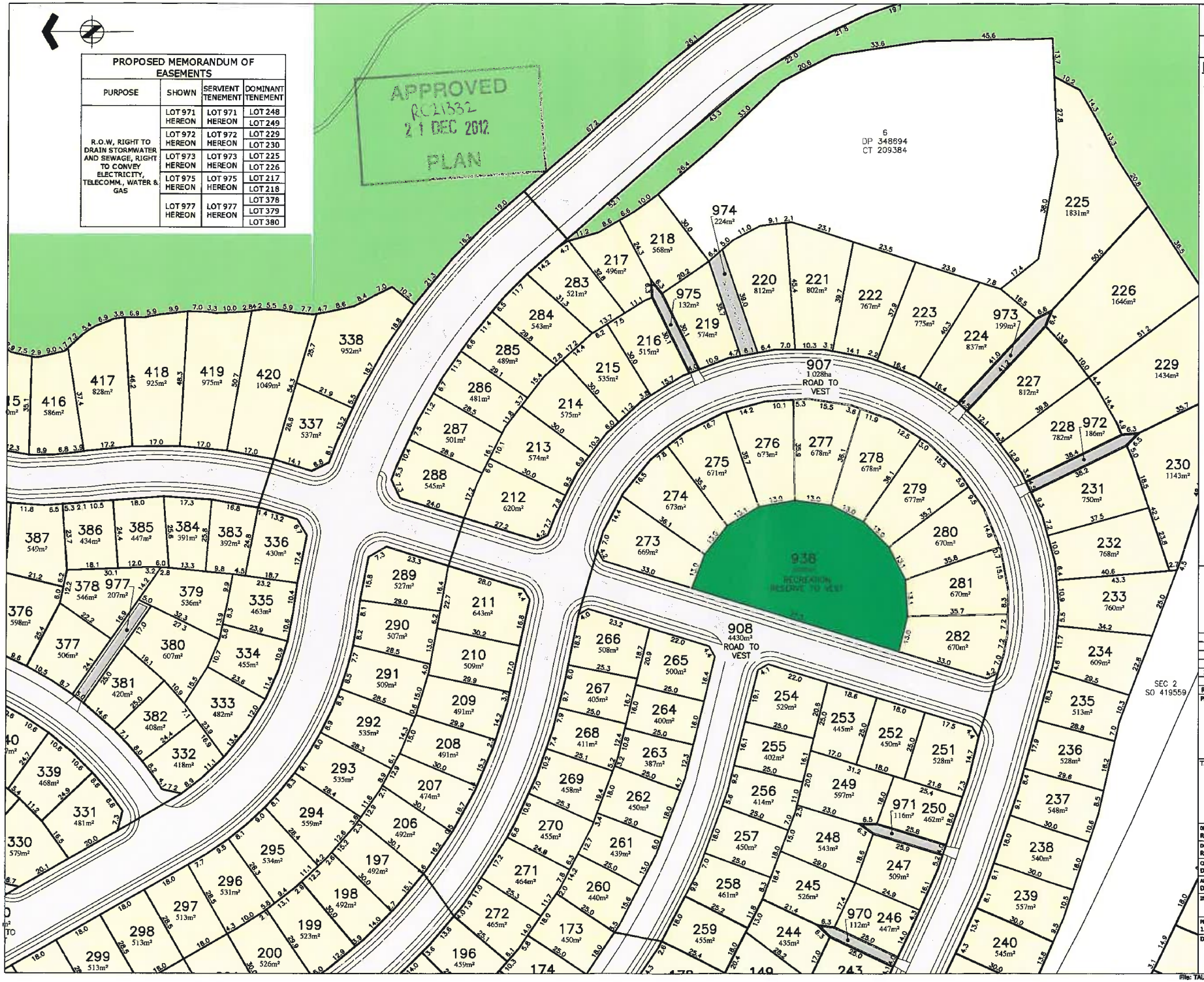

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 971 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 248 AND 249 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 972 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 229 AND 230 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 973 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 225 AND 226 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 974 HEREON BE AMALGAMATED WITH LOT 6 DP 348694 AND ONE COMPUTER REGISTER BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 975 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 217 AND 218 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 977 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 378, 379 AND 380 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

HARRISON GRIERSON

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REF	REVISIONS	BY	DATE
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF PT LOTS 10 & 11 DP 364444 & PT LOT 103 DP 408042

DESIGNED: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 23.11.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: **RESOURCE CONSENT**

PROJECT No: 1520-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: **132631-23-RC106**
REV **2**

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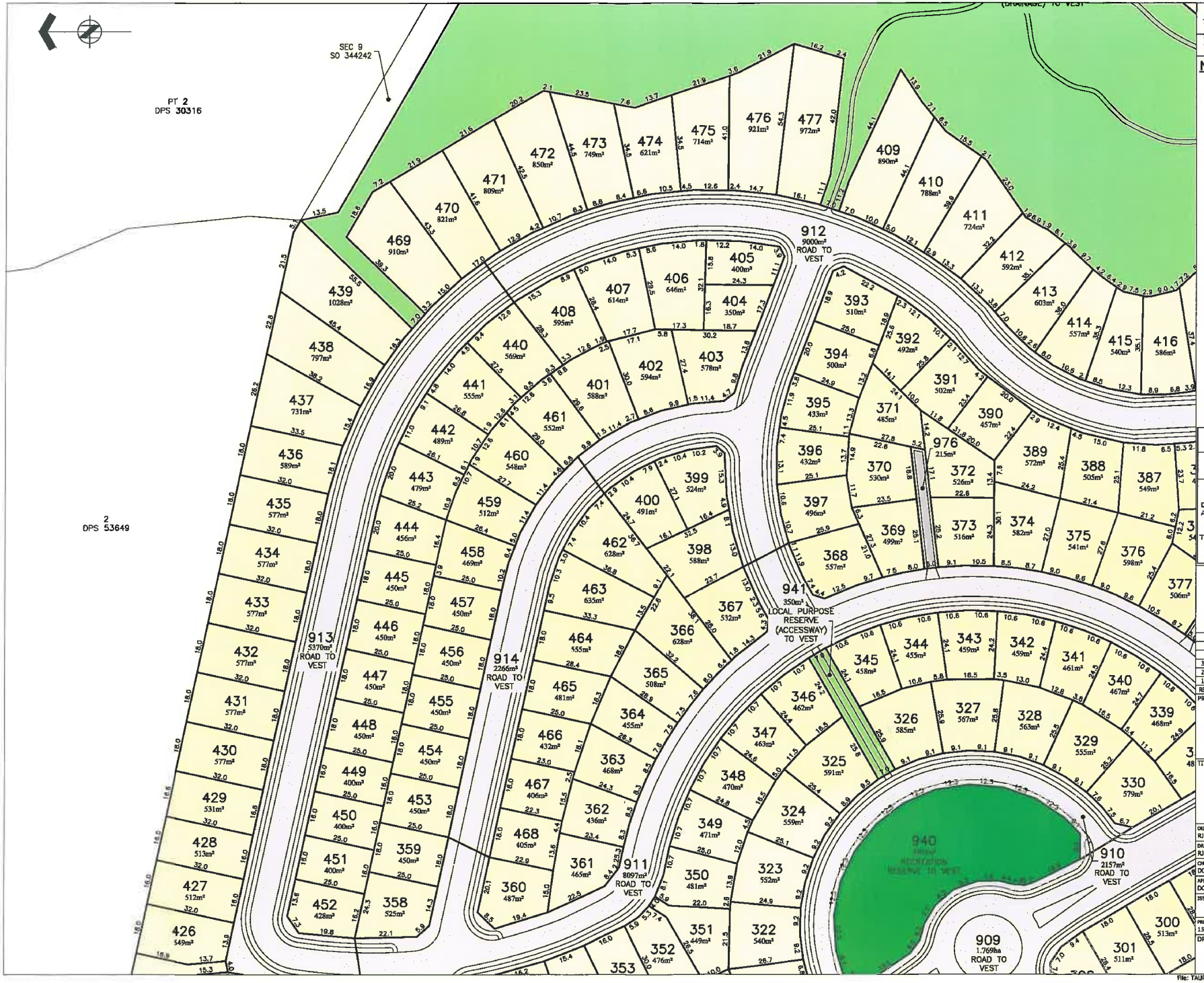

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 976 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 370, 371 AND 372 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

APPROVED
RC21332
21 DEC 2012
PLAN

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 976 HEREON	LOT 976 HEREON	LOT 370
			LOT 371
			LOT 372

HARRISON GRIERSON

ADVISORS AND DESIGNERS
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141 Cameron Road Tauranga 3110
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www.harrisongrierson.com

REF	REVISIONS	BY	DATE
3	LOT 942 REMOVED, LOT 469 REVISED FOR RESERVE	RJM	5.5.12
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	18.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

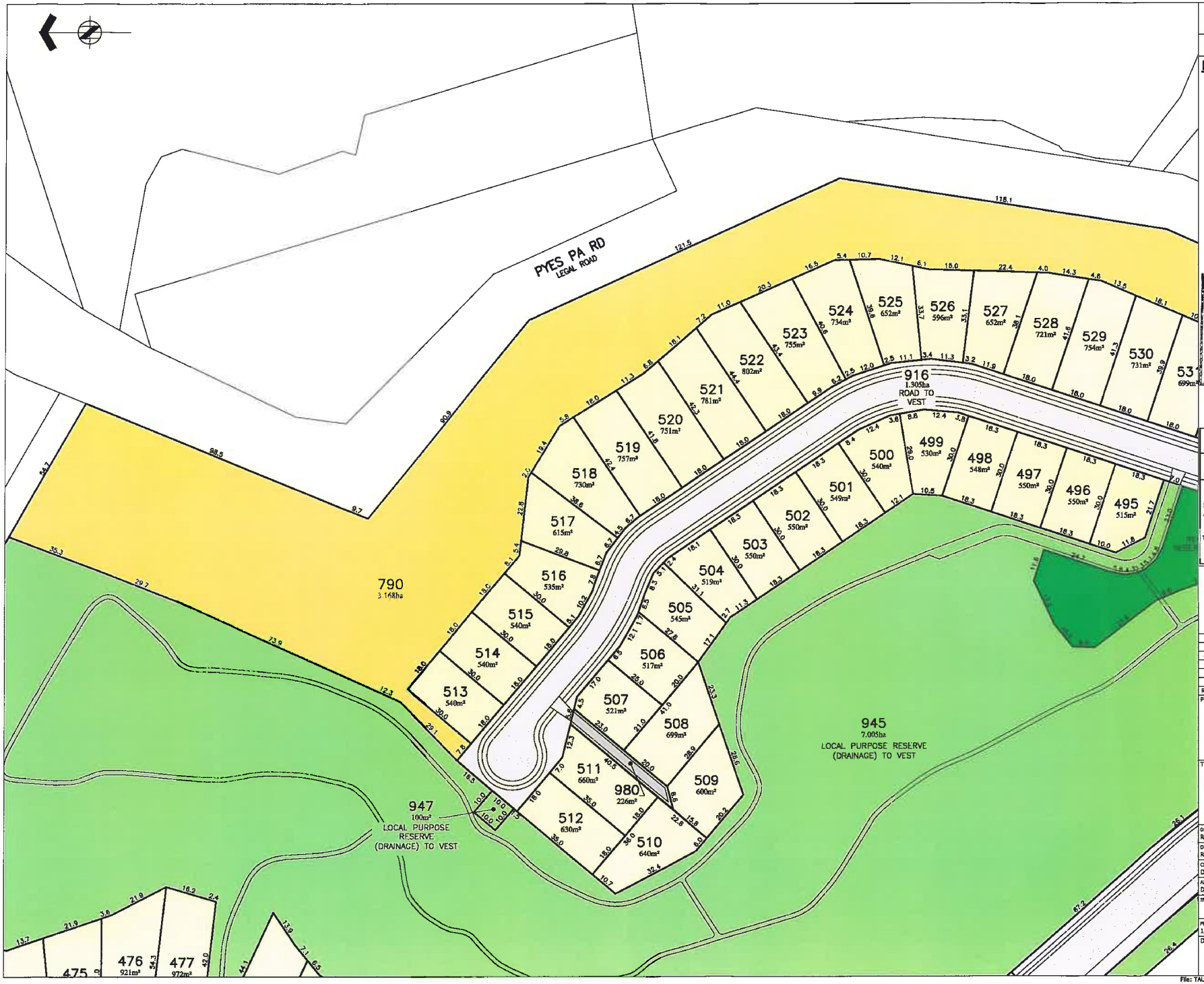
ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 05.12.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: 132631-23-RC107
REV 3

File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

   THAT LOT 980 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 508, 509 AND 510 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

APPROVED
RC21332
21 DEC 2012
PLAN

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.C.W. RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 980 HEREON	LOT 980 HEREON	LOT 508
			LOT 509
			LOT 510

HARRISON GRIERSON
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www.harrisongrierson.com

REF	REVISIONS	BY	DATE
4	LOT 946 REMOVED NOW PART OF LOT 790	RJM	14.12.12
3	AREA OF LOT 945 INCREASED	RJM	5.12.12
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	28.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	18.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

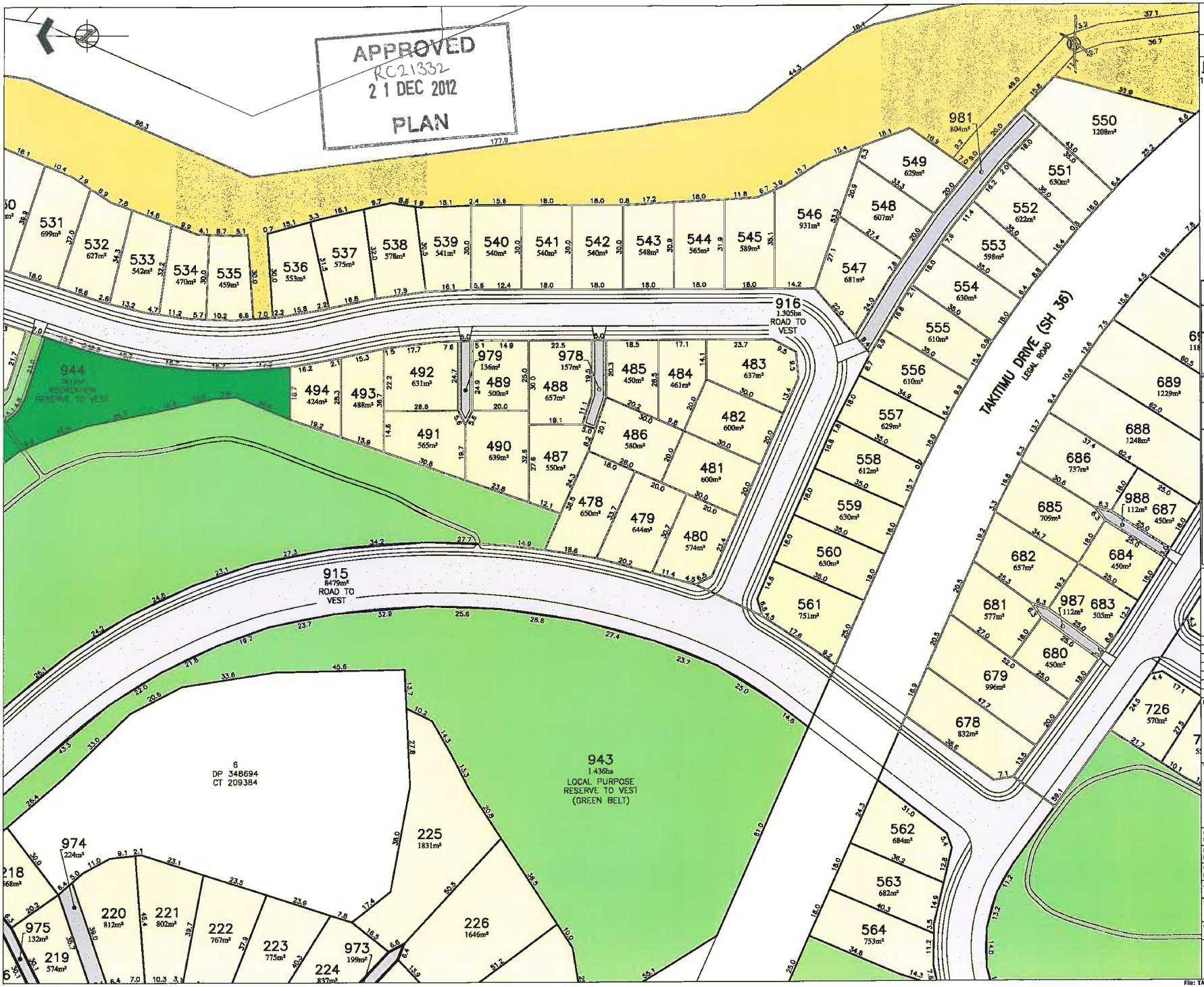
ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 17.12.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: 132631-23-RC108
REV 4

File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 978 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 486 AND 487 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 979 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 490 AND 491 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 981 HEREON BE HELD AS TO EIGHT UNDIVIDED ONE EIGHTH SHARES BY THE OWNERS OF LOTS 548 TO 555 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

~~PROPOSED MEMORANDUM OF EASEMENT IN GROSS~~

PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
PEDESTRIAN ACCESSWAY	E	LOT 790 HEREON	TAURANGA CITY COUNCIL
	LOT 981 HEREON	LOT 981 HEREON	

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
E.O.W. RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 978 HEREON	LOT 978 HEREON	LOT 486
			LOT 487
	LOT 979 HEREON	LOT 979 HEREON	LOT 490
			LOT 491
	LOT 981 HEREON	LOT 981 HEREON	LOT 548
			LOT 549
			LOT 550
			LOT 551
			LOT 552
			LOT 553
			LOT 554
			LOT 555

HARRISON GRIERSON

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Office of Origin: Tauranga
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www.harrisongrierson.com

REF	REVISIONS	BY	DATE
4	PEDESTRIAN ACCESS OVER LOT 981 PROVIDED	RJM	19.12.12
3	LOT 946 REMOVED NOW PART OF LOT 790	RJM	14.12.12
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 19.12.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

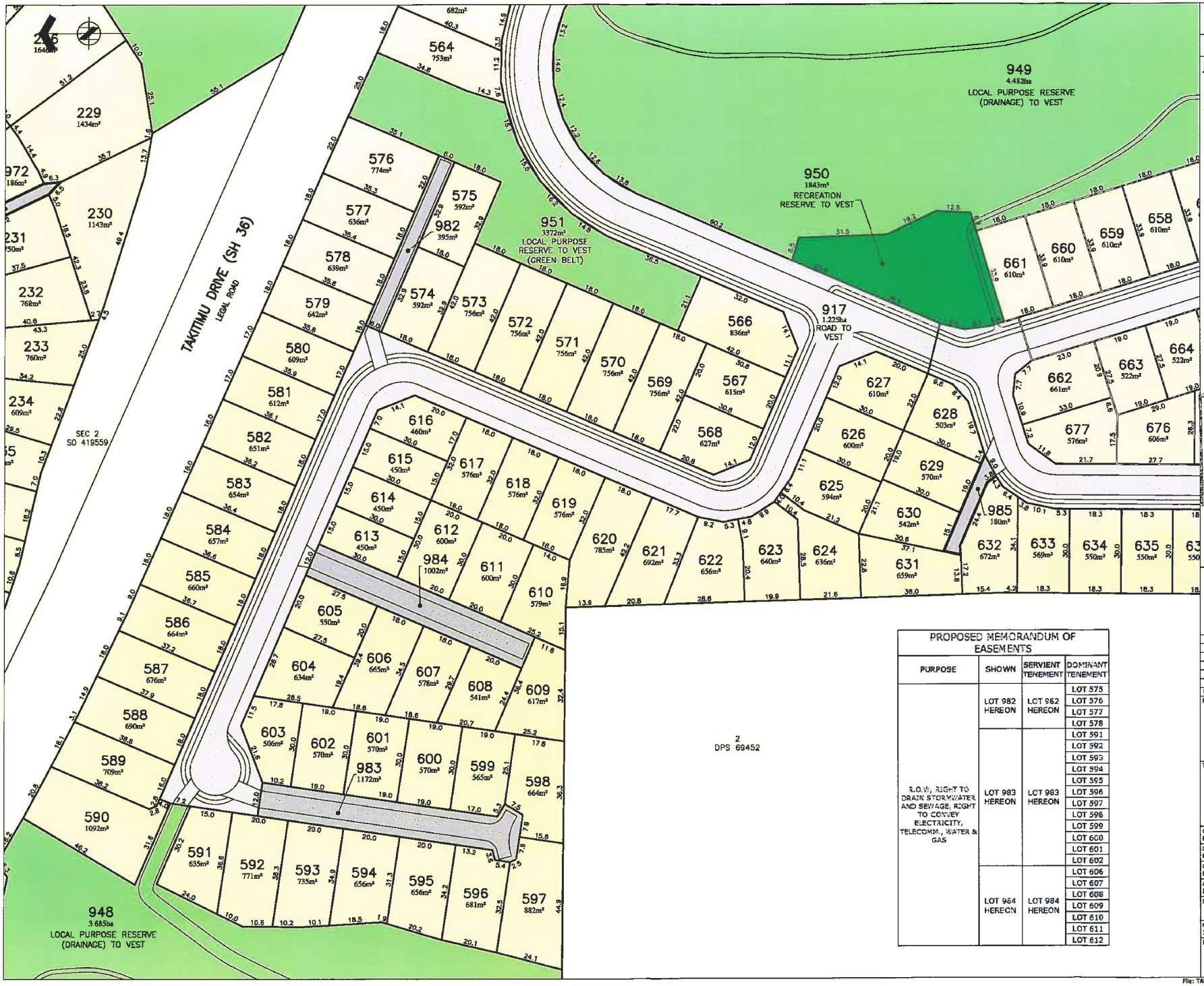
ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01 | SCALES: 1:625 (A1) 1:1250 (A3) | A1

DRAWING No: 132631-23-RC109 | REV 4

File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG

Pedestrian Access easement removed from proposal - confirmed by applicant 21/12/12



PROPOSED MEMORANDUM OF EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 982 HEREON	LOT 982 HEREON	LOT 575
			LOT 576
			LOT 577
			LOT 578
	LOT 983 HEREON	LOT 983 HEREON	LOT 591
			LOT 592
			LOT 593
			LOT 594
			LOT 595
			LOT 596
			LOT 597
			LOT 598
			LOT 599
			LOT 600
			LOT 601
			LOT 602
	LOT 984 HEREON	LOT 984 HEREON	LOT 606
			LOT 607
			LOT 608
			LOT 609
			LOT 610
			LOT 611
			LOT 612

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 982 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 575 TO 578 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 983 HEREON BE HELD AS TO TWELVE UNDIVIDED ONE TWELFTH SHARES BY THE OWNERS OF LOTS 591 TO 602 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 984 HEREON BE HELD AS TO SEVEN UNDIVIDED ONE SEVENTH SHARES BY THE OWNERS OF LOTS 606 TO 612 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

APPROVED
RC21332
21 DEC 2012
PLAN

HARRISON GRIERSON
ADVISORS AND DESIGNERS
Office of Origin: Tauranga
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REF	REVISIONS	BY	DATE
3	LOT 565 REMOVED, NOW PART OF LOT 951	RJM	14.12.12
2	AREA B ADDED AS GREEN BELT LAND COVENANT	RJM	29.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 17.12.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: 132631-23-RC110
REV 3

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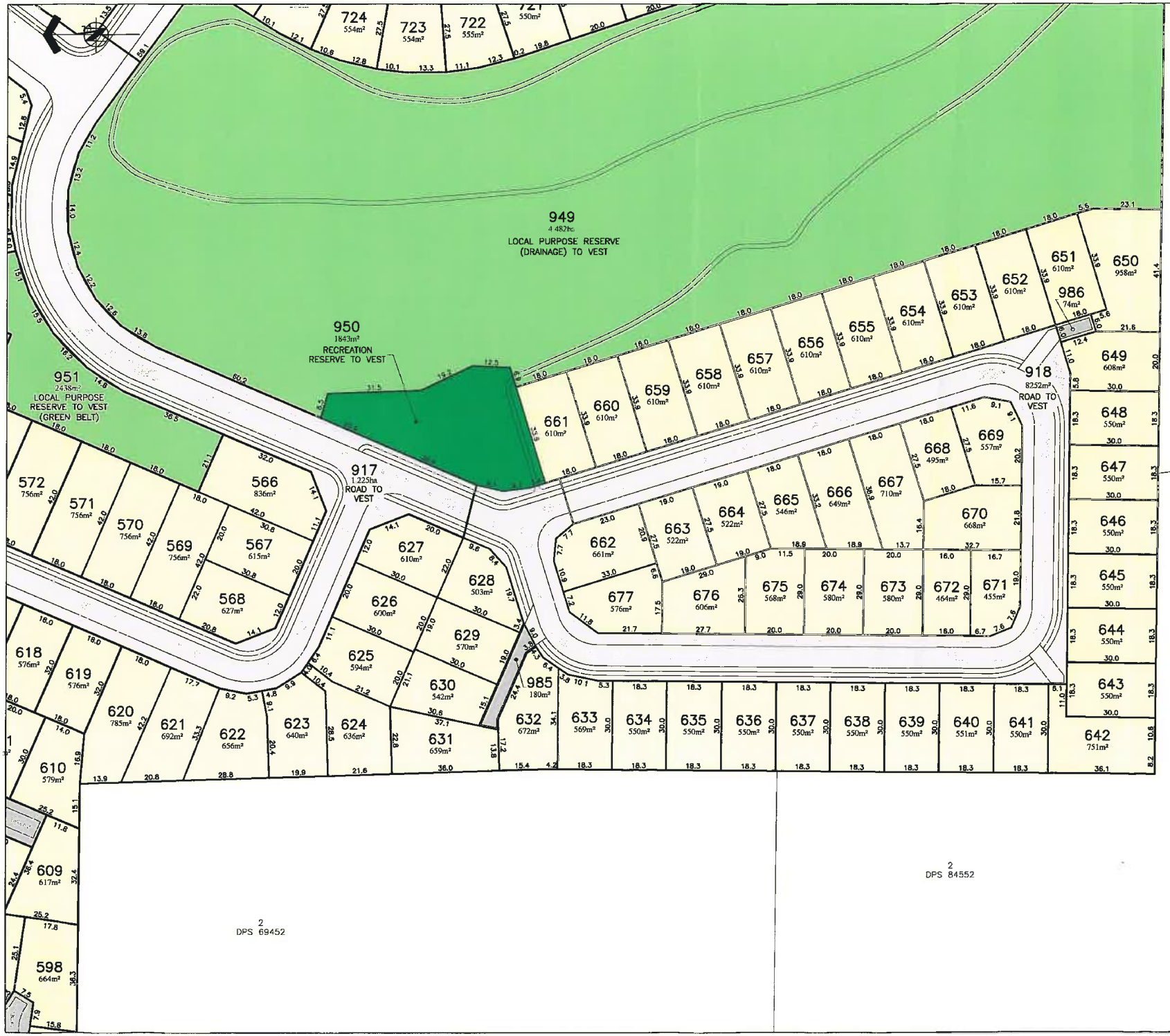

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 985 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 629, 630 AND 631 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 986 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 650 AND 651 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

APPROVED
RC21332
21 DEC 2012
PLAN

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 985 HEREON	LOT 985 HEREON	LOT 629
			LOT 630
			LOT 631
	LOT 986 HEREON	LOT 986 HEREON	LOT 650
			LOT 651

HARRISON GRIERSON

ADVISORS AND DESIGNERS
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www.harrisongrierson.com

REF	REVISIONS	BY	DATE
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

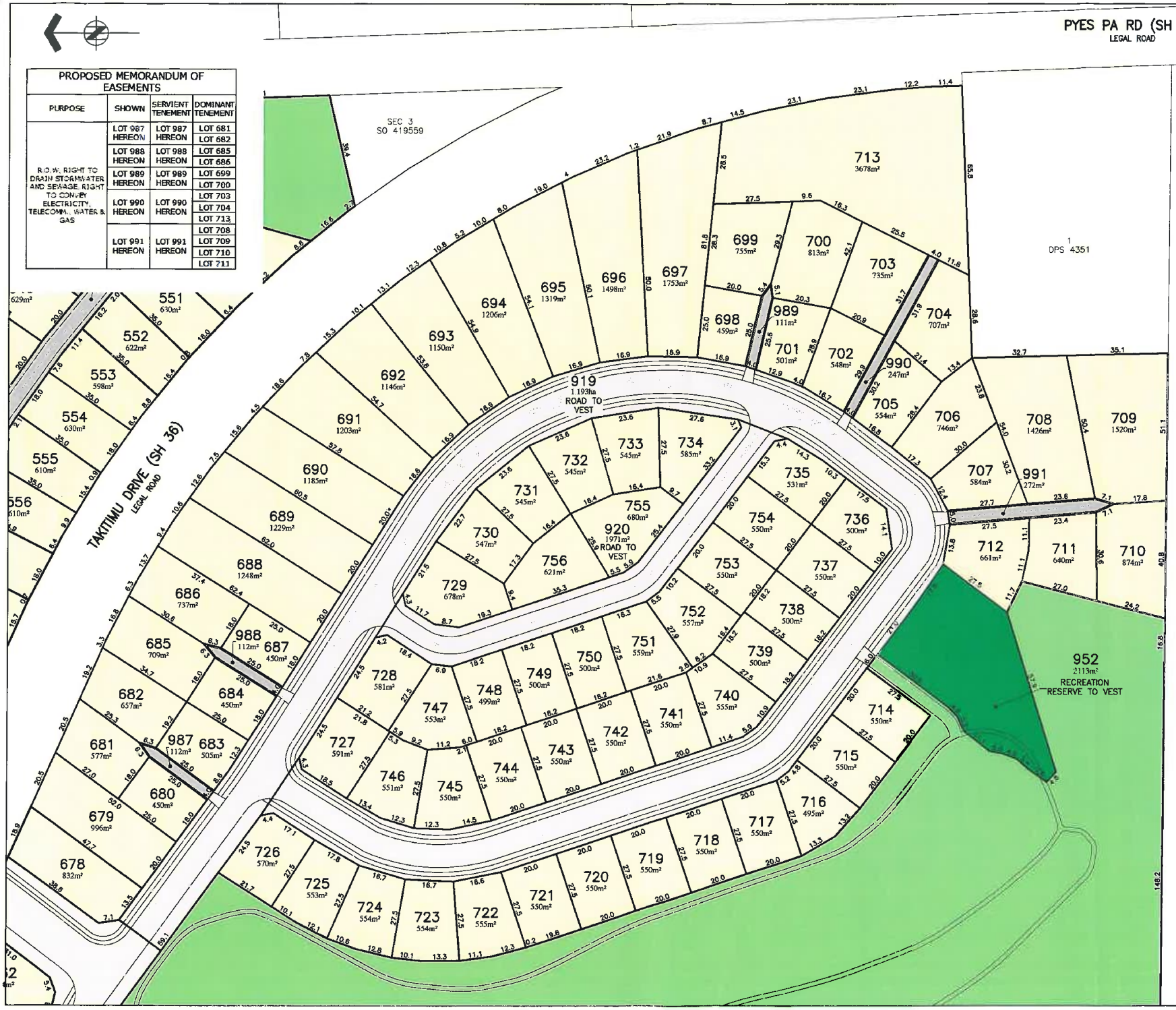
PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.1.2	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.1.2	SIGNED:	PLOT DATE: 23.11.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC111		REV 2

File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG



PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W. RIGHT TO DRAIN STORMWATER AND SEWAGE RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 987 HEREON	LOT 987 HEREON	LOT 681
			LOT 682
	LOT 988 HEREON	LOT 988 HEREON	LOT 685
			LOT 686
	LOT 989 HEREON	LOT 989 HEREON	LOT 699
			LOT 700
	LOT 990 HEREON	LOT 990 HEREON	LOT 703
			LOT 704
			LOT 713
	LOT 991 HEREON	LOT 991 HEREON	LOT 708
			LOT 709
			LOT 710
			LOT 711

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND
ACENZ
ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 987 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 681 AND 682 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 988 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 685 AND 686 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 989 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 699 AND 700 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 990 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 703, 704 & 713 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 991 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 708 TO 711 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

APPROVED
RC 21332
2 1 DEC 2012
PLAN

HARRISON GRIERSON

ADVISORS AND DESIGNERS
Office of Origin: Tauranga
Level 1 Harrison Grierson House
141 Cameron Road Tauranga 3110
P +64 7 576 0623
www.harrisongrierson.com

2	REVISED LOT LAYOUT	RJM	19.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	18.10.12
REF	REVISIONS	BY	DATE

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

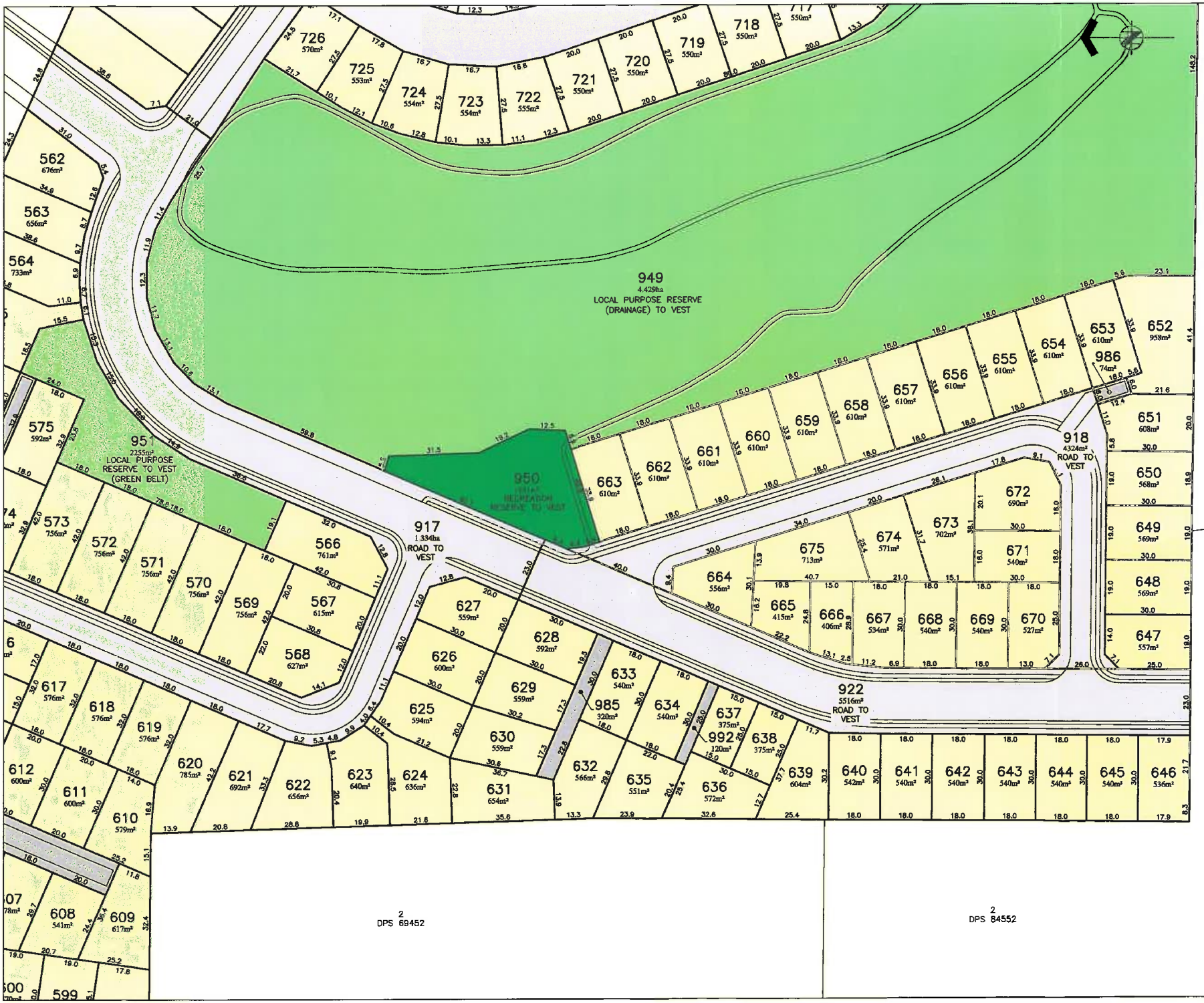
PROPOSED SUBDIVISION OF PT LOTS 10 & 11 DP 364444 & PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 23.11.12
CHECKED: DCN	DATE:	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE:	SIGNED:	SURVEY DATE:

ISSUE STATUS: **RESOURCE CONSENT**

PROJECT No: 1520-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC112		REV 2

File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 985 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 629 TO 632 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 986 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 652 AND 653 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 992 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 635 AND 636 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

APPROVED
RC 21332
21 DEC 2012
PLAN

HARRISON GRIERSON CONSULTANTS
ADVISORS AND DESIGNERS
Office of Origin: Tauranga
Level 1 Harrison Grierson House
141 Cameron Road Tauranga 3110
P +64 7 578 0023
www.harrisongrierson.com

REF	REVISIONS	BY	DATE
2	REVISED COLLECTOR ROAD AND LOT LAYOUT	RJM	5.12.12
1	ISSUED FOR RESOURCE CONSENT	RJM	20.11.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGE 3K - OPTION B

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 20.11.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 20.11.12	SIGNED:	PLOT DATE: 05.12.12
CHECKED: DCN	DATE: 20.11.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 20.11.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: 132631-23-RC400
REV 2

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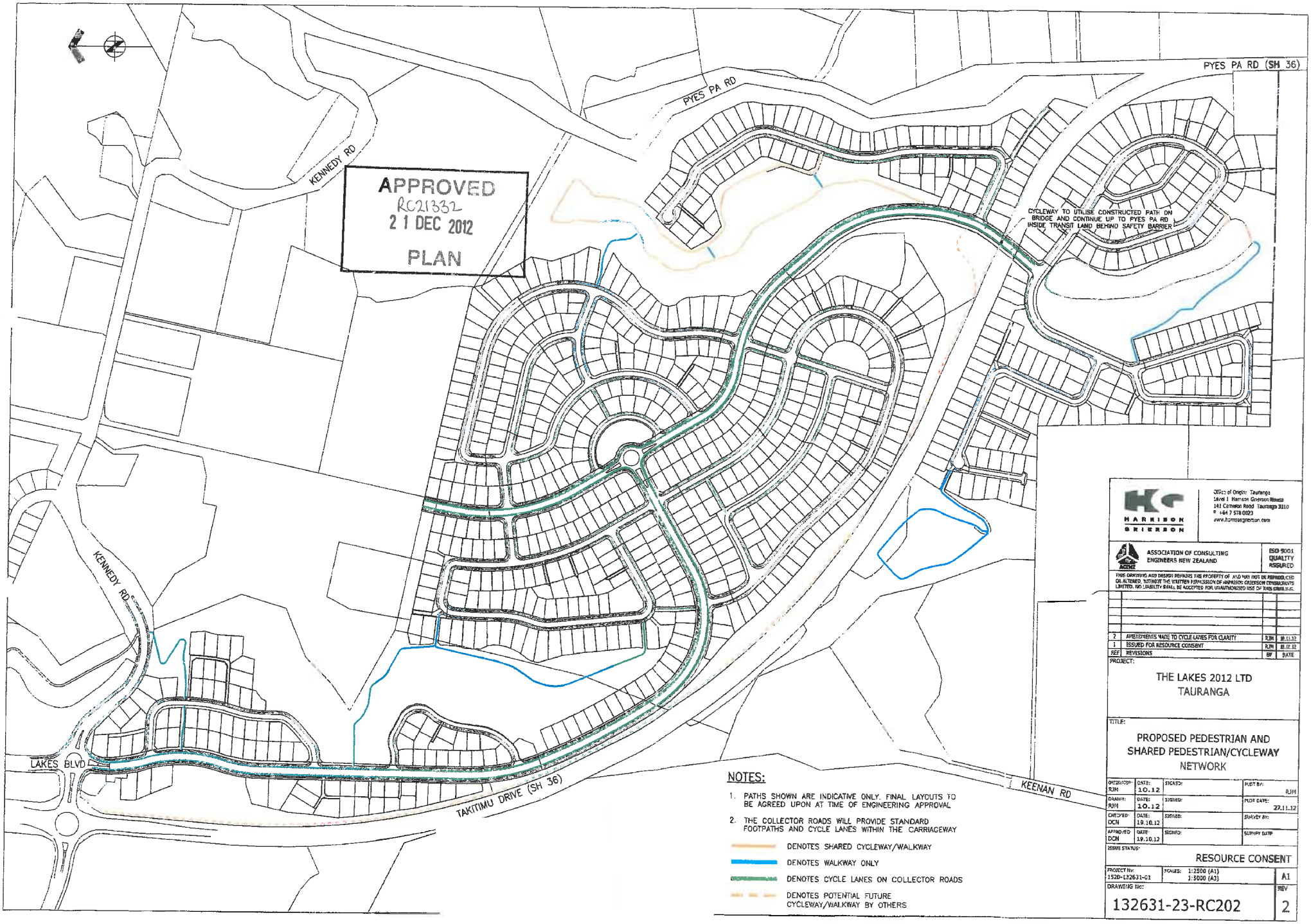

NOTES:

1. PATHS SHOWN ARE INDICATIVE ONLY. FINAL LAYOUTS TO BE AGREED UPON AT TIME OF ENGINEERING APPROVAL
2. THE COLLECTOR ROADS WILL PROVIDE STANDARD FOOTPATHS AND CYCLE LANES WITHIN THE CARRIAGEWAY

DENOTES SHARED CYCLEWAY/WALKWAY

DENOTES WALKWAY ONLY

DENOTES CYCLE LANES ON COLLECTOR ROADS

DENOTES POTENTIAL FUTURE CYCLEWAY/WALKWAY BY OTHERS

HARRISON GRIERSON

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ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

REF	REVISIONS	BY	DATE
2	AMENDMENTS MADE TO CYCLE LANES FOR CLARITY	RJM	27.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	22.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA

TITLE:

PROPOSED PEDESTRIAN AND SHARED PEDESTRIAN/CYCLEWAY NETWORK

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 27.11.12
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01	SCALES: 1:2500 (A1) 1:5000 (A3)	A1
DRAWING No: 132631-23-RC202		REV 2

The Lakes 2012 Limited
C/- Harrison Grierson Consultants Limited
PO Box 1199
Tauranga 3140

DECISION ON CHANGE OF CONDITIONS APPLICATION – RC21332-04
Under the Resource Management Act 1991

That pursuant to Sections 104, 104B, 127 and 108 of the Resource Management Act 1991, the discretionary activity application by The Lakes 2012 Limited to carry out a redesign of the road layout and changes to access lots within stage 3 as well as the reconfiguration of some residential lots with an increase of nine (inclusive of the subdivision of Lot 6 DP 348694) relating to The Lakes Pyes Pa, Balance Stage 2 and Stage 3 legally described as Pt Lots 9, 10 and 11 DP 364444 and Pt Lot 103 DP 40802 be granted.

That pursuant to Section 113 of the RMA – the reasons for the decision are as per the recommendation:

The actual and potential effects on the environment of the change have been determined as being acceptable and approving the application will be consistent with the relevant provisions of the Regional Policy Statement and Operative City Plan. Overall the application will be consistent with the purpose and principles of the Act.

Condition 1, 4 and 29 amendments are highlighted in bold to read:

1. *The proposal shall proceed in accordance with the application submitted including:*

   - *The Assessment of Environmental Effects prepared by Harrison Grierson Consultants Limited entitled "The Lakes – Balance Stage 2 and Stage 3", referenced 1520-132631-01, dated October 2012;*

   - *Further Information prepared by Harrison Grierson Consultants Limited entitled "RC21332 – The Lakes – Stage 2/3 Further Information Response", referenced 1520-132631-01, dated 23 November 2012;*

   - *Further Information prepared by Harrison Grierson Consultants Limited entitled "Stage 2/3 at The Lakes", referenced 1520-132631-01, dated 16 December 2012;*

   - *The Landscape Design Company Report dated 26 November 2012;*

Tauranga City Council
91 Willow Street, Private Bag 12022, Tauranga 3143, New Zealand
Phone 07 577 7000 **Fax** 07 577 7193 **Email** info@tauranga.govt.nz **www.tauranga.govt.nz**

- *The Shrimpton & Lipinski Report entitled "Pyes Pa West Urbanisation Development, Tauranga – Geotechnical Assessment Report' referenced 16944, dated October 2003;*

- *The Coffey Geotechnics Report entitled "Geotechnical Assessment Report – Suitability of Site for Residential Subdivision The Lakes Subdivision – Stages 2 & 3, Tauriko, Tauranga", referenced GENZTAUC13086AD, dated 17 August 2012;*

- *The Archaeology Report prepared by Heritage Consultants entitled "Preliminary Archaeological Survey and Assessment of Effects – Proposed Residential Subdivision and Roading Development", dated April 2003;*

- *The Emails received by Council from David Needham sent at;*

  - *3:41pm on 26 November 2012;*
  - *8:30am on 27 November 2012;*
  - *11:23am on 28 November 2012;*
  - *11:08am on 28 November 2012;*
  - *10:14am on 18 December 2012;*
  - *2:54pm on 19 December 2012;*
  - *9:51am on 21 December 012;*

- *Except where varied by the s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1520-132631-01, dated June 2013 and Further Information received by Council dated 19 July 2013; and the s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1520-133562-02 dated 9 October 2013 and the Further Information email received by Council from David Needham sent at 12:44pm on 31 October 2013; and the Hegley Acoustic Consultants report dated 1 July 2013; and the s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1510-133562-02 dated 9 December 2013;* ***and s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1520-135959-01 dated March 2014;***

- *The Scheme Plans prepared by Harrison Grierson Consultants Limited entitled "Proposed Subdivision of Part Lots 10 & 11 DP 364444 & Pt Lot 103 DP 408042" referenced;*

  - *132631-23-RC100, rev* ~~*6*~~ ***7****, dated* ~~***17 June 2013***~~ ***25 February 2014;***
  - *132631-23-RC101, rev* ~~*8*~~ ***9*** *dated* ~~***6 December 2013***~~ ***25 February 2014;***
  - *132631-23-RC102, rev* ~~*6*~~ ***7*** *dated* ~~***17 June 2013***~~ ***25 February 2014;***
  - *132631-23-RC103, rev* ~~***2***~~ ***3*** *dated* ~~***23 November 2012***~~ ***25 February 2014;***
  - *132631-23-RC104, rev* ~~***2***~~ ***3*** *dated* ~~***23 November 2012***~~ ***25 February 2014;***
  - *132631-23-RC105, rev* ~~***2***~~ ***3*** *dated* ~~***23 November 2012***~~ ***25 February 2014;***
  - *132631-23-RC106, rev* ~~***2***~~ ***3*** *dated* ~~***23 November 2012***~~ ***25 February 2014;***
  - *132631-23-RC107, rev* ~~***3***~~ ***4*** *dated* ~~***5 December 2012***~~ ***25 February 2014;***
  - *132631-23-RC108, rev* ~~***4***~~ ***5*** *dated* ~~***14 December 2012***~~ ***25 February 2014;***
  - *132631-23-RC109, rev* ~~***4***~~ ***5*** *dated* ~~***19 December 2012***~~ ***25 February 2014;***
  - *132631-23-RC110, rev* ~~***3***~~ ***4*** *dated* ~~***17 December 2012***~~ ***25 February 2014;***
  - *132631-23-RC112, rev* ~~***2***~~ ***3*** *dated* ~~***23 November 2012***~~ ***25 February 2014;***
  - ***132631-23-RC500, rev 1, dated 2 March 2014;***

And comply with either one of the following Scheme Plan options;

Option A

- *The Scheme Plan prepared by Harrison Grierson Consultants Limited entitled "Proposed Subdivision of Part Lots 10 & 11 DP 364444 & Pt Lot 103 DP 408042 referenced 132631-23-RC111, rev ~~2~~ **3**, dated ~~**23 November 2012**~~ **25 February 2014;** or*

Option B

- *The Scheme Plans prepared by Harrison Grierson Consultants Limited entitled "Proposed Subdivision of Part Lots 10 & 11 DP 364444 & Pt Lot 103 DP 408042 referenced 132631-23-RC400, rev 2, dated 5 December 2012 (disregarding Lot 951 which has been subject to area increase);*

- *The following Plans prepared by Harrison Grierson Consultants Limited;*

  - *"Plan of Previous Buildings and Proposed Buffer Zone For Contamination Assessment", referenced 132631-23-RC205, rev 1, dated 23 November 2012;*
  - *"Proposed Pedestrian and Shared Pedestrian/Cycleway Network", referenced 132631-23-RC202, rev 2, dated 27 November 2012;*
  - *"Proposed Road Profiles", referenced 132631-23-RC203, rev 2 dated 19 November 2012;*
  - *"Proposed Finish Contours", referenced 132631-23-RC200, rev 1, dated 19 October 2012;*
  - *"Indicative Earthworks Remaining Cut/ Fill Depths", referenced 132631-23-RC201, rev 1, dated 19 October 2012;*
  - *"Bus Tracking Curves 12.5m Rigid Bus", referenced 132631-23-RC204, rev 1, dated 19 October 2012;*
  - *"Proposed Trunk Services Stormwater Plan", referenced 132631-23-RC210, rev 2, dated 18 December 2012;*
  - *"Proposed Trunk Services Sanitary Sewer Plan", referenced 132631-23-RC211, rev 1, dated 19 October 2012;*
  - *"Proposed Trunk Services Potable Water Plan", referenced 132631-23-RC212, rev 1, dated 19 October 2012;*
  - *"Proposed Layout Overlaying City Plan L86", referenced 132631-23-RC300, rev 2, dated 17 June 2013;*
  - *"Proposed Layout Overlaying City Plan L95", referenced 132631-23-RC301, rev 2, dated 17 June 2013;*
  - *Stage 2 and 3 Reduced Developable Areas Based on Revised Reserve Slopes" referenced 132631-23-RC303, rev 2, dated 17 June 2013.*

Subject to any changes required through compliance with the following conditions

*Noting Condition 1 as amended through s127 Variation to Resource Consent granted 24 July 2013 – TCC Ref 21332*01 and subsequent s127 Variations to Consent granted 7 November 2013 –TCC Ref 21332*02 and 28 January 2014 – TCC Ref 21332*03 with amendments to consent condition underlined.*

2. *Any staging of subdivision consent by way of s223/224 certificates issued on separate survey for this subdivision is appropriate subject to that staging complying with all relevant conditions as listed for that stage within this subdivision consent.*

3. *All matters and works relating to the servicing and accessing of the subdivision, shall be designed, supervised, constructed and certified in accordance with requirements of the Council's' Infrastructure Development Code.*

4. *Prior to any works commencing on the site (exclusive of site clearance or bulk earthworks associated with any Bay of Plenty Regional Council earthworks consent) the consent holder shall submit, to the Council, plans of the proposed activity to and obtain plan approval. Including the following:*

   - *The information and plans required by the Infrastructure Development Code;*
   - *All potential run out areas;*
   - *All flood risk areas;*
   - *Details of any overland flowpaths;*
   - *Details of the works to establish a suitable building platform on each proposed lot;*
   - *Details of the construction of the road to vest and the proposed traffic management measures;*
   - *Details of the construction for all Right of Way lots;*
   - *Details of the sewer extension that is required to service the upstream catchment;*
   - *Details of proposed temporary sanitary sewer pump station;*
   - *Details of design and construction of Detention Ponds and Dams demonstrating the peak flow mitigation required, and how maintenance access is achieved;*
   - *Details of the extent of ponding in extreme rainfall events;*
   - *Details of any culvert upgrade required under proposed roads to vest;*
   - *Details of Fire Fighting system;*
   - *Details of landscaping and planting within Road to vest;*
   - *Details of landscaping and planting of Greenbelt Reserves to vest;*
   - *Details of Recreation Reserves to vest, including development of playgrounds and landscaping (with structural retaining of slopes, accessibility of pathways, featured paving and structural and play equipment to similar standard as illustrated in Photographs received by Council on 18 December 2012);*
   - ***Details of construction of pedestrian accessways***

5. *All residential lots shall be provided with a separate underground connection to the sanitary sewer, stormwater, water and electricity reticulation system in accordance with the Council's Infrastructure Development Code*

6. *The proposed Right of Way lots 934, 960-991 inclusive (and lot 992 if Scheme Plan Option B prepared by Harrison Grierson Consultants Limited referenced 132631-23-RC400, rev 2, dated 5 December 2012 proceeds) shall be constructed in accordance with the Infrastructure Development Code.*

7. *Prior to the first application for s224 approval, the Kennedy Road Waste Water Pump Station shall be complete and operational.*

8. *All lots with a building platform higher than RL40m Moturiki Datum shall be fed from the Joyce Road water supply.*

9. *Where landscaping is proposed on land to be vested as local purpose Greenbelt reserve or Recreation reserve, the landscaping shall be established and maintained at the consent holders expense. The landscaping shall be maintained for not less than 36 months for Greenbelt and 18 months for Recreation reserve from the date of completion. The date of completion shall be agreed with Council. A maintenance bond shall be entered into should vesting occur prior to completion of the maintenance period.*

10. *The consent holder shall supply to the Council a set of 'as built' plans of all engineering works in accordance with the Council's Infrastructure Development Code.*

11. *The location of any subsoil drains shall be shown on the as-built drawings submitted to the Council and within the geotechnical completion report required by Condition 16.*

12. *All earthworks design, testing and construction shall be undertaken in accordance with Infrastructure Development Code and the specific requirements of the consent holders appointed Geo-Professional.*

13. *Where earthworks and/or pre-load operations occur over the Council's mains the consent holder shall undertake a CCTV survey of the mains prior to, and upon completion of the earthworks and/or pre-load operations. Monitoring shall continue at regular intervals during the earthworks and pre-load phases of the project as an ongoing check of the condition of the mains and to ensure their serviceability. If damage occurs to the mains during the earthworks and/or pre-load operations the Council will repair the mains at the consent holder's expense, with any payment for repairs or losses arising as a result of the damage shall be paid prior to certification pursuant to Section 224.*

14. *The Consent Holder shall construct a building platform on each proposed lot to avoid the effects of inundation. The platform shall be a minimum of 500mm above the calculated 50 year (2%AEP) storm level.*

15. *Prior to any earthworks which will increase the stormwater runoff into adjoining catchments, the detention dams and/or ponds required to provide peak flow attenuation shall be in operation.*

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

    - *Comply with the Council's Infrastructure Development Code QA4 requirements;*
    - *Display the position of all designated building platforms and building restriction lines where applicable;*
    - *Certify the provision of debris protection bunds where required;*
    - *Provide recommendations for the disposal of stormwater;*
    - *Provide recommendations for the on going 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;*
- *Determine minimum floor level requirements for lots adjacent to stormwater ponding areas;*
- *Certify that any residual 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;*
- *Comment on removal or amendment of existing land feature/s displayed on Council's GIS.*

17. *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.*

18. *All building line restrictions or designated building platforms shall be clearly identified and dimensioned on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991.*

19. *The consent holder shall, prior to the release of the s223 certificate for the subdivision or any stage of the subdivision, submit to Council's Corporate Information Section three alternative street names for authorisation in accordance with Council's Street Naming Policy (including Iwi consultation), for each proposed new street and lane in the subdivision. The authorised street name signs will be manufactured and erected by the consent holder at the consent holder's expense. All traffic and pedestrian access signage shall be manufactured by an approved certifier and erected by the consent holder at the consent holder's expense.*

20. *All easements required for underground services and rights of way serving lots within the subdivision shall be duly granted or reserved.*

21. *The consent holder shall register an easement in gross in favour of the Council over any stormwater overland flowpath located on private property, including those resulting from overload of the roading primary stormwater system under extreme rainfall conditions.*

22. *The overland flowpath easement shall be shown on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991 and shall be shown as the "Right to Drain Stormwater" and shall be registered on the survey plan under a "Memorandum of Easements in Gross".*

23. *The consent holder shall vest in the Council the following lots as shown on the scheme plan:*

    - *Lots 900-~~921~~ **919** inclusive as Road;*
    - *Lots 930, 935, 938, 940, 944, 950 and 952 as Recreation Reserves;*
    - *Lots 932, 933, 943, 945, 948, 949, 951 and Pt Lot 9 DP364444 as Local Purpose: Greenbelt Reserves;*
    - *Lots 931, 936, 937 and 941 as Local Purpose: Accessway Reserves;*
    - *Lot 947 as Local Purpose: Waste Water Reserve;*

The lots to vest shall be shown on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991.

*Condition 23 as amended through s127 Variation to Resource Consent granted 24 July 2013 – TCC Ref 21332*01. Amendments to consent condition underlined.*

24. *Prior to vesting of lot 947, the consent holder shall enter into a bond for removal of the temporary waste water pump station and associated Infrastructure. Should modification of the structure plan result in the pump station forming part of the permanent network, then a bond will not be required.*

25. *Pursuant to Section 221 of the Resource Management Act 1991, a consent notice shall be registered on the Certificate of Title of any property that shares a common boundary with any of the following local purpose reserves:*
    - *Accessway*
    - *Recreation*
    - *Drainage*
    - *Waste Water*
    - *Stormwater*
    - *Greenbelt*

    The consent notice shall advise the owners and subsequent owners thereof, of the following requirement to be complied with on a continuing basis: The owners are required to meet the full cost of any fencing along the common boundary between the lot and adjoining land that are intended to be vested in Tauranga City Council as local purpose reserve.

26. *Upon application for the s223 certificate for the subdivision the consent holder shall confirm in writing to Council which property boundaries require a fencing consent notice to be registered on its title.*

27. *Prior to bulk earthworks being undertaken within 100m of the area marked potential "HAIL Site" on the Harrison Grierson Plan entitled "Plan of Previous Buildings and Proposed Buffer Zone For Contamination Assessment", referenced 132631-23-RC205, rev 1, dated 23 November 2012, a site investigation report prepared by a suitably qualified professional in accordance with 'Guideline No.1 – Reporting on Contaminated Sites in New Zealand, Ministry for the Environment' is required to be provided to Council's Manager of Environmental Planning. The site investigation report shall identify and quantify any soil contamination, and any remediation works necessary (if any). Prior to lodgement of s224 application in relation to the above land area, any remediation works required to address contaminated soil shall be undertaken. Note, that a land use consent under the City Plan addressing contaminated soil will be required if the site investigation report determines it to be contaminated.*

28. *That before the commencement of any ground disturbance associated with the proposed development within Stages 3H, 3F and Lot 949 (Local Purpose Reserve:Greenbelt), an authority to modify damage or destroy U14/_1915 and U14_2166 and possible unrecorded subsurface archaeological sites from the New Zealand Historical Places Trust is to be obtained under the provisions of Section 12 of the Historic Places Act 1993. Ngai Tamarawaho Iwi representatives shall also be*

given 48 hours notice in writing prior to the commencement of earthworks within the abovementioned locations within the subdivision.

29. *The amalgamation conditions referenced within the Scheme Plans listed within Condition 1 shall be recorded on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991 (LINZ Requests: 1114213 & subsequent LINZ Requests 1152384 & 1191724 &* ***1204864*** *for plans associated with consent variations.*

*Condition 29 as amended through s127 Variation to Resource Consent granted 24 July 2013 – TCC Ref 21332*01 and 28 January 2014 – TCC Ref 21332*03 with amendments to consent condition underlined.*

30. *That a shared cycleway/walkway is to be constructed within the State Highway designation from Pyes Pa Road to link with the Collector Road within the site which is denoted as part of a potential future cycleway/walkway within the Harrison Grierson Plan entitled "Proposed Pedestrian and Shared Pedestrian/Cycleway Network", referenced 132631-23-RC202, rev 2, dated 27 November 2012. The timing and design of construction of the cycleway /walkway within the State Highway (Pyes Pa Bypass) will require approval under s176 of the Resource Management Act 1991. The final approval of construction drawings will be required from New Zealand Transport Agency State Highway Manager: Bay of Plenty.*

31. *The subdivision consent has a term of 15 years to complete from the date in which it has been granted.*

32. *All costs associated with the conditions of this consent, including those required under the Council's' Infrastructure Development Code, shall be met by the consent holder.*

33. *Pursuant to Section 221 of the Resource Management Act 1991, a consent notice shall be registered on the Certificate of Titles of the following Lots advising the owners and subsequent owners thereof of the requirements to be complied with on a continuing basis:*

For Lots 855, 856, 860, 861, 864, 865, 867, 868, 869 and 870

a) *An acoustic fence constituting a close board timber fence with battens over the joins as illustrated within Figure 2 of the Hegley Acoustics Consultants report dated 1 July 2013 shall be maintained on the boundary of the lot and the reserve adjacent to State Highway 36 in the location as shown within Figure 1 of the Hegley Acoustics Consultants report dated 1 July 2013. The fencing shall be maintained at all times to ensure itsacoustic integrity is maintained.*

For Lots 848, 849, 854, 855, 856, 860, 861, 864, 865, 867, 868, 869, 870, 879 and 890

b) *Any new dwelling being constructed, or any existing dwelling being extended greater than 25% of the existing floor area, that is above the ground floor level (i.e. being second and/or third storey), shall be designed and constructed to achieve an internal road-traffic design sound level of 40dBL $_{Aeq(24h)}$ inside all habitable rooms with the ventilating windows open.*

At the time of building consent application an acoustic design report shall be provided to Council from a suitably qualified and experienced acoustics expert demonstrating compliance with the abovementioned sound level requirement. If this cannot be achieved, then:

The windows of all habitable rooms shall be constructed with glazing that includes a laminated pane that is at least 6.38mm thick and covers the glazed area, and a ventilation system shall be installed to either:

- *Consist of an air conditioning unit(s) provided that the noise level generated by the unit(s) must not exceed 40dB$L_{Aeq(30s)}$ in the largest habitable room (excluding bedrooms) and 35dB$L_{Aeq(30s)}$ in all other habitable rooms; when measured 1 metre from any grille or diffuser, or*

- *A system capable of providing a least 15 air changes per hour in the largest habitable room (excluding bedrooms) and at least 5 air changes per hour in all other habitable rooms, and*

- *The noise level generated by the system must not exceed 40dB$L_{Aeq(30s)}$ in the largest habitable room (excluding bedrooms) and 35dB$L_{Aeq(30s)}$ in all other habitable rooms; when measured 1 metre from any grille or diffuser, and*

- *The internal air pressure must be no more than 10 Pa above ambient air pressure due to the mechanical ventilation, and*

- *Where a high air flow rate setting is provided, the system must be controllable by the occupants to be able to alter the ventilation rate with at least three equal progressive stages up to the high setting.*

The above requirements do not apply if it can be demonstrated by way of prediction or measurement by a suitably qualified and experienced acoustic expert that the road-traffic noise level from State Highway 36 is less than 55 dB$L_{Aeq(24h)}$ on all facades of any addition, extension or alteration, or new dwelling which fronts State Highway 36.

*Condition 33 Imposed through s127 Variation to Consent granted 7 November 2013 TCC Ref 21332*02. Consent condition underlined.*

Recommended and Assessed by:

James Jacobs
Intermediate Environmental Planner

Delegated Authorisation by:

Brad Bellamy
Acting Team Leader: Consents

Date: 11th April 2014

Advice Notes

1. *Under RMA s357, you can object to this consent by serving written notice on the Council within 15 working days of receiving this decision, detailing the reasons for the objection.*

2. *Should the actual processing cost exceed the deposit fee paid at lodgement, if not already accompanying this decision, an invoice may be sent at a later date.*

3. *Development contributions under LGA 2002 –*

   Requirement for development contribution: Pursuant to section 198(1)(a) of the Local Government Act 2002, Council requires that a development contribution provided for and in accordance with Council's Development Contributions Policy (which is subject to change), be made (paid) by the consent holder to Council.

   Calculation and payment: Council's Development Contributions Policy currently provides that the required development contribution is:

   - *determined in accordance with Table 2 of Schedule 1 of the Policy in force at the time this subdivision consent is granted; and*
   - *payable immediately before the section 224 completion certificate is released, and that the certificate will not be released until the contribution is paid in full to Council.*

   Postponement or remission: Council's Development Contributions Policy currently provides that there will be no postponement or remission of development contributions except in exceptional circumstances at the discretion of Council's Chief Executive or in the special circumstances outlined in Council's Development Contributions Policy.

   *Advice Note 3 as amended through s127 Variation to Resource Consent granted 28 January 2014 – TCC Ref 21332*03.*

4. *All archaeological sites whether recorded or unrecorded under Part 1 of the Historic Places Act 1993 cannot be destroyed, damaged or modified without the consent of the Historic Places Trust of New Zealand. In the event that an archaeological site(s) and/or koiwi are unearthed, the consent holder is advised to immediately stop work on the part of the site that the archaeological site(s) is located, and contact the Historic Places Trust for advice.*

5. *Construction noise from starting up and operation of construction equipment and all other construction activities on the site of the subdivision are required to meet the limits recommended in Table 1 in NZS6803:1999, and shall be measured and assessed in accordance with, NZS6803P:1984 - "The measurement and assessment of noise from construction, maintenance and demolition work". Adjustments provided in Clause 6.1 of NZS6803P:1984 shall apply for the full duration of the project, and references in the tables to NZS6802 shall read as references to Clause 4.2.2 of NZS6802:1991.*

6. *Where any building or drainage works are required to satisfy conditions of this consent, all consents required under the Building Act 2004 must be obtained prior to the works being carried out.*

7. *Dust management and silt runoff is to be controlled in accordance with the City Plan and the Infrastructure Development Code. The Consent Holder is advised that they are required by Bay of Plenty Regional Councils Land Management Plan to take the*

appropriate measures to prevent or minimise sediment generation and yield (sediment discharge).

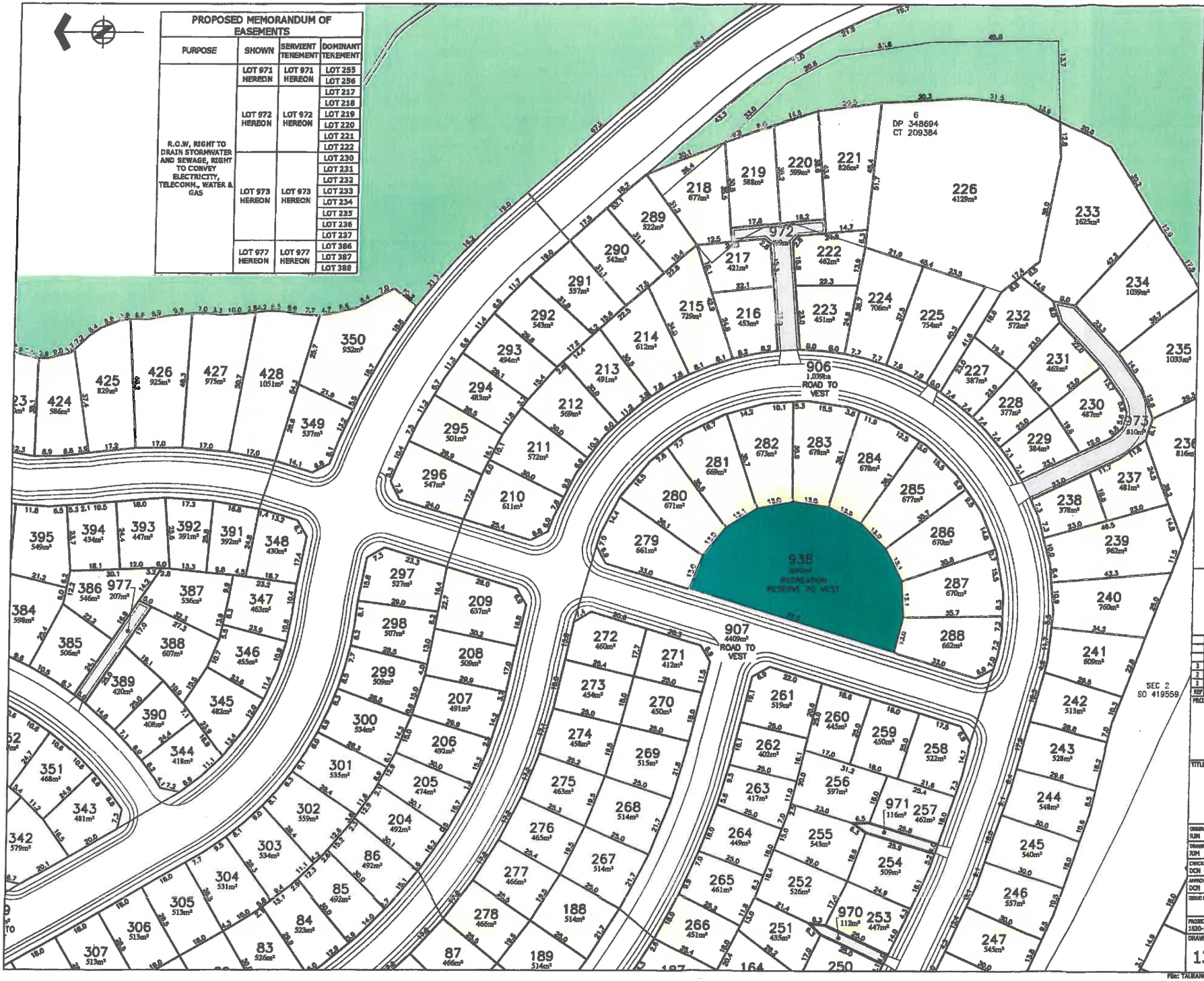
8. *Noise attenuation treatment within State Highway 36 shall be implemented in accordance with the 'Agreement in respect of the Funding and Construction of Noise Attenuation Barriers along Pyes Pa Bypass (Takitimu Drive Extension)' dated November 2010.*

9. *Where land to be vested is subject to a specified interest that is proposed to remain, the Council may certify that interest on the survey plan, pursuant to section 239(2) of the Resource Management Act 1991.*

10. *The consent provides approvals to both layouts in Stage 3K. Should Tauranga City Council wish the applicant to pursue Option B then they recognise that they will need to confirm this to the applicant and confirm how the consent holder will be compensated for implementing this option. The consent holder is under no obligation under this consent to pursue Option B.*

11. *Acknowledged is an agreement relating to works in Lieu of financial contributions and forward funding of infrastructure for Pyes Pa West between TCC and Grasshopper dated 19 May 2004 and deed of variation of agreement relating to works in lieu of financial contributions and forward funding of infrastructure for Pyes Pa West between TCC and Grasshopper dated 3 March 2006.*

12. *It is considered that the subdivision will be consistent with the Consent Notice 6592047.2 registered on the title of Lot 9 – 11 DP 364444.*



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND | ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 971 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 255 AND 256 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 972 HEREON BE HELD AS TO SIX UNDIVIDED ONE SIXTH SHARES BY THE OWNERS OF LOTS 217 TO 222 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 973 HEREON BE HELD AS TO EIGHT UNDIVIDED ONE EIGHTH SHARES BY THE OWNERS OF LOTS 230 TO 237 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 977 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 386, 387 AND 388 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

RC21332-04
RC 24045

APPROVED
11 APR 2014
PLAN

HARRISON GRIERSON

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

REV	REVISIONS	BY	DATE
3	REVISED STAGE 3A,B,C,D,G & H LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	25.10.12

PROJECT:
THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:
PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.10.12	SIGNED:	PLOT DATE: 28.02.14
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: 132631-23-RC106
REV 3

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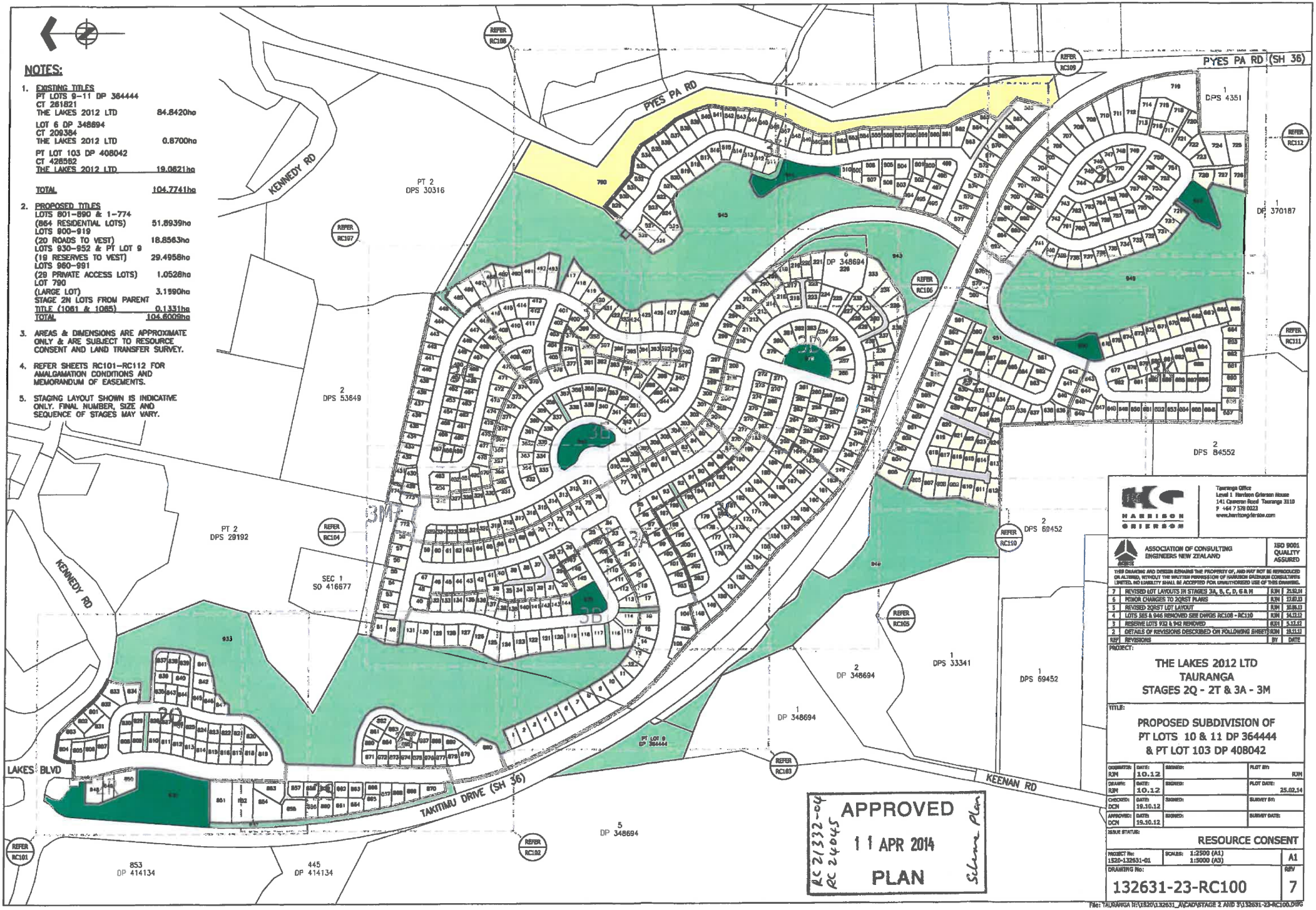
NOTES:
1. EXISTING TITLES
PT LOTS 9-11 DP 364444
CT 261821
THE LAKES 2012 LTD 84.8420ha
LOT 6 DP 348694
CT 209384
THE LAKES 2012 LTD 0.8700ha
PT LOT 103 DP 408042
CT 428562
THE LAKES 2012 LTD 19.0621ha
TOTAL 104.7741ha
2. PROPOSED TITLES
LOTS 801-890 & 1-774
(864 RESIDENTIAL LOTS) 51.8939ha
LOTS 900-919
(20 ROADS TO VEST) 18.8563ha
LOTS 930-952 & PT LOT 9
(19 RESERVES TO VEST) 29.4958ha
LOTS 960-991
(29 PRIVATE ACCESS LOTS) 1.0528ha
LOT 790
(LARGE LOT) 3.1990ha
STAGE 2N LOTS FROM PARENT
TITLE (1061 & 1065) 0.1331ha
TOTAL 104.6009ha
3. AREAS & DIMENSIONS ARE APPROXIMATE ONLY & ARE SUBJECT TO RESOURCE CONSENT AND LAND TRANSFER SURVEY.
4. REFER SHEETS RC101-RC112 FOR AMALGAMATION CONDITIONS AND MEMORANDUM OF EASEMENTS.
5. STAGING LAYOUT SHOWN IS INDICATIVE ONLY. FINAL NUMBER, SIZE AND SEQUENCE OF STAGES MAY VARY.
PYES PA RD
PYES PA RD (SH 36)
KENNEDY RD
KENNEDY RD
LAKES BLVD
TAKITIMU DRIVE (SH 36)
KEENAN RD
PT 2 DPS 30316
2 DPS 53649
PT 2 DPS 29192
SEC 1 SO 416677
1 DPS 4351
1 DP 370187
2 DPS 84552
2 DPS 69452
1 DPS 33341
1 DP 348694
2 DP 348694
5 DP 348694
PT LOT 9 DP 364444
853 DP 414134
445 DP 414134
REFER RC101
REFER RC102
REFER RC103
REFER RC104
REFER RC105
REFER RC106
REFER RC107
REFER RC108
REFER RC109
REFER RC110
REFER RC111
REFER RC112
APPROVED
RC 21332-04
RC 24045
11 APR 2014
PLAN
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ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND
ISO 9001 QUALITY ASSURED
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7 REVISED LOT LAYOUTS IN STAGES 3A, B, C, D, 6 & M RJM 25.02.14
6 MINOR CHANGES TO 2QRST PLANS RJM 17.07.13
5 REVISED 2QRST LOT LAYOUT RJM 30.05.13
4 LOTS 385 & 946 REMOVED SEE DWGS RC108 - RC110 RJM 14.12.12
3 RESERVE LOTS 932 & 942 REMOVED RJM 5.12.12
2 DETAILS OF REVISIONS DESCRIBED ON FOLLOWING SHEET(S) RJM 18.11.12
REF REVISIONS BY DATE
PROJECT:
THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M
TITLE:
PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042
DESIGNED: RJM DATE: 10.12 PLOT BY: RJM
DRAWN: RJM DATE: 10.12 PLOT DATE: 25.02.14
CHECKED: DCN DATE: 19.10.12 SURVEY BY:
APPROVED: DCN DATE: 19.10.12 SURVEY DATE:
ISSUE STATUS: RESOURCE CONSENT
PROJECT No: 1520-132631-01
SCALES: 1:2500 (A1) 1:5000 (A3)
A1
DRAWING No: 132631-23-RC100
REV 7
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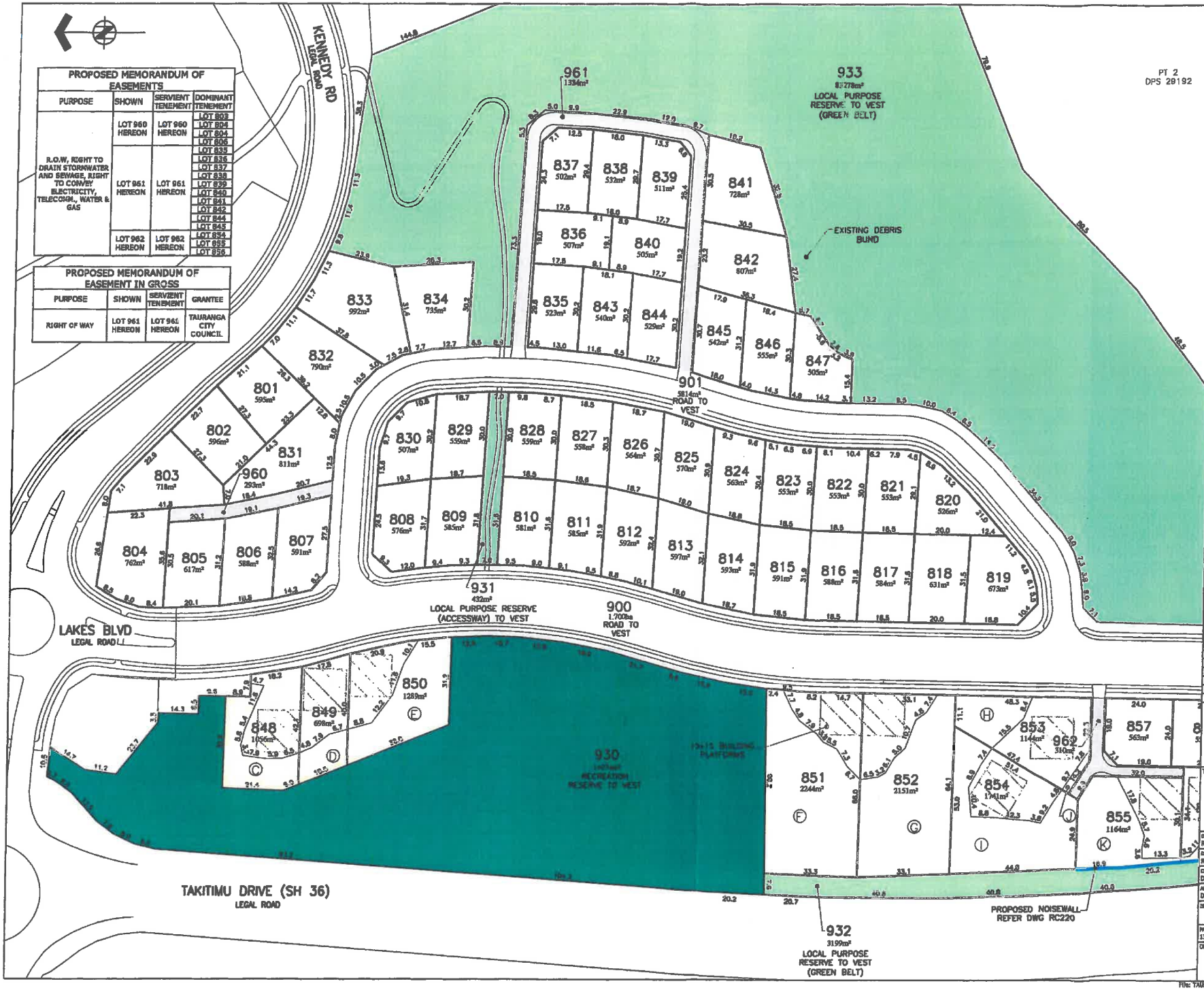

PROPOSED MEMORANDUM OF EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 960 HEREON	LOT 960 HEREON	LOT 803 LOT 804 LOT 805 LOT 806
	LOT 961 HEREON	LOT 961 HEREON	LOT 835 LOT 836 LOT 837 LOT 838 LOT 839 LOT 840 LOT 841 LOT 842 LOT 843 LOT 844 LOT 845
	LOT 962 HEREON	LOT 962 HEREON	LOT 854 LOT 855 LOT 856

PROPOSED MEMORANDUM OF EASEMENT IN GROSS			
PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
RIGHT OF WAY	LOT 961 HEREON	LOT 961 HEREON	TAURANGA CITY COUNCIL

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
THAT LOT 960 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 803, 804, 805 AND 806 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 961 HEREON BE HELD AS TO TEN UNDIVIDED ONE TENTH SHARES BY THE OWNERS OF LOTS 835 – 842, 844 AND 845 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 962 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 854–856 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

2. BUILDING RESTRICTIONS:
AREAS SHOWN C – K ARE SUBJECT TO BUILDING RESTRICTIONS. THE LINES SHOWN ARE INDICATIVE ONLY. FINAL BUILDING LINE RESTRICTIONS WILL BE CONFIRMED AT THE TIME OF LEGAL SURVEY.

RC 21332-04
APPROVED
11 APR 2014
PLAN

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REF	REVISIONS	BY	DATE
9	NEW LOT 933 AREA DUE TO REVISED STAGE 3B LOT BOUNDARY	RJM	25.02.14
8	AMALGAMATION CONDITIONS AND R.O.W SCHEDULE AMENDED	RJM	06.12.13
7	MINOR CHANGES TO 2QRST PLANS	RJM	12.07.13
6	EXTENT OF NOISE WALL AMENDED	RJM	1.07.13
5	REVISED 2QRST LOT LAYOUT	RJM	10.06.13
4	BUILDING RESTRICTION LINES ADDED	RJM	15.04.13
3	LOT 932 REMOVED, LOT 933 AREA INCREASED	RJM	5.03.13

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1320-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: 132631-23-RC101
REV 9

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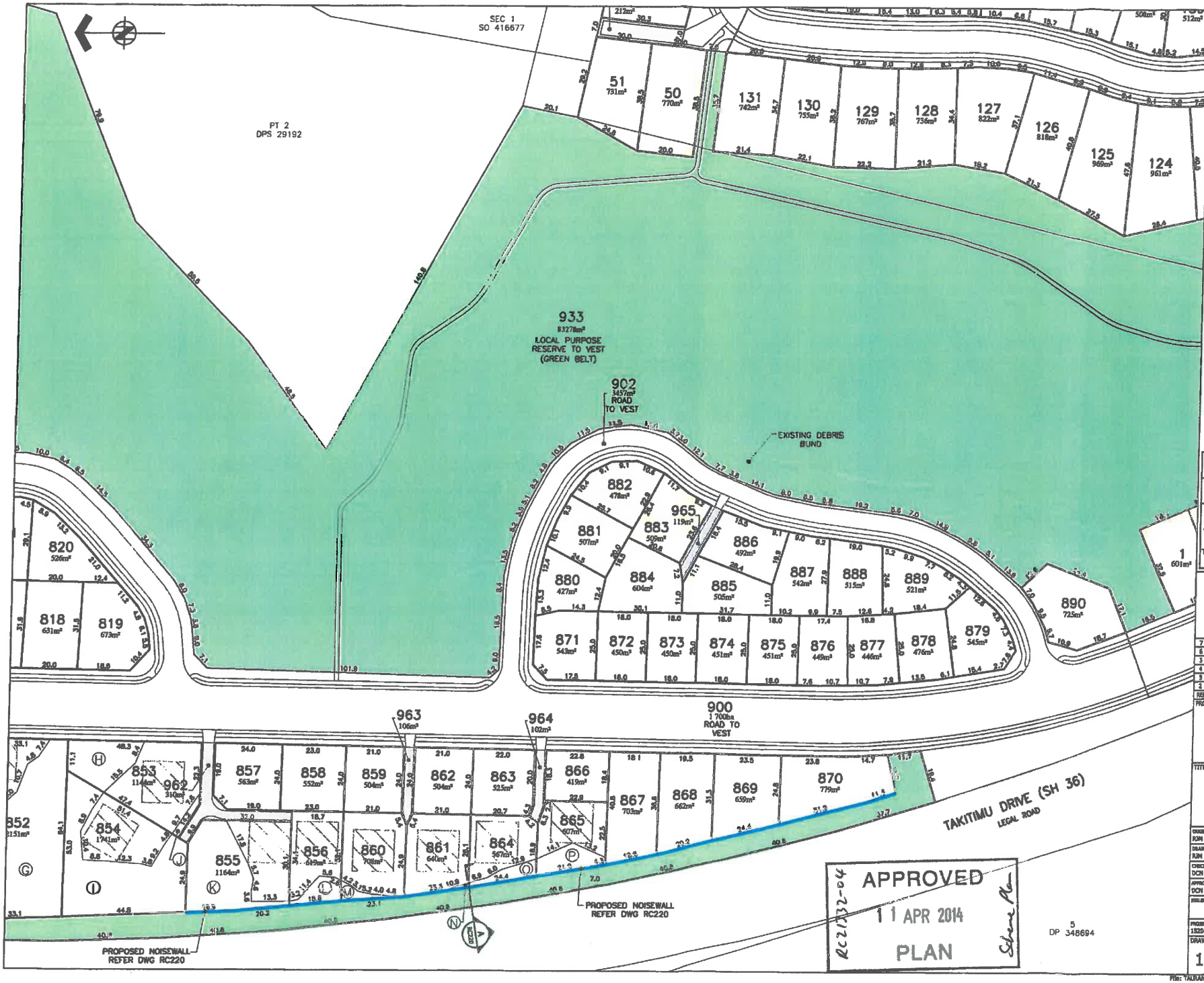

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND | ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
THAT LOT 963 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 860 AND 861 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 964 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 864 AND 865 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 965 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 884 AND 885 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

2. BUILDING RESTRICTIONS:
AREAS SHOWN G – P ARE SUBJECT TO BUILDING RESTRICTIONS. THE LINES SHOWN ARE INDICATIVE ONLY. FINAL BUILDING LINE RESTRICTIONS WILL BE CONFIRMED AT THE TIME OF LEGAL SURVEY.

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 963 HEREON	LOT 963 HEREON	LOT 860
			LOT 861
	LOT 964 HEREON	LOT 964 HEREON	LOT 864
			LOT 865
	LOT 965 HEREON	LOT 965 HEREON	LOT 884
			LOT 885

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REF	REVISIONS	BY	DATE
7	NEW LOT 933 AREA DUE TO REVISED STAGE 3B LOT BOUNDARY	RJH	25.02.14
6	MINOR CHANGES TO 2C/ST PLANS	RJH	17.07.13
5	EXTENT OF NOISE WALL AMENDED	RJH	1.07.13
4	REVISED 2C/ST LOT LAYOUT	RJH	18.06.13
3	BUILDING RESTRICTION LINES ADDED	RJH	16.04.13
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJH	23.11.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJH	DATE: 10.1.2	SIGNED:	PLOT BY: RJH
DRAWN: RJH	DATE: 10.1.2	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: **RESOURCE CONSENT**

PROJECT No: 1320-132631-01 | SCALES: 1:625 (A1) 1:1250 (A3) | A1

DRAWING No: **132631-23-RC102** | REV **7**

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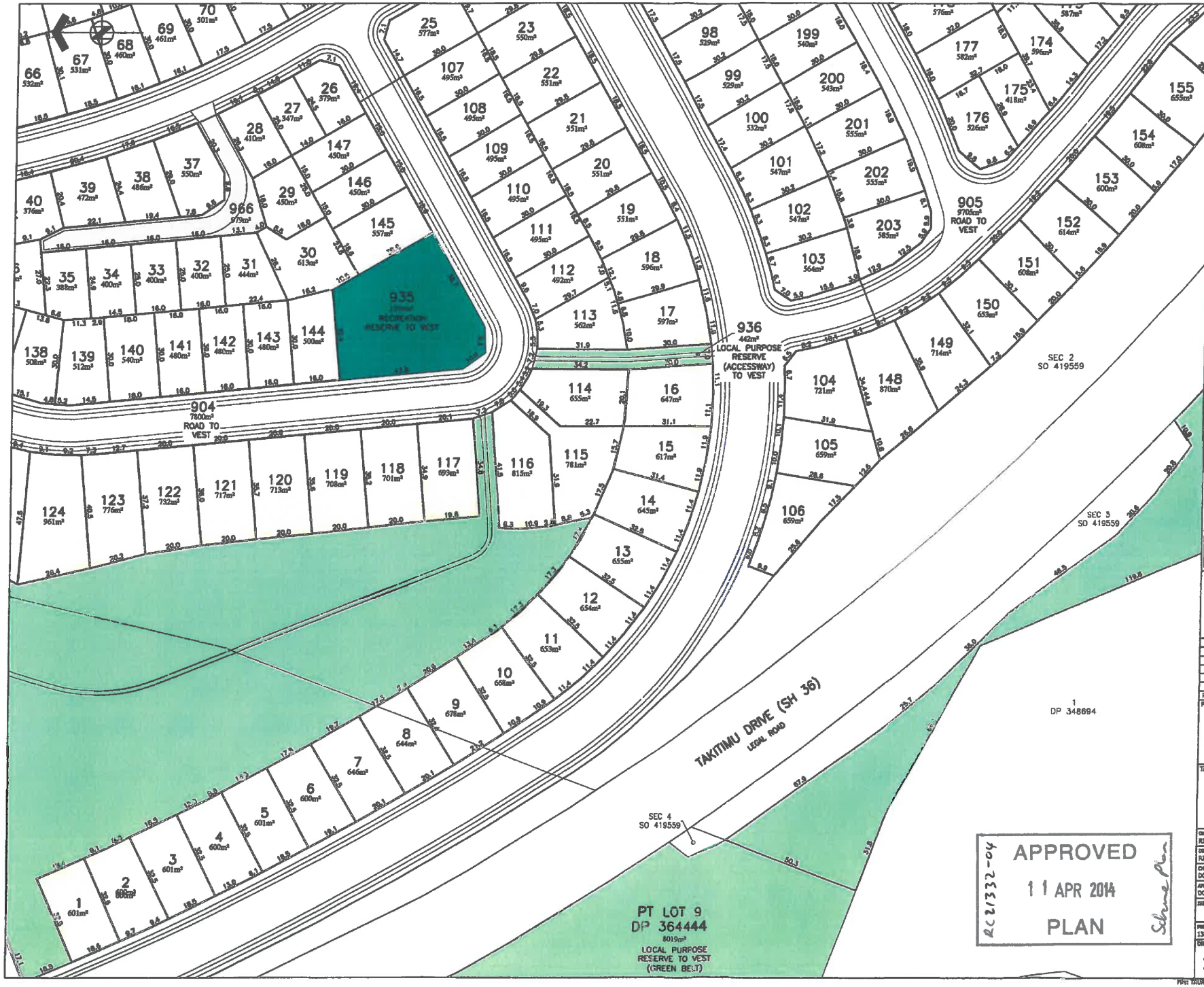

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
THAT LOT 966 HEREON BE HELD AS TO EIGHT UNDIVIDED ONE EIGHTH SHARES BY THE OWNERS OF LOTS 29 TO 36 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 966 HEREON	LOT 966 HEREON	LOT 29
			LOT 30
			LOT 31
			LOT 32
			LOT 33
			LOT 34
			LOT 35
			LOT 36

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REF	REVISIONS	BY	DATE
3	REVISED STAGE 3A,B,C,D,E & H LAYOUT & ALL LOT NUMBERS	RJH	25.02.14
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJH	23.10.12
1	ISSUED FOR RESOURCE CONSENT	RJH	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJH	DATE: 10.10.12	SIGNED:	PLOT BY: RJH
DRAWN: RJH	DATE: 10.10.12	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCH	DATE: 29.10.12	SIGNED:	SURVEY INFO
APPROVED: DCH	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1320-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC103		REV 3

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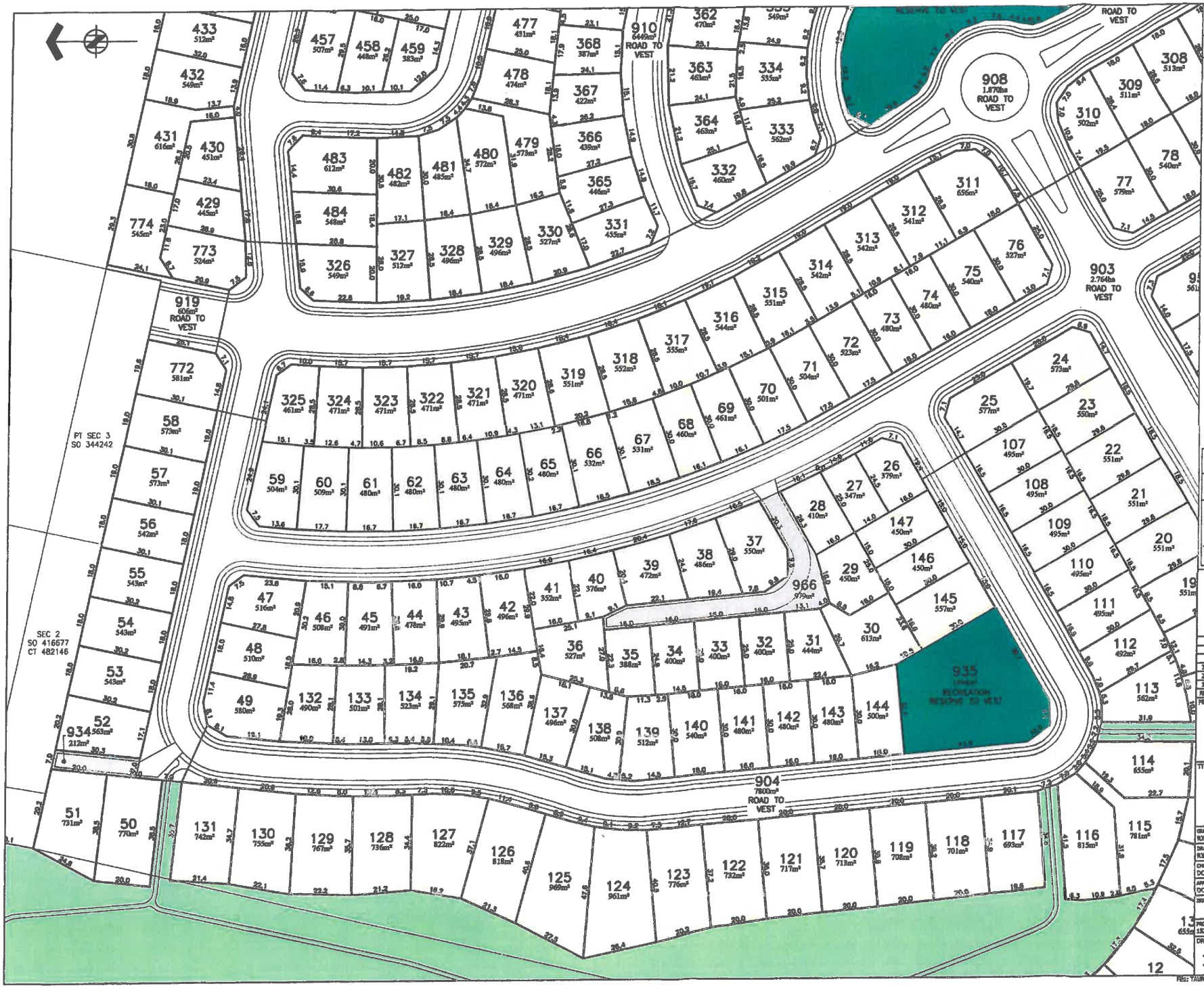

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 934 HEREON BE AMALGAMATED WITH SECTION 2 SO 416677 AND ONE COMPUTER REGISTER BE ISSUED IN ACCORDANCE THEREWITH.

RC21332-04

APPROVED

11 APR 2014

PLAN

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 934 HEREON	LOT 934 HEREON	LOT 51
			SEC 2 SO 416677

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REF	REVISIONS	BY	DATE
3	REVISED STAGE 3A,B,C,D,G & H LAYOUT & ALL LOT NUMBERS	KIM	25.02.14
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	KIM	29.11.13
1	ISSUED FOR RESOURCE CONSENT	KIM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

DESIGNED: KIM	DATE: 10.12	SIGNED:	PLOT BY: KIM
DRAWN: KIM	DATE: 10.12	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCH	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCH	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1320-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC104		REV 3

File: TAURANGA H:\1320\132631_AVCAD\STAGE 2 AND 3\132631-23-RC100.DWG

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
THAT LOT 969 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 164 AND 165 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 970 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 251 AND 252 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

PROPOSED MEMORANDUM OF EASEMENTS IN GROSS

PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	A	LOT 249 HEREON	TAURANGA CITY COUNCIL

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 969 HEREON	LOT 969 HEREON	LOT 164
			LOT 165
	LOT 970 HEREON	LOT 970 HEREON	LOT 251
			LOT 252

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Level 1 Harrison Grierson House
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REF	REVISIONS	BY	DATE
3	REVISED STAGE 3A,B,C,D,E & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
2	NEW EASEMENT A PROPOSED OVER LOT 242	RJM	20.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

DESIGNED: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCR	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCR	DATE: 19.10.12	SIGNED:	SURVEY DATE:

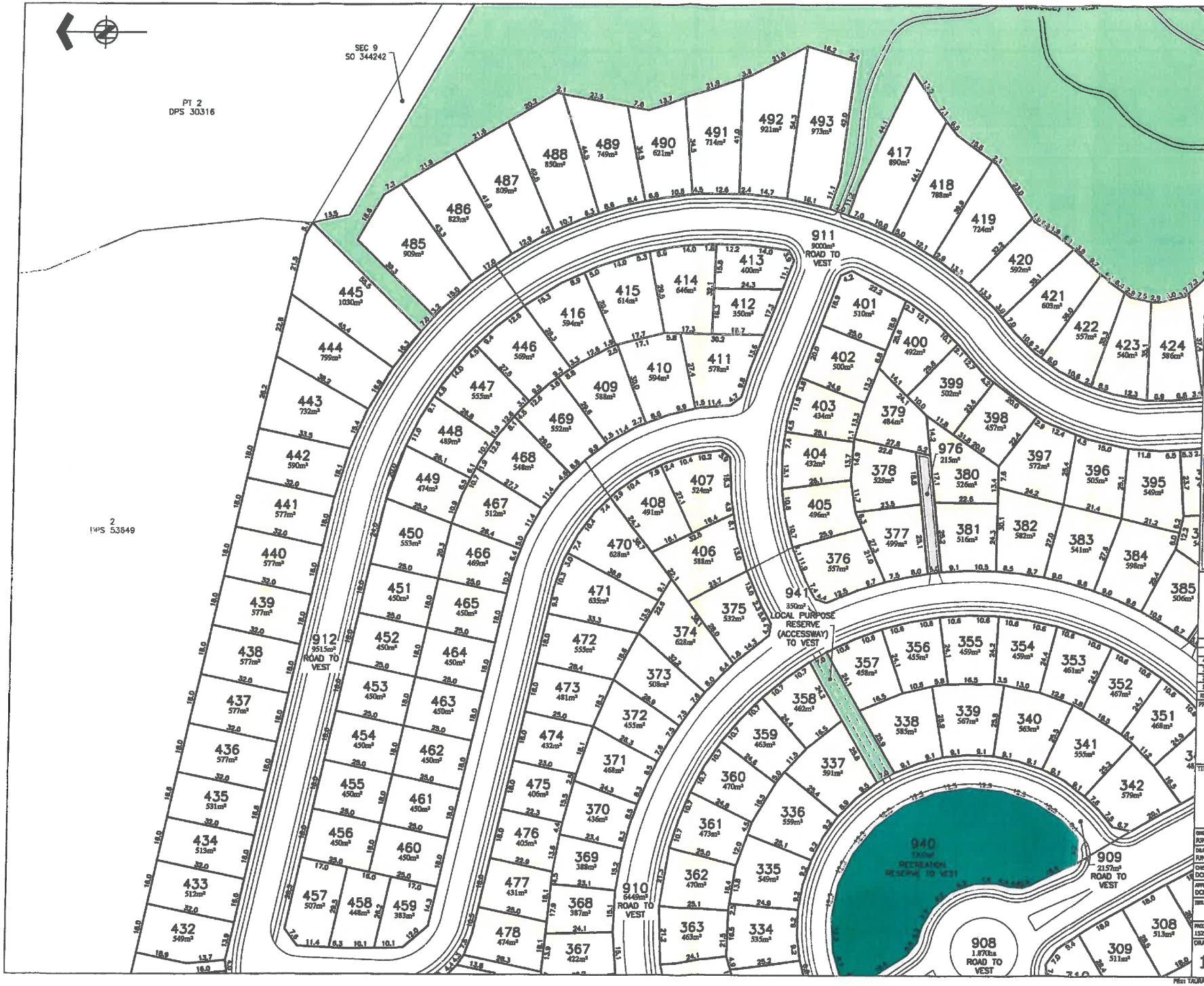
ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: 132631-23-RC105
REV 3

File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC105.DWG

RC 21332-04
APPROVED
11 APR 2014
PLAN



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 976 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 378, 379 AND 380 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

RC21332-04

APPROVED

11 APR 2014

PLAN

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 976 HEREON	LOT 976 HEREON	LOT 378
			LOT 379
			LOT 380

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Level 1 Harrison Grierson House
141 Cameron Road Tauranga 3110
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www.harrisongrierson.com

REF	REVISIONS	BY	DATE
4	REVISED STAGE 5A,B,C,D,G & H LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
3	LOT 942 REMOVED, LOT 460 REVISED FOR RESERVE	RJM	05.02.13
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.01.13
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC107		REV 4

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 980 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 524, 525 AND 526 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

RC21332-04
APPROVED
11 APR 2014
PLAN

PROPOSED MEMORANDUM OF EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 980 HEREON	LOT 980 HEREON	LOT 524 LOT 525 LOT 526

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NO	REVISIONS	BY	DATE
5	REVISED STAGE 3A,B,C,D,E & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
4	LOT 946 REMOVED NOW PART OF LOT 790	RJM	14.12.12
3	AREA OF LOT 945 INCREASED	RJM	5.12.12
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:
THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

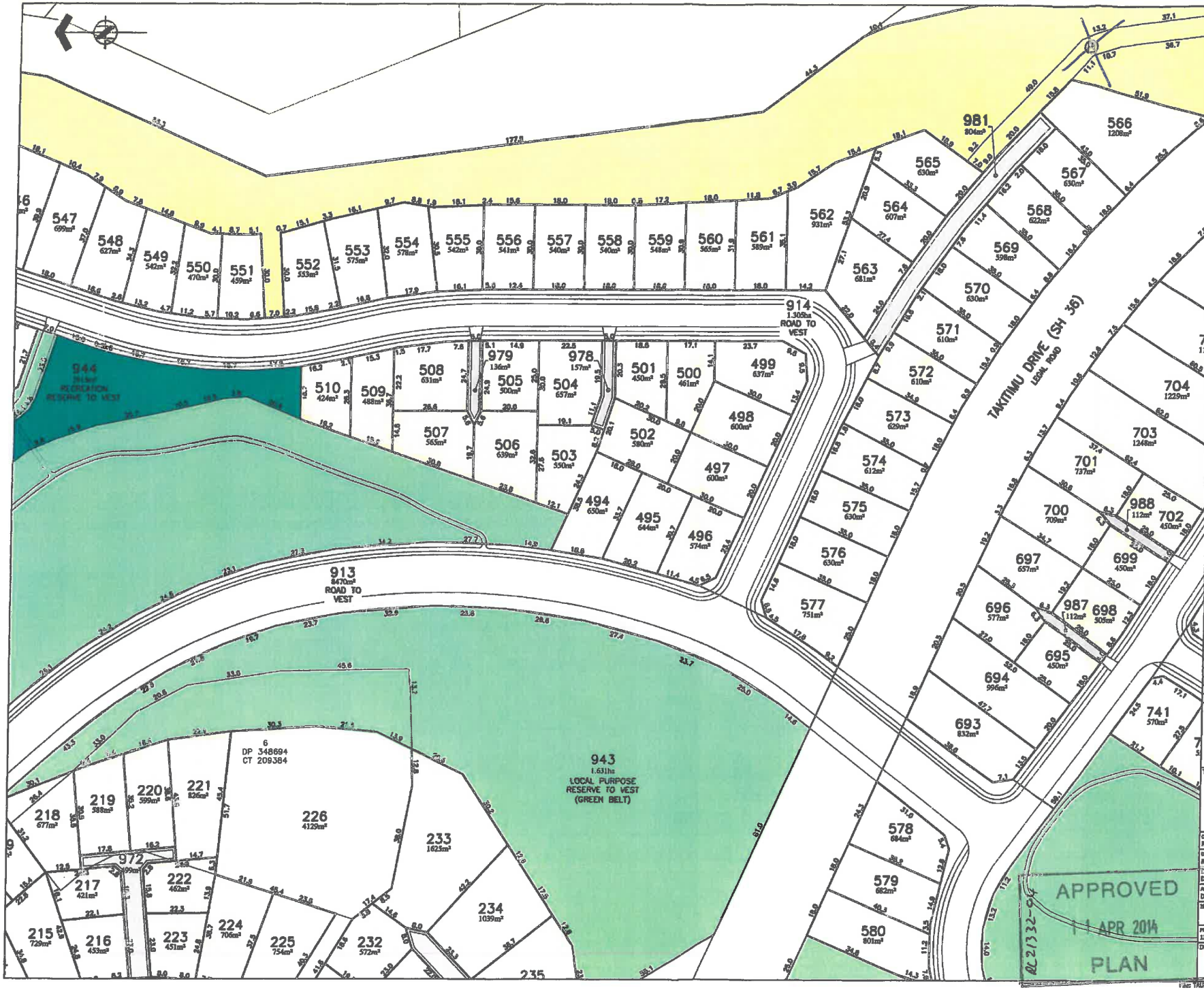
TITLE:
PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCH	DATE: 10.10.12	SIGNED:	SURVEY BY:
APPROVED: DCH	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC108		REV 5

File: TAURANGA N:\1520\132631_AUCAD\STAGE 2 AND 3\132631-23-RC108.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND — ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 978 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 502 AND 503 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 979 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 506 AND 507 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 981 HEREON BE HELD AS TO EIGHT UNDIVIDED ONE EIGHTH SHARES BY THE OWNERS OF LOTS 564 TO 571 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

PROPOSED MEMORANDUM OF EASEMENT IN GROSS

PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
PEDESTRIAN ACCESSWAY	B	LOT 700 HEREON	TAURANGA CITY COUNCIL
	LOT 981 HEREON	LOT 981 HEREON	

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 978 HEREON	LOT 978 HEREON	LOT 502
			LOT 503
	LOT 979 HEREON	LOT 979 HEREON	LOT 506
			LOT 507
	LOT 981 HEREON	LOT 981 HEREON	LOT 564
			LOT 565
			LOT 566
			LOT 567
			LOT 568
			LOT 569
			LOT 570
			LOT 571

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REF	REVISIONS	BY	DATE
5	REVISED STAGE 3A,B,C,D,G & H LAYOUT & ALL LOT NUMBERS	RJH	25.03.14
4	PEDESTRIAN ACCESS OVER LOT 981 PROVIDED	RJH	19.12.13
3	LOT 946 REMOVED NOW PART OF LOT 700	RJH	14.12.12
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJH	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJH	18.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

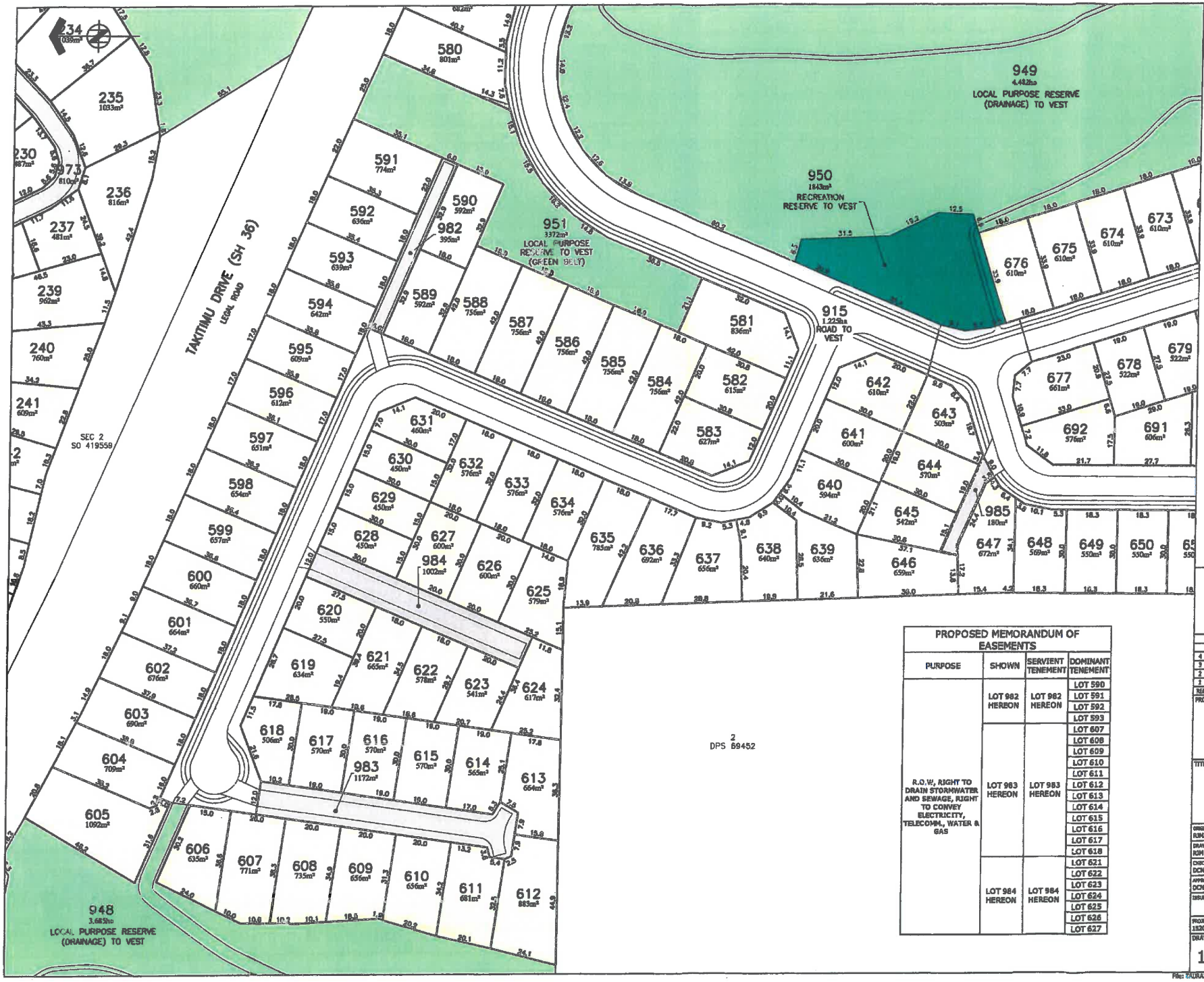
DESIGNED: RJH	DATE: 10.12	SIGNED:	PLOT BY: RJH
DRAWN: RJH	DATE: 10.12	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCH	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCH	DATE: 19.10.12	SIGNED:	SURVEY DATE:

STATUS: RESOURCE CONSENT

PROJECT No: 1320132631-01 | SCALES: 1:625 (A1) 1:1250 (A3) | A1

DRAWING No: 132631-23-RC109 | REV 5

File: TAURANGA N:\1320\132631_AUCAD\STAGE 3 AND 3\132631-23-RC109.DWG



PROPOSED MEMORANDUM OF EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 982 HEREON	LOT 982 HEREON	LOT 590
			LOT 591
			LOT 592
			LOT 593
	LOT 983 HEREON	LOT 983 HEREON	LOT 607
			LOT 608
			LOT 609
			LOT 610
			LOT 611
			LOT 612
			LOT 613
			LOT 614
			LOT 615
			LOT 616
			LOT 617
			LOT 618
	LOT 984 HEREON	LOT 984 HEREON	LOT 621
			LOT 622
			LOT 623
			LOT 624
			LOT 625
			LOT 626
			LOT 627

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 982 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 590 TO 593 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 983 HEREON BE HELD AS TO TWELVE UNDIVIDED ONE TWELFTH SHARES BY THE OWNERS OF LOTS 607 TO 618 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 984 HEREON BE HELD AS TO SEVEN UNDIVIDED ONE SEVENTH SHARES BY THE OWNERS OF LOTS 621 TO 627 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

RC 21332-04

APPROVED

11 APR 2014

PLAN

HARRISON GRIERSON

Tauranga Office
Level 1 Harrison Grierson House
141 Cameron Road Tauranga 3110
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REF	REVISIONS	BY	DATE
4	REVISED STAGE 3A,B,C,D,G & H LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
3	LOT 985 REMOVED, NOW PART OF LOT 951	RJM	14.12.13
2	AREA B ADDED AS GREEN BELT LAND COVENANT	RJM	21.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

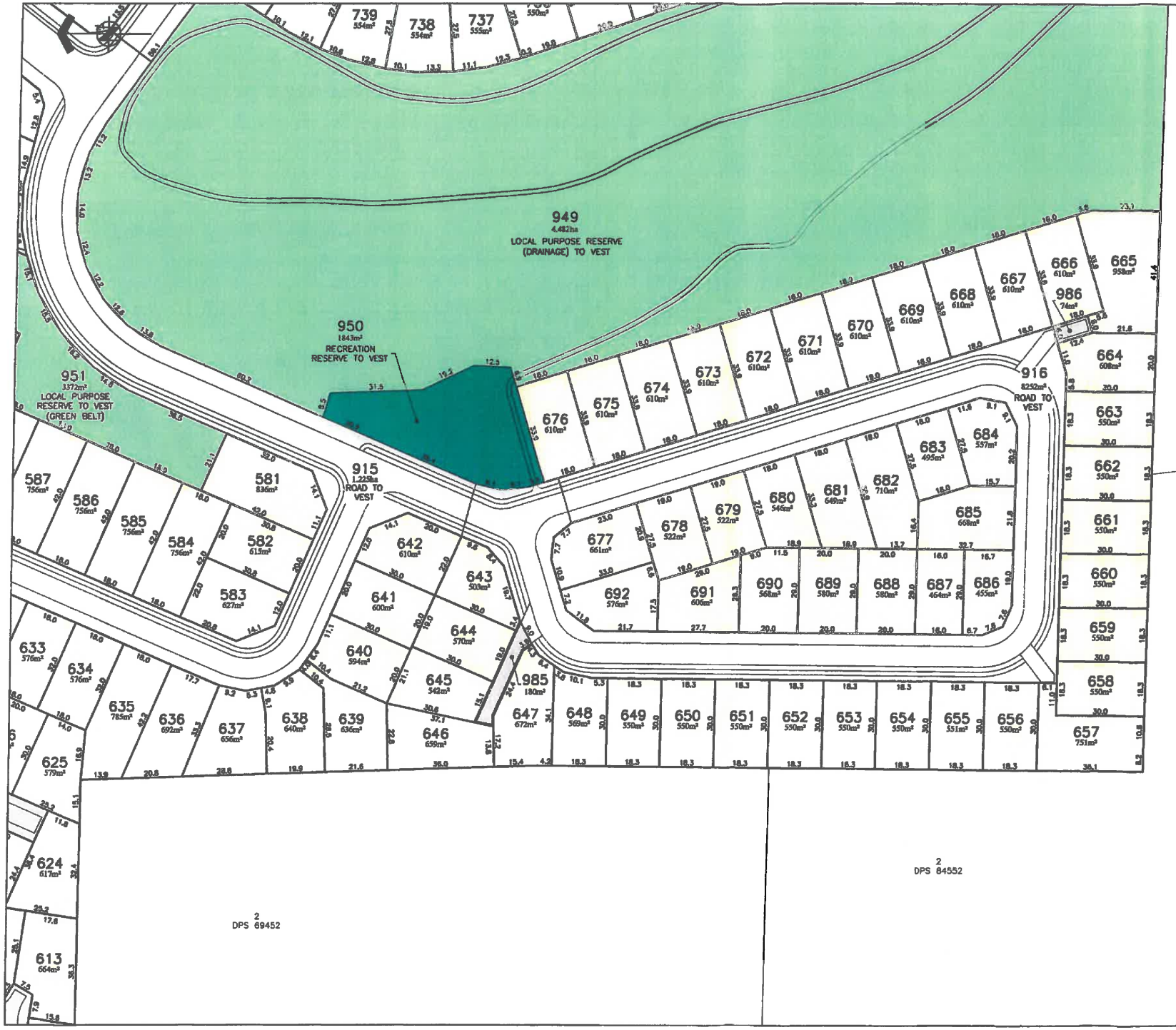
PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1320-132631-01	SCALES: 1:625 (A1) 1:1250 (A3)	A1
DRAWING No: 132631-23-RC110		REV 4

File: TAURANGA N:\1320\132631_AVCAD\STAGE 2 AND 3\132631-23-RC110.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 985 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 644, 645 AND 646 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 986 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 665 AND 666 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

RC 21372-04

APPROVED

11 APR 2014

PLAN

PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 985 HEREON	LOT 985 HEREON	LOT 644
			LOT 645
			LOT 646
	LOT 986 HEREON	LOT 986 HEREON	LOT 665
			LOT 666

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Level 1 Harrison Grierson House
141 Cameron Road Tauranga 3110
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REF	REVISIONS	BY	DATE
3	REVISED STAGE 3A,B,C,D,E & H LAYOUT & ALL LOT NUMBERS	RJH	25.02.14
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJH	21.11.12
1	ISSUED FOR RESOURCE CONSENT	RJH	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

DESIGNED: RJH	DATE: 10.12	SIGNED:	PLOT BY: RJH
DRAWN: RJH	DATE: 10.12	SIGNED:	PLOT DATE: 25.02.14
CHECKED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01

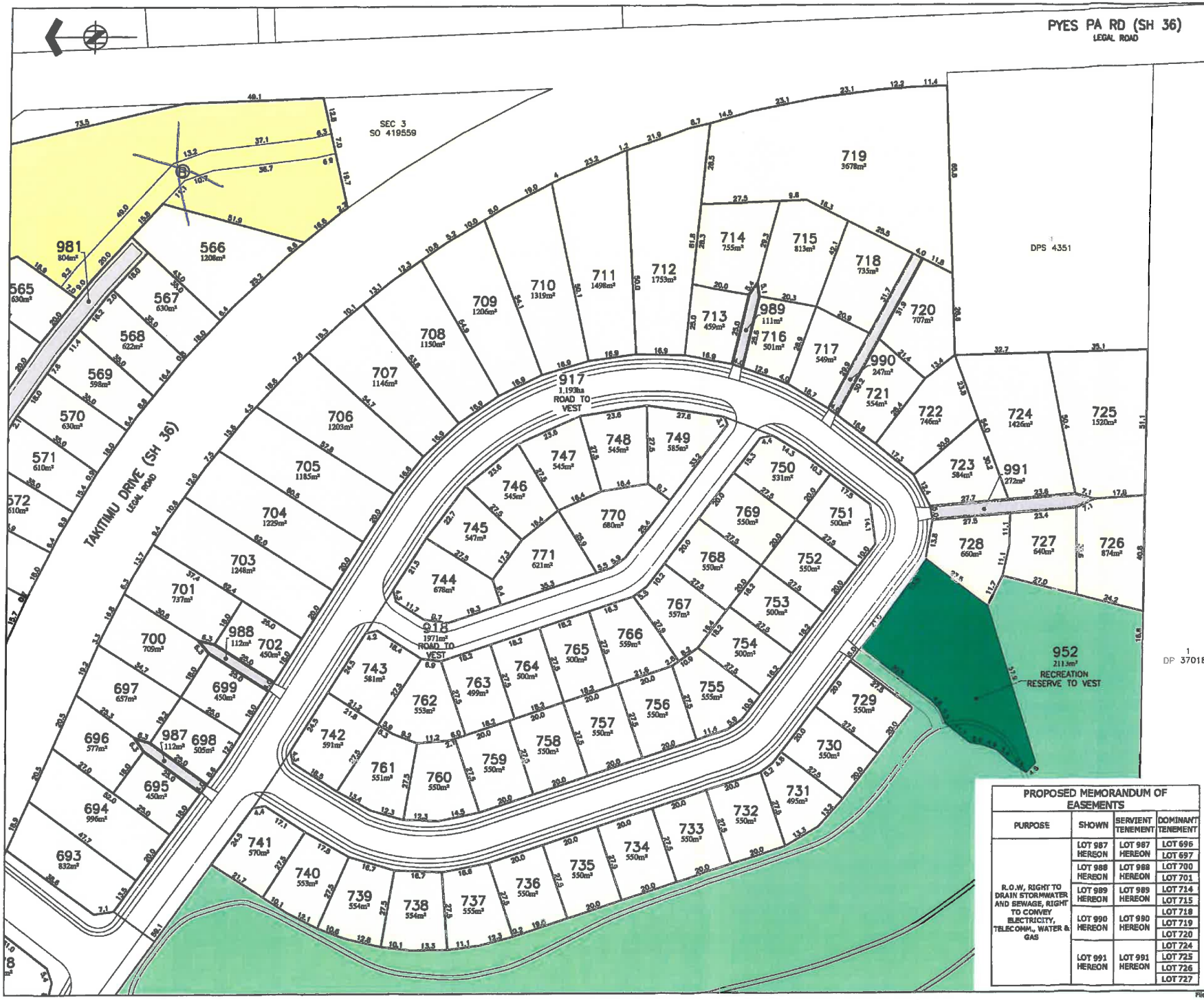
SCALES: 1:625 (A1) 1:1250 (A3)

A1

DRAWING No: 132631-23-RC111

REV 3

File: TAURANGA N:\1520\132631_AJCAD\STAGE 2 AND 3\132631-23-RC100.DWG



PROPOSED MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
R.O.W, RIGHT TO DRAIN STORMWATER AND SEWAGE, RIGHT TO CONVEY ELECTRICITY, TELECOMM., WATER & GAS	LOT 987 HEREON	LOT 987 HEREON	LOT 696
			LOT 697
	LOT 988 HEREON	LOT 988 HEREON	LOT 700
			LOT 701
	LOT 989 HEREON	LOT 989 HEREON	LOT 714
			LOT 715
	LOT 990 HEREON	LOT 990 HEREON	LOT 718
			LOT 719
			LOT 720
			LOT 724
	LOT 991 HEREON	LOT 991 HEREON	LOT 725
			LOT 726
			LOT 727

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 987 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 696 AND 697 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 988 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 700 AND 701 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 989 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 714 AND 715 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 990 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 718, 719 & 720 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 991 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 724 TO 727 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

RC 2/1332-04
APPROVED
11 APR 2014
PLAN
Surveyor Plan

HARRISON GRIERSON
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Level 1 Harrison Grierson House
141 Cameron Road Tauranga 3110
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REF	REVISIONS	BY	DATE
3	REVISED STAGE 3A,B,C,D,G & H LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
2	REVISED LOT LAYOUT	RJM	19.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 10 & 11 DP 364444
& PT LOT 103 DP 408042

DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
CHECKED: DCN	DATE: 19.10.12	SIGNED:	PLOT DATE: 25.02.14
APPROVED: DCN	DATE: 19.10.12	SIGNED:	SURVEY BY:
			SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:625 (A1) 1:1250 (A3)
A1

DRAWING No: 132631-23-RC112
REV 3

File: TAURANGA R:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG

NOTES:

1. EXISTING TITLES

PT LOTS 9-11 DP 364444 CT 261821 THE LAKES 2012 LTD	84.8420ha
LOT 6 DP 348694 CT 209384 THE LAKES 2012 LTD	0.8700ha
PT LOT 103 DP 408042 CT 428562 THE LAKES 2012 LTD	19.0621ha
TOTAL	104.7741ha

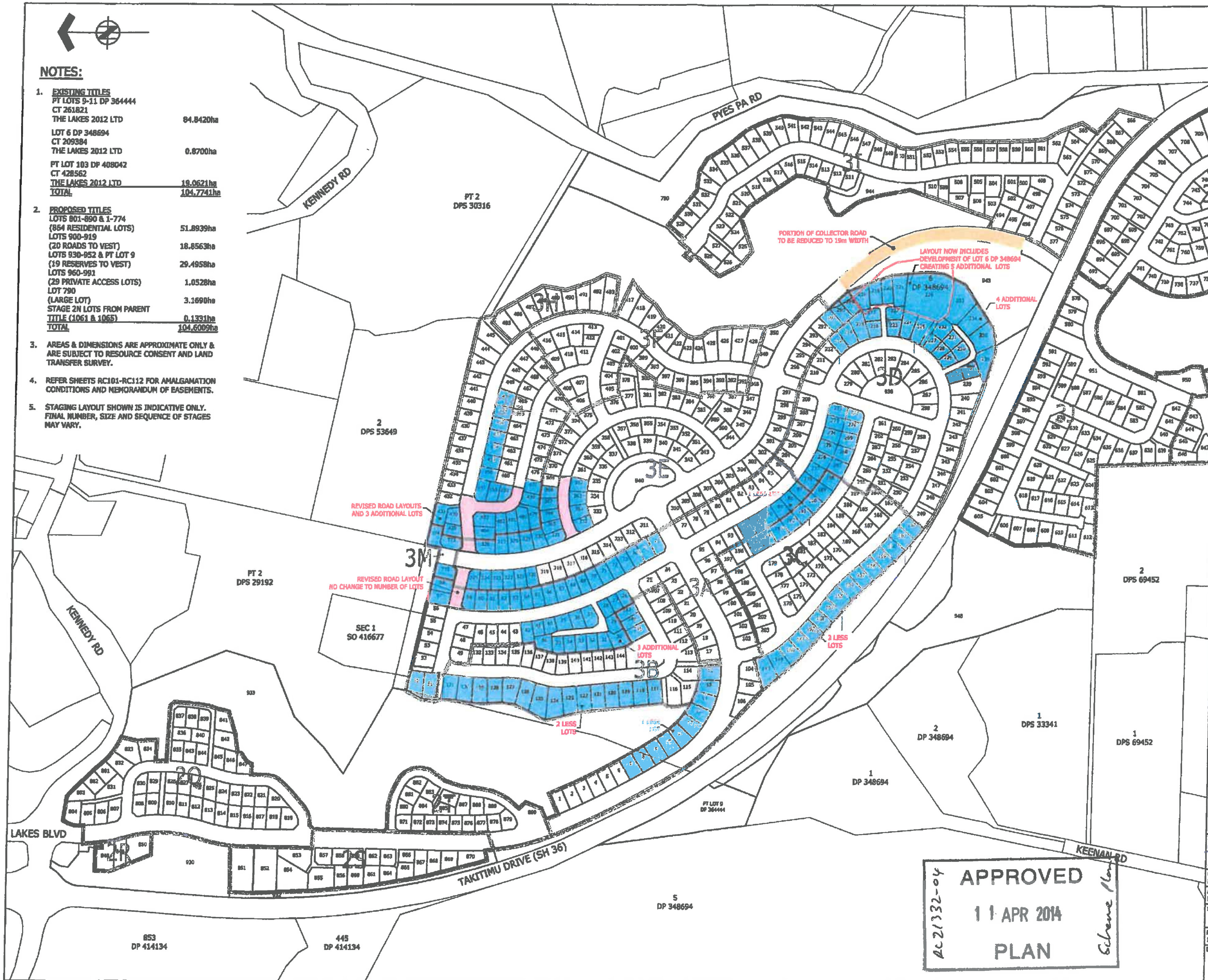
2. PROPOSED TITLES

LOTS 801-890 & 1-774 (864 RESIDENTIAL LOTS)	51.8939ha
LOTS 900-919 (20 ROADS TO VEST)	18.8563ha
LOTS 930-952 & PT LOT 9 (19 RESERVES TO VEST)	29.4958ha
LOTS 960-991 (29 PRIVATE ACCESS LOTS)	1.0528ha
LOT 790 (LARGE LOT)	3.1690ha
STAGE 2N LOTS FROM PARENT TITLE (1061 & 1065)	0.1331ha
TOTAL	104.6009ha

3. AREAS & DIMENSIONS ARE APPROXIMATE ONLY & ARE SUBJECT TO RESOURCE CONSENT AND LAND TRANSFER SURVEY.

4. REFER SHEETS RC101-RC112 FOR AMALGAMATION CONDITIONS AND MEMORANDUM OF EASEMENTS.

5. STAGING LAYOUT SHOWN IS INDICATIVE ONLY. FINAL NUMBER, SIZE AND SEQUENCE OF STAGES MAY VARY.



APPROVED
11 APR 2014
PLAN
RC21332-04
Scheme Plan

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HARRISON GRIERSON

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

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REF	REVISIONS	BY	DATE
1	ISSUED WITH VARIATION TO SHOW EXTENT OF REVISIONS	RJM	03.03.14

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

RC21332
SUMMARY OF REVISIONS FOR VARIATION SUBMITTED MARCH 2014

ORIGINATOR: RJM	DATE: 03.03.14	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 03.03.14	SIGNED:	PLOT DATE: 03.03.14
CHECKED: DCN	DATE: 03.03.14	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 03.03.14	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01 | SCALES: 1:2500 (A1) 1:5000 (A3) | A1

DRAWING No: 132631-23-RC500 | REV 1

File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100 VARIATION SUMMARY 140303.DWG

Tauranga City

The Lakes 2012 Limited
C/- Harrison Grierson Consultants Limited
PO Box 1199
Tauranga 3140

DECISION ON CHANGE OF CONDITIONS APPLICATION – RC21332*08
Under the Resource Management Act 1991

That pursuant to Sections 104, 104B, 127 and 108 of the Resource Management Act 1991, the application by The Lakes 2012 Limited to change conditions of subdivision consent RC21332 to provide for a reconfiguration of residential lots with three additional lots created, a revised road and access lot layout, re-alignment of greenbelt and recreation reserve and to impose consent notices on titles to address reverse sensitivity noise effects;

And

To vary the land use consent to allow for future residential development on lots 236, 237 and 238 to be developed in accordance with the Suburban Residential permitted activity rules;

As it relates to land with The Lakes Stage 2 and Stage 3 legally described as Pt Lots 9, 10 and 11 DP 364444 and Pt Lot 103 DP 40802 is granted.

That pursuant to Section 113 of the RMA – the reasons for the decision are as per the recommendation:

The actual and potential effects on the environment of the change have been determined as being acceptable and approving the application will be consistent with the relevant provisions of the Regional Policy Statement and Operative City Plan. Overall the application will be consistent with the purpose and principles of the Act.

Condition 1, 6, 23, 29 and 33 amendments are highlighted as bold red:

1. *The proposal shall proceed in accordance with the application submitted including:*

   - *The Assessment of Environmental Effects prepared by Harrison Grierson Consultants Limited entitled "The Lakes – Balance Stage 2 and Stage 3", referenced 1520-132631-01, dated October 2012;*

   - *Further Information prepared by Harrison Grierson Consultants Limited entitled "RC21332 – The Lakes – Stage 2/3 Further Information Response", referenced 1520-132631-01, dated 23 November 2012;*

- *Further Information prepared by Harrison Grierson Consultants Limited entitled "Stage 2/3 at The Lakes", referenced 1520-132631-01, dated 16 December 2012;*
- *The Landscape Design Company Report dated 26 November 2012;*

- *The Shrimpton & Lipinski Report entitled "Pyes Pa West Urbanisation Development, Tauranga – Geotechnical Assessment Report' referenced 16944, dated October 2003;*

- *The Coffey Geotechnics Report entitled "Geotechnical Assessment Report – Suitability of Site for Residential Subdivision The Lakes Subdivision – Stages 2 & 3, Tauriko, Tauranga", referenced GENZTAUC13086AD, dated 17 August 2012;*

- *The Archaeology Report prepared by Heritage Consultants entitled "Preliminary Archaeological Survey and Assessment of Effects – Proposed Residential Subdivision and Roading Development", dated April 2003;*

- *The Emails received by Council from David Needham sent at;*

  - *3:41pm on 26 November 2012;*
  - *8:30am on 27 November 2012;*
  - *11:23am on 28 November 2012;*
  - *11:08am on 28 November 2012;*
  - *10:14am on 18 December 2012;*
  - *2:54pm on 19 December 2012;*
  - *9:51am on 21 December 012;*

- *Except where varied by the s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1520-132631-01, dated June 2013 and Further Information received by Council dated 19 July 2013; and the s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1520-133562-02 dated 9 October 2013 and the Further Information email received by Council from David Needham sent at 12:44pm on 31 October 2013; and the Hegley Acoustic Consultants report dated 1 July 2013; and the s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1510-133562-02 dated 9 December 2013; and s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1520-135959-01 dated March 2014; and the s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1510-135959-01 dated 10 February 2015; and the Hegley Acoustic Consultants report dated 10 December 2015;* ***and the s127 Variation to Consent Application prepared by Harrison Grierson Consultants Limited referenced 1520-137966-01, dated May 2015; and the Hegley Acoustic Consultants report dated 2 June 2015;***

- *The Scheme Plans prepared by Harrison Grierson Consultants Limited ~~entitled "Proposed Subdivision of Part Lots 10 & 11 DP 364444 & Pt Lot 103 DP 408042"~~ referenced;*

  - *132631-23-RC100, rev ~~7~~ **8**, dated ~~25 February 2014~~ **26 May 2015**;*
  - *132631-23-RC101, rev ~~9~~ **10** dated ~~25 February 2014~~ **26 May 2015**;*
  - *132631-23-RC102, rev ~~7~~ **8** dated ~~25 February 2014~~ **26 May 2015**;*
  - *132631-23-RC103, rev ~~3~~ **4** dated ~~25 February 2014~~ **26 May 2015**;*
  - *132631-23-RC104, rev ~~3~~ **5** dated ~~25 February 2014~~ **26 June 2015**;*

- 132631-23-RC105, rev ~~3~~ **4** dated ~~25 February 2014~~ **26 May 2015**;
- 132631-23-RC106, rev ~~3~~ **5** dated ~~25 February 2014~~ **24 June 2015**;
- 132631-23-RC107, rev ~~4~~ **5** dated ~~25 February 2014~~ **26 May 2015**;
- 132631-23-RC108, rev ~~5~~ **7** dated ~~25 February 2014~~ **24 June 2015**;
- 132631-23-RC109, rev ~~5~~ **7** dated ~~25 February 2014~~ **24 June 2015**;
- 132631-23-RC110, rev ~~4~~ **6** dated ~~25 February 2014~~ **24 June 2015**;
- 132631-23-RC112, rev ~~3~~ **5** dated ~~25 February 2014~~ **24 June 2015**;
- 132631-23-RC~~500~~ **502**, rev 1 dated ~~2 March 2014~~ **20 May 2015**;

And comply with either one of the following Scheme Plan options;

Option A

- The Scheme Plan prepared by Harrison Grierson Consultants Limited entitled "~~Proposed Subdivision of Part Lots 10 & 11 DP 364444 & Pt Lot 103 DP 408042~~ referenced 132631-23-RC111, rev ~~3~~ **5**, dated ~~25 February 2014~~ **24 June 2015**; or

Option B

- The Scheme Plan prepared by Harrison Grierson Consultants Limited entitled "Proposed Subdivision of Part Lots 10 & 11 DP 364444 & Pt Lot 103 DP 408042 referenced 132631-23-RC400, rev 2, dated 5 December 2012 (disregarding Lot 951 which has been subject to area increase);

- The following Plans prepared by Harrison Grierson Consultants Limited;

  - "Plan of Previous Buildings and Proposed Buffer Zone For Contamination Assessment", referenced 132631-23-RC205, rev 1, dated 23 November 2012;
  - "Proposed Pedestrian and Shared Pedestrian/Cycleway Network", referenced 132631-23-RC202, rev 2, dated 27 November 2012;
  - "Proposed Road Profiles", referenced 132631-23-RC203, rev 2 dated 19 November 2012;
  - "Proposed Finish Contours", referenced 132631-23-RC200, rev 1, dated 19 October 2012;
  - "Indicative Earthworks Remaining Cut/ Fill Depths", referenced 132631-23-RC201, rev 1, dated 19 October 2012;
  - "Bus Tracking Curves 12.5m Rigid Bus", referenced 132631-23-RC204, rev 1, dated 19 October 2012;
  - "Proposed Trunk Services Stormwater Plan", referenced 132631-23-RC210, rev 2, dated 18 December 2012;
  - "Proposed Trunk Services Sanitary Sewer Plan", referenced 132631-23-RC211, rev 1, dated 19 October 2012;
  - "Proposed Trunk Services Potable Water Plan", referenced 132631-23-RC212, rev 1, dated 19 October 2012;
  - "Proposed Layout Overlaying City Plan L86", referenced 132631-23-RC300, rev 2, dated 17 June 2013;
  - "Proposed Layout Overlaying City Plan L95", referenced 132631-23-RC301, rev 2, dated 17 June 2013;
  - Stage 2 and 3 Reduced Developable Areas Based on Revised Reserve Slopes" referenced 132631-23-RC303, rev 2, dated 17 June 2013.

Subject to any changes required through compliance with the following conditions

*Noting Condition 1 as amended through s127 Variation to Resource Consent granted 24 July 2013 – TCC Ref 21332*01 and subsequent s127 Variations to Consent granted 7 November 2013 –TCC Ref 21332*02 and 28 January 2014 – TCC Ref 21332*03, and 11 April 2014 – RCC Ref 21332*04 and 16 March 2015 – TCC Ref 21332*06 with amendments to consent condition underlined. New changes to the condition are highlighted in bold red.*

2. *Any staging of subdivision consent by way of s223/224 certificates issued on separate survey for this subdivision is appropriate subject to that staging complying with all relevant conditions as listed for that stage within this subdivision consent.*

3. *All matters and works relating to the servicing and accessing of the subdivision, shall be designed, supervised, constructed and certified in accordance with requirements of the Council's' Infrastructure Development Code.*

4. *Prior to any works commencing on the site (exclusive of site clearance or bulk earthworks associated with any Bay of Plenty Regional Council earthworks consent) the consent holder shall submit, to the Council, plans of the proposed activity to and obtain plan approval. Including the following:*

- *The information and plans required by the Infrastructure Development Code;*
- *All potential run out areas;*
- *All flood risk areas;*
- *Details of any overland flowpaths;*
- *Details of the works to establish a suitable building platform on each proposed lot;*
- *Details of the construction of the road to vest and the proposed traffic management measures;*
- *Details of the construction for all Right of Way lots;*
- *Details of the sewer extension that is required to service the upstream catchment;*
- *Details of proposed temporary sanitary sewer pump station;*
- *Details of design and construction of Detention Ponds and Dams demonstrating the peak flow mitigation required, and how maintenance access is achieved;*
- *Details of the extent of ponding in extreme rainfall events;*
- *Details of any culvert upgrade required under proposed roads to vest;*
- *Details of Fire Fighting system;*
- *Details of landscaping and planting within Road to vest;*
- *Details of landscaping and planting of Greenbelt Reserves to vest;*
- *Details of Recreation Reserves to vest, including development of playgrounds and landscaping (with structural retaining of slopes, accessibility of pathways, featured paving and structural and play equipment to similar standard as illustrated in Photographs received by Council on 18 December 2012);*
- *<u>Details of construction of pedestrian accessways</u>*

*Condition 4 as amended through s127 Variation to Resource Consent granted 11 April 2014 – TCC Ref 21332*04. Amendments to consent condition underlined.*

5. *All residential lots shall be provided with a separate underground connection to the sanitary sewer, stormwater, water and electricity reticulation system in accordance with the Council's Infrastructure Development Code*

6. *The proposed Right of Way lots 934, 960-9942 inclusive (and lot 992 if Scheme Plan Option B prepared by Harrison Grierson Consultants Limited referenced 132631-23-RC400, rev 2, dated 5 December 2012 proceeds) shall be constructed in accordance with the Infrastructure Development Code.*

7. *Prior to the first application for s224 approval, the Kennedy Road Waste Water Pump Station shall be complete and operational.*

8. *All lots with a building platform higher than RL40m Moturiki Datum shall be fed from the Joyce Road water supply.*

9. *Where landscaping is proposed on land to be vested as local purpose Greenbelt reserve or Recreation reserve, the landscaping shall be established and maintained at the consent holders expense. The landscaping shall be maintained for not less than 36 months for Greenbelt and 18 months for Recreation reserve from the date of completion. The date of completion shall be agreed with Council. A maintenance bond shall be entered into should vesting occur prior to completion of the maintenance period.*

10. *The consent holder shall supply to the Council a set of 'as built' plans of all engineering works in accordance with the Council's Infrastructure Development Code.*

11. *The location of any subsoil drains shall be shown on the as-built drawings submitted to the Council and within the geotechnical completion report required by Condition 16.*

12. *All earthworks design, testing and construction shall be undertaken in accordance with Infrastructure Development Code and the specific requirements of the consent holders appointed Geo-Professional.*

13. *Where earthworks and/or pre-load operations occur over the Council's mains the consent holder shall undertake a CCTV survey of the mains prior to, and upon completion of the earthworks and/or pre-load operations. Monitoring shall continue at regular intervals during the earthworks and pre-load phases of the project as an ongoing check of the condition of the mains and to ensure their serviceability. If damage occurs to the mains during the earthworks and/or pre-load operations the Council will repair the mains at the consent holder's expense, with any payment for repairs or losses arising as a result of the damage shall be paid prior to certification pursuant to Section 224.*

14. *The Consent Holder shall construct a building platform on each proposed lot to avoid the effects of inundation. The platform shall be a minimum of 500mm above the calculated 50 year (2%AEP) storm level.*

15. *Prior to any earthworks which will increase the stormwater runoff into adjoining catchments, the detention dams and/or ponds required to provide peak flow attenuation shall be in operation.*

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

- *Comply with the Council's Infrastructure Development Code QA4 requirements;*
- *Display the position of all designated building platforms and building restriction lines where applicable;*
- *Certify the provision of debris protection bunds where required;*
- *Provide recommendations for the disposal of stormwater;*
- *Provide recommendations for the on going 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;*
- *Determine minimum floor level requirements for lots adjacent to stormwater ponding areas;*
- *Certify that any residual 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;*
- *Comment on removal or amendment of existing land feature/s displayed on Council's GIS.*

17. *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.*

18. *All building line restrictions or designated building platforms shall be clearly identified and dimensioned on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991.*

19. *The consent holder shall, prior to the release of the s223 certificate for the subdivision or any stage of the subdivision, submit to Council's Corporate Information Section three alternative street names for authorisation in accordance with Council's Street Naming Policy (including Iwi consultation), for each proposed new street and lane in the subdivision. The authorised street name signs will be manufactured and erected by the consent holder at the consent holder's expense. All traffic and pedestrian access signage shall be manufactured by an approved certifier and erected by the consent holder at the consent holder's expense.*

20. *All easements required for underground services and rights of way serving lots within the subdivision shall be duly granted or reserved.*

21. *The consent holder shall register an easement in gross in favour of the Council over any stormwater overland flowpath located on private property, including those resulting from overload of the roading primary stormwater system under extreme rainfall conditions.*

22. *The overland flowpath easement shall be shown on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991 and shall be shown as the "Right to Drain Stormwater" and shall be registered on the survey plan under a "Memorandum of Easements in Gross".*

23. *The consent holder shall vest in the Council the following lots as shown on the scheme plan:*

- *Lots 900 to ~~919~~ 920 inclusive as Road;*
- *Lots 930, 935, 938, 940, 944, 950 and 952 as Recreation Reserves;*
- *Lots 932, 933, 943, 945, 948, 949, 951 and Pt Lot 9 DP364444 as Local Purpose: Greenbelt Reserves;*
- *Lots 931, 936, 937 and 941 as Local Purpose: Accessway Reserves;*
- *Lot 947 as Local Purpose: Waste Water Reserve;*

The lots to vest shall be shown on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991.

*Condition 23 as amended through s127 Variations to Resource Consent granted 24 July 2013 – TCC Ref 21332*01 and 11 April 2014 TCC Ref 21332*04. Amendments to consent condition underlined.*

24. *Prior to vesting of lot 947, the consent holder shall enter into a bond for removal of the temporary waste water pump station and associated Infrastructure. Should modification of the structure plan result in the pump station forming part of the permanent network, then a bond will not be required.*

25. *Pursuant to Section 221 of the Resource Management Act 1991, a consent notice shall be registered on the Certificate of Title of any property that shares a common boundary with any of the following local purpose reserves:*

- *Accessway*
- *Recreation*
- *Drainage*
- *Waste Water*
- *Stormwater*
- *Greenbelt*

The consent notice shall advise the owners and subsequent owners thereof, of the following requirement to be complied with on a continuing basis: The owners are required to meet the full cost of any fencing along the common boundary between the lot and adjoining land that are intended to be vested in Tauranga City Council as local purpose reserve.

26. *Upon application for the s223 certificate for the subdivision the consent holder shall confirm in writing to Council which property boundaries require a fencing consent notice to be registered on its title.*

27. *Prior to bulk earthworks being undertaken within 100m of the area marked potential "HAIL Site" on the Harrison Grierson Plan entitled "Plan of Previous Buildings and Proposed Buffer Zone For Contamination Assessment", referenced 132631-23-RC205, rev 1, dated 23 November 2012, a site investigation report prepared by a suitably qualified professional in accordance with 'Guideline No.1 – Reporting on Contaminated Sites in New Zealand, Ministry for the Environment' is required to be provided to Council's Manager of Environmental Planning. The site investigation report shall identify and quantify any soil contamination, and any remediation works necessary (if any). Prior to lodgement of s224 application in relation*

to the above land area, any remediation works required to address contaminated soil shall be undertaken. Note, that a land use consent under the City Plan addressing contaminated soil will be required if the site investigation report determines it to be contaminated.

28. That before the commencement of any ground disturbance associated with the proposed development within Stages 3H, 3F and Lot 949 (Local Purpose Reserve:Greenbelt), an authority to modify damage or destroy U14/_1915 and U14_2166 and possible unrecorded subsurface archaeological sites from the New Zealand Historical Places Trust is to be obtained under the provisions of Section 12 of the Historic Places Act 1993. Ngai Tamarawaho Iwi representatives shall also be given 48 hours notice in writing prior to the commencement of earthworks within the abovementioned locations within the subdivision.

29. The amalgamation conditions referenced within the Scheme Plans listed within Condition 1 shall be recorded on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991 (LINZ Request~~s:~~ **1300709** ~~**1114213 & subsequent LINZ Requests 1152384 & 1191724 & 1204864 for plans associated with consent variations**~~.

The following amalgamation condition shall also be recorded on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act 1991 (LINZ Request 1276588):

> "That Lot 890 be transferred to the owner of Lot 1 DP 474511 (CT651657) and that one computer register be issued to include both parcels."

Note, the amalgamation of Lot 1 DP 474511 and Lot 890 is only required until subsequent s223/s224 certification has occurred to create consented lots 868, 869, 870 and 890.

Condition 29 as amended through s127 Variation to Resource Consent granted 24 July 2013 – TCC Ref 21332*01, 28 January 2014 – TCC Ref 21332*03 and 11 April 2014 – TCC Ref 21332*04 and 16 March 2015 – TCC Ref 21332*06 with amendments to consent condition underlined. New changes to the condition are highlighted in bold red.

30. That a shared cycleway/walkway is to be constructed within the State Highway designation from Pyes Pa Road to link with the Collector Road within the site which is denoted as part of a potential future cycleway/walkway within the Harrison Grierson Plan entitled "Proposed Pedestrian and Shared Pedestrian/Cycleway Network", referenced 132631-23-RC202, rev 2, dated 27 November 2012. The timing and design of construction of the cycleway /walkway within the State Highway (Pyes Pa Bypass) will require approval under s176 of the Resource Management Act 1991. The final approval of construction drawings will be required from New Zealand Transport Agency State Highway Manager: Bay of Plenty.

31. The subdivision consent has a term of 15 years to complete from the date in which it has been granted.

32. All costs associated with the conditions of this consent, including those required under the Council's' Infrastructure Development Code, shall be met by the consent holder.

33. *Pursuant to Section 221 of the Resource Management Act 1991, a consent notice shall be registered on the Certificate of Titles of the following Lots advising the owners and subsequent owners thereof of the requirements to be complied with on a continuing basis:*

For Lots 855, 856, 860, 861, 864, 865, 867, 868, 869 and 870

a) *An acoustic fence constituting a close board timber fence with battens over the joins as illustrated within Figure 2 of the Hegley Acoustics Consultants report dated 1 July 2013 shall be maintained on the boundary of the lot and the reserve adjacent to State Highway 36 in the location as shown within Figure 1 of the Hegley Acoustics Consultants report dated 1 July 2013. The fencing shall be maintained at all times to ensure its acoustic integrity is maintained.*

For Lots 105, 106, 848, 849, 854, 855, 856, 860, 861, 864, 865, 867, 868, 869, 870, 879, ~~and~~ 890, ***148 to 158, 163, 166, 167, 224, 238 to 248, 255, 258 and 259***

b) *Any new dwelling being constructed, or any existing dwelling being extended greater than 25% of the existing floor area, that is above the ground floor level (i.e. being second and/or third storey), shall be designed and constructed to achieve an internal road-traffic design sound level of 40dBL $_{Aeq(24h)}$ inside all habitable rooms with the ventilating windows open.*

At the time of building consent application an acoustic design report shall be provided to Council from a suitably qualified and experienced acoustics expert demonstrating compliance with the abovementioned sound level requirement. If this cannot be achieved, then:

The windows of all habitable rooms shall be constructed with glazing that includes a laminated pane that is at least 6.38mm thick and covers the glazed area, and a ventilation system shall be installed to either:

- *Consist of an air conditioning unit(s) provided that the noise level generated by the unit(s) must not exceed 40dBL$_{Aeq(30s)}$ in the largest habitable room (excluding bedrooms) and 35dBL$_{Aeq(30s)}$ in all other habitable rooms; when measured 1 metre from any grille or diffuser, or*
- *A system capable of providing a least 15 air changes per hour in the largest habitable room (excluding bedrooms) and at least 5 air changes per hour in all other habitable rooms, and*
- *The noise level generated by the system must not exceed 40dBL$_{Aeq(30s)}$ in the largest habitable room (excluding bedrooms) and 35dBL$_{Aeq(30s)}$ in all other habitable rooms; when measured 1 metre from any grille or diffuser, and*
- *The internal air pressure must be no more than 10 Pa above ambient air pressure due to the mechanical ventilation, and*
- *Where a high air flow rate setting is provided, the system must be controllable by the occupants to be able to alter the ventilation rate with at least three equal progressive stages up to the high setting.*

The above requirements do not apply if it can be demonstrated by way of prediction or measurement by a suitably qualified and experienced acoustic expert that the road-traffic noise level from State Highway 36 is less than 55 dBL $_{Aeq(24h)}$ on all facades of any addition, extension or alteration, or new dwelling which fronts State Highway 36.

For Lots 105 and 106

c) *An acoustic fence constituting a close board timber fence with battens over the joins as illustrated within Figure 2 of the Hegley Acoustics Consultant's report dated 10 December 2014 shall be maintained on the boundary of the lot and the reserve adjacent to State Highway 36 in the location as shown within Figure 1 of the Hegley Acoustics Consultants report dated 10 December 2014. The fencing shall be maintained at all times to ensure its acoustic integrity is maintained.*

For Lots 148 to 162 and Lots 237 to 254

d) ***An acoustic fence constituting a close board timber fence with battens over the joins as illustrated within Figure 2 of the Hegley Acoustics Consultant's report dated 2 June 2015 shall be maintained on the boundary of the lot in the location as shown within Figure 1 of the Hegley Acoustics Consultants report dated 2 June 2015. The fencing shall be maintained at all times to ensure its acoustic integrity is maintained.***

For lots 159 to 162 and 249 to 254

e) ***Any new dwelling being constructed, or any existing dwelling being extended greater than 25% shall be designed and constructed to achieve an internal road-traffic design sound level of 40dBL $_{Aeq(24h)}$ inside all habitable rooms with the ventilating windows open.***

At the time of building consent application an acoustic design report shall be provided to Council from a suitably qualified and experienced acoustics expert demonstrating compliance with the abovementioned sound level requirement. If this cannot be achieved, then:

The windows of all habitable rooms shall be constructed with glazing that includes a laminated pane that is at least 6.38mm thick and covers the glazed area, and a ventilation system shall be installed to either:

- ***Consist of an air conditioning unit(s) provided that the noise level generated by the unit(s) must not exceed 40dBL$_{Aeq(30s)}$ in the largest habitable room (excluding bedrooms) and 35dBL$_{Aeq(30s)}$ in all other habitable rooms; when measured 1 metre from any grille or diffuser, or***

- ***A system capable of providing a least 15 air changes per hour in the largest habitable room (excluding bedrooms) and at least 5 air changes per hour in all other habitable rooms, and***

- ***The noise level generated by the system must not exceed 40dBL$_{Aeq(30s)}$ in the largest habitable room (excluding bedrooms) and 35dBL$_{Aeq(30s)}$ in all other habitable rooms; when measured 1 metre from any grille or diffuser, and***

- ***The internal air pressure must be no more than 10 Pa above ambient air pressure due to the mechanical ventilation, and***

- ***Where a high air flow rate setting is provided, the system must be controllable by the occupants to be able to alter the ventilation rate with at least three equal progressive stages up to the high setting.***

The above requirements do not apply if it can be demonstrated by way of prediction or measurement by a suitably qualified and experienced acoustic expert that the road-traffic noise level from State Highway 36 is less than 55 dBL $_{Aeq(24h)}$ on all facades of any addition, extension or alteration, or new dwelling which fronts State Highway 36.

*Condition 33 Imposed through s127 Variation to Consent granted 7 November 2013 - TCC Ref 21332*02, and 16 March 2015 – TCC Ref 21332*06 with amendments to consent condition underlined Consent condition underlined. The new changes to condition are highlighted in bold red.*

Recommended and Assessed by:

James Jacobs

James Jacobs
Intermediate Environmental Planner

Delegated Authorisation by:

Lee Dove
Senior Environmental Planner

Date: 13/7/2015

Advice Notes

1. *Under RMA s357, you can object to this consent by serving written notice on the Council within 15 working days of receiving this decision, detailing the reasons for the objection.*

2. *Should the actual processing cost exceed the deposit fee paid at lodgement, if not already accompanying this decision, an invoice may be sent at a later date.*

3. *Development contributions under LGA 2002 –*

   Requirement for development contribution: Pursuant to section 198(1)(a) of the Local Government Act 2002, Council requires that a development contribution provided for and in accordance with Council's Development Contributions Policy (which is subject to change), be made (paid) by the consent holder to Council.

   Calculation and payment: Council's Development Contributions Policy currently provides that the required development contribution is:

- *determined in accordance with Table 2 of Schedule 1 of the Policy in force at the time this subdivision consent is granted; and*
- *payable immediately before the section 224 completion certificate is released, and that the certificate will not be released until the contribution is paid in full to Council.*

Postponement or remission: Council's Development Contributions Policy currently provides that there will be no postponement or remission of development contributions except in exceptional circumstances at the discretion of Council's Chief Executive or in the special circumstances outlined in Council's Development Contributions Policy.

*Advice Note 3 as amended through s127 Variation to Resource Consent granted 28 January 2014 – TCC Ref 21332*03.*

4. *All archaeological sites whether recorded or unrecorded under Part 1 of the Historic Places Act 1993 cannot be destroyed, damaged or modified without the consent of the Historic Places Trust of New Zealand. In the event that an archaeological site(s) and/or koiwi are unearthed, the consent holder is advised to immediately stop work on the part of the site that the archaeological site(s) is located, and contact the Historic Places Trust for advice.*

5. *Construction noise from starting up and operation of construction equipment and all other construction activities on the site of the subdivision are required to meet the limits recommended in Table 1 in NZS6803:1999, and shall be measured and assessed in accordance with, NZS6803P:1984 - "The measurement and assessment of noise from construction, maintenance and demolition work". Adjustments provided in Clause 6.1 of NZS6803P:1984 shall apply for the full duration of the project, and references in the tables to NZS6802 shall read as references to Clause 4.2.2 of NZS6802:1991.*

6. *Where any building or drainage works are required to satisfy conditions of this consent, all consents required under the Building Act 2004 must be obtained prior to the works being carried out.*

7. *Dust management and silt runoff is to be controlled in accordance with the City Plan and the Infrastructure Development Code. The Consent Holder is advised that they are required by Bay of Plenty Regional Councils Land Management Plan to take the appropriate measures to prevent or minimise sediment generation and yield (sediment discharge).*

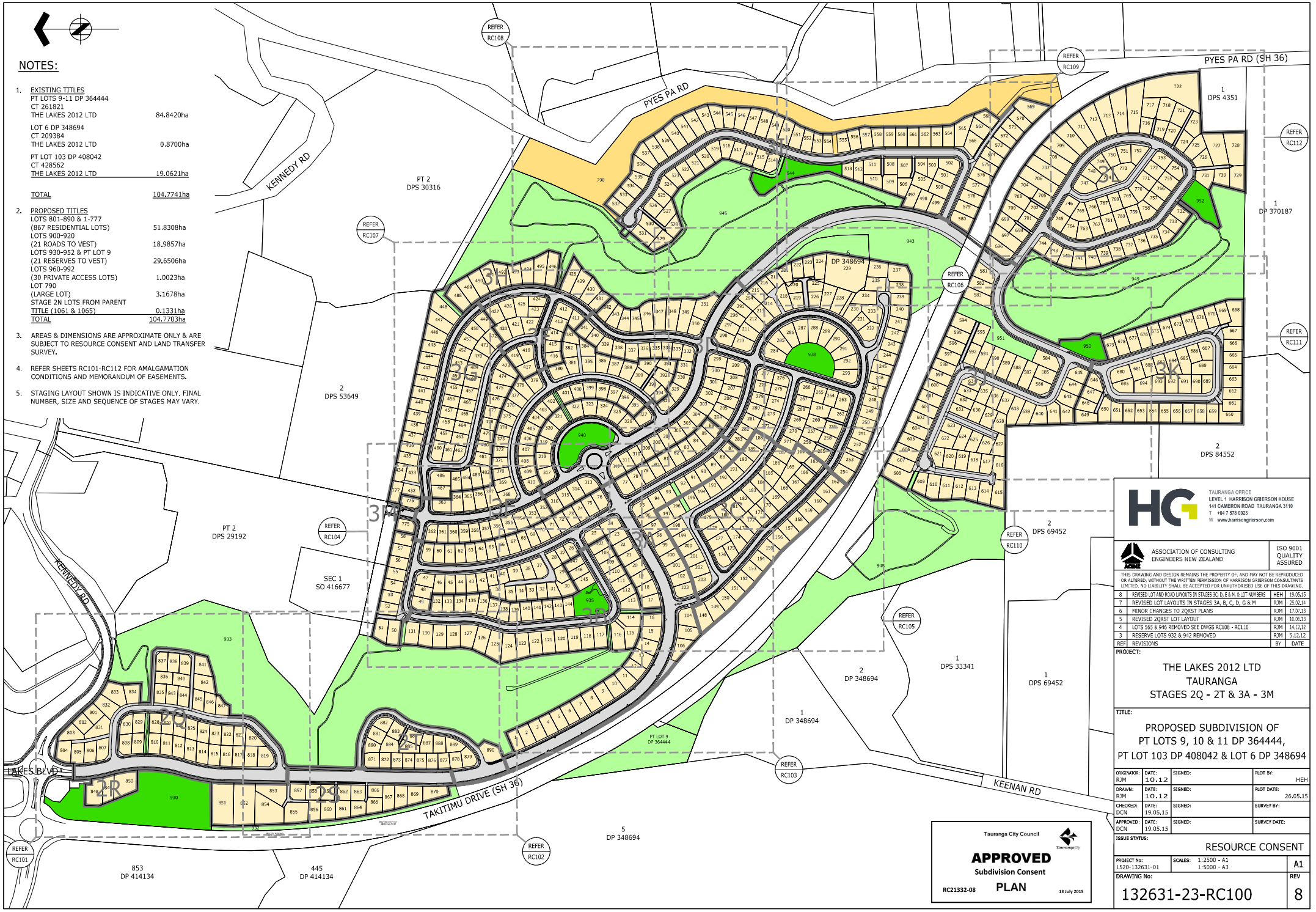
8. *Noise attenuation treatment within State Highway 36 shall be implemented in accordance with the 'Agreement in respect of the Funding and Construction of Noise Attenuation Barriers along Pyes Pa Bypass (Takitimu Drive Extension)' dated November 2010.*

9. *Where land to be vested is subject to a specified interest that is proposed to remain, the Council may certify that interest on the survey plan, pursuant to section 239(2) of the Resource Management Act 1991.*

10. *The consent provides approvals to both layouts in Stage 3K. Should Tauranga City Council wish the applicant to pursue Option B then they recognise that they will need to confirm this to the applicant and confirm how the consent holder will be compensated for implementing this option. The consent holder is under no obligation under this consent to pursue Option B.*

11. *Acknowledged is an agreement relating to works in Lieu of financial contributions and forward funding of infrastructure for Pyes Pa West between TCC and Grasshopper dated 19 May 2004 and deed of variation of agreement relating to works in lieu of financial contributions and forward funding of infrastructure for Pyes Pa West between TCC and Grasshopper dated 3 March 2006.*

12. *It is considered that the subdivision will be consistent with the Consent Notice 6592047.2 registered on the title of Lot 9 – 11 DP 364444.*


NOTES:
1. EXISTING TITLES
PT LOTS 9-11 DP 364444
CT 261821
THE LAKES 2012 LTD 84.8420ha
LOT 6 DP 348694
CT 209384
THE LAKES 2012 LTD 0.8700ha
PT LOT 103 DP 408042
CT 428562
THE LAKES 2012 LTD 19.0621ha
TOTAL 104.7741ha
2. PROPOSED TITLES
LOTS 801-890 & 1-777
(867 RESIDENTIAL LOTS) 51.8308ha
LOTS 900-920
(21 ROADS TO VEST) 18.9857ha
LOTS 930-952 & PT LOT 9
(21 RESERVES TO VEST) 29.6506ha
LOTS 960-992
(30 PRIVATE ACCESS LOTS) 1.0023ha
LOT 790
(LARGE LOT) 3.1678ha
STAGE 2N LOTS FROM PARENT
TITLE (1061 & 1065) 0.1331ha
TOTAL 104.7703ha
3. AREAS & DIMENSIONS ARE APPROXIMATE ONLY & ARE SUBJECT TO RESOURCE CONSENT AND LAND TRANSFER SURVEY.
4. REFER SHEETS RC101-RC112 FOR AMALGAMATION CONDITIONS AND MEMORANDUM OF EASEMENTS.
5. STAGING LAYOUT SHOWN IS INDICATIVE ONLY. FINAL NUMBER, SIZE AND SEQUENCE OF STAGES MAY VARY.
PYES PA RD
PYES PA RD (SH 36)
KENNEDY RD
KENNEDY RD
TAKITIMU DRIVE (SH 36)
KEENAN RD
LAKES BLVD
PT 2 DPS 30316
2 DPS 53649
PT 2 DPS 29192
SEC 1 SO 416677
1 DPS 4351
1 DP 370187
2 DPS 84552
2 DPS 69452
1 DPS 33341
1 DP 348694
2 DP 348694
5 DP 348694
PT LOT 9 DP 364444
853 DP 414134
445 DP 414134
6 DP 348694
REFER RC101
REFER RC102
REFER RC103
REFER RC104
REFER RC105
REFER RC106
REFER RC107
REFER RC108
REFER RC109
REFER RC110
REFER RC111
REFER RC112
3A
3B
3C
3D
3E
3F
3G
3H
3J
3K
3L
2N
2P
2Q
2R
2S
2T
Tauranga City Council
APPROVED
Subdivision Consent
RC21332-08
PLAN
13 July 2015
HG
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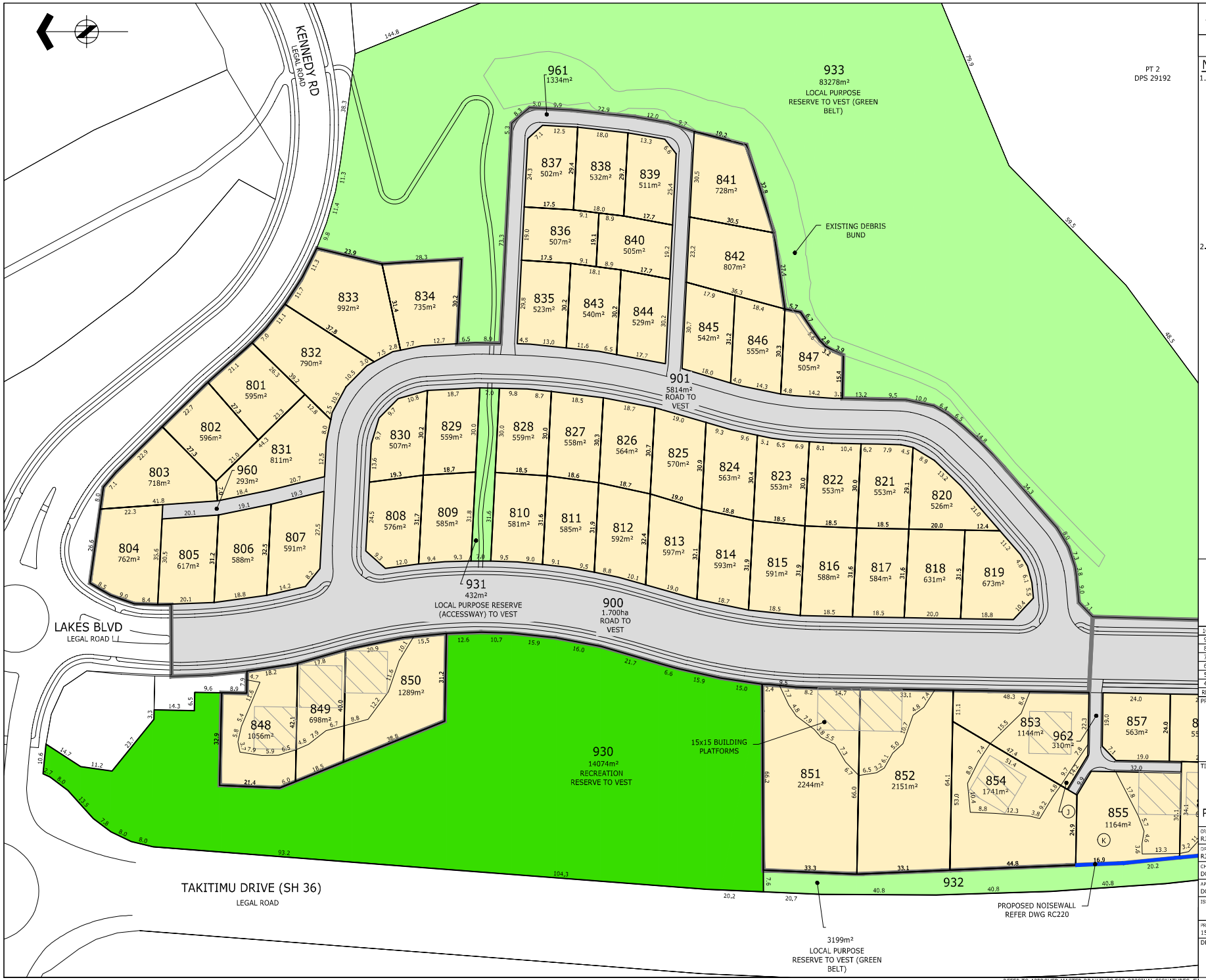
8 REVISED LOT AND ROAD LAYOUTS IN STAGES 3C, D, E & M, & LOT NUMBERS HEH 19.05.15
7 REVISED LOT LAYOUTS IN STAGES 3A, B, C, D, G & M RJM 25.02.14
6 MINOR CHANGES TO 2QRST PLANS RJM 17.07.13
5 REVISED 2QRST LOT LAYOUT RJM 10.06.13
4 LOTS 565 & 946 REMOVED SEE DWGS RC108 - RC110 RJM 14.12.12
3 RESERVE LOTS 932 & 942 REMOVED RJM 5.12.12
REF REVISIONS BY DATE
PROJECT:
THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M
TITLE:
PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694
ORIGINATOR: RJM DATE: 10.12 SIGNED: PLOT BY: HEH
DRAWN: RJM DATE: 10.12 SIGNED: PLOT DATE: 26.05.15
CHECKED: DCN DATE: 19.05.15 SIGNED: SURVEY BY:
APPROVED: DCN DATE: 19.05.15 SIGNED: SURVEY DATE:
ISSUE STATUS:
RESOURCE CONSENT
PROJECT No: 1520-132631-01
SCALES: 1:2500 - A1 1:5000 - A3
A1
DRAWING No:
132631-23-RC100
REV 8



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
   THAT LOT 960 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 803, 804, 805 AND 806 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 961 HEREON BE HELD AS TO TEN UNDIVIDED ONE TENTH SHARES BY THE OWNERS OF LOTS 835 - 842, 844 AND 845 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 962 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 854-856 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

2. BUILDING RESTRICTIONS:
   AREAS SHOWN C - K ARE SUBJECT TO BUILDING RESTRICTIONS. THE LINES SHOWN ARE INDICATIVE ONLY. FINAL BUILDING LINE RESTRICTIONS WILL BE CONFIRMED AT THE TIME OF LEGAL SURVEY.

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 **PLAN** 13 July 2015

HG
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W www.harrisongrierson.com

10	REVISED LOT AND ROAD LAYOUTS IN STAGES 3C, D, E & M, & LOT NUMBERS	HEH	19.06.15
9	NEW LOT 933 AREA DUE TO REVISED STAGE 3B LOT BOUNDARY	RJM	25.02.14
8	AMALGAMATION CONDITIONS AND R.O.W SCHEDULE AMENDED	RJM	06.12.13
7	MINOR CHANGES TO 2QRST PLANS	RJM	17.07.13
6	EXTENT OF NOISE WALL AMENDED	RJM	1.07.13
5	REVISED 2QRST LOT LAYOUT	RJM	10.06.13
4	BUILDING RESTRICTION LINES ADDED	RJM	16.04.13
REF	REVISIONS	BY	DATE

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

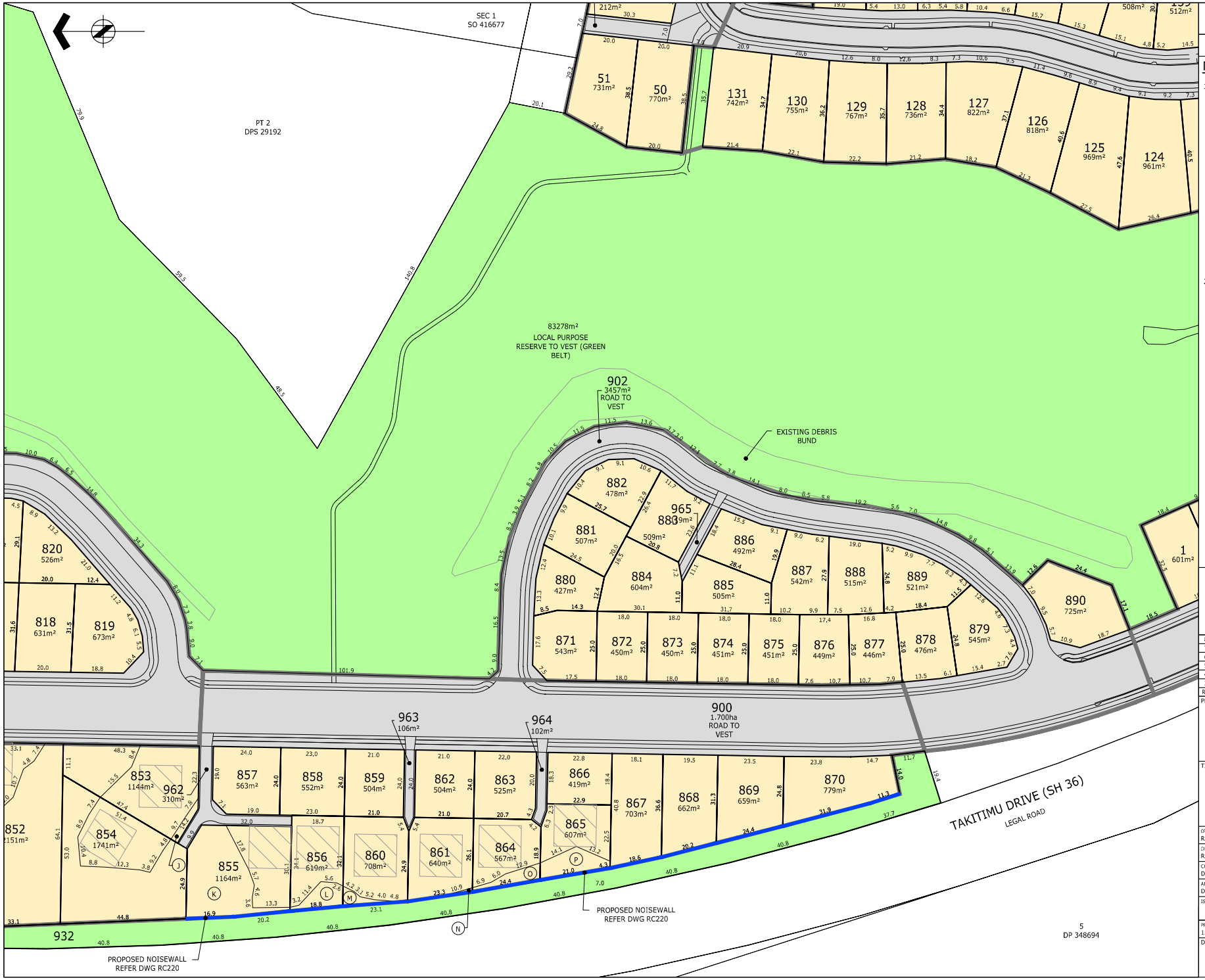
PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: HEH
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 26.05.15
CHECKED: DCN	DATE: 19.05.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.05.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01 | SCALES: 1:625 - A1, 1:1250 - A3 | A1

DRAWING No: 132631-23-RC101 | REV 10



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND | ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
   THAT LOT 963 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 860 AND 861 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 964 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 864 AND 865 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

   THAT LOT 965 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 884 AND 885 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

2. BUILDING RESTRICTIONS:
   AREAS SHOWN G - P ARE SUBJECT TO BUILDING RESTRICTIONS. THE LINES SHOWN ARE INDICATIVE ONLY. FINAL BUILDING LINE RESTRICTIONS WILL BE CONFIRMED AT THE TIME OF LEGAL SURVEY.

Tauranga City Council

APPROVED
Subdivision Consent
RC21332-08 **PLAN** 13 July 2015

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REF	REVISIONS	BY	DATE
8	REVISED LOT AND ROAD LAYOUTS IN STAGES 3C, D, E & M, & LOT NUMBERS	HEH	19.05.15
7	NEW LOT 933 AREA DUE TO REVISED STAGE 3B LOT BOUNDARY	RJM	25.02.14
6	MINOR CHANGES TO 2QRST PLANS	RJM	17.07.13
5	EXTENT OF NOISE WALL AMENDED	RJM	3.07.13
4	REVISED 2QRST LOT LAYOUT	RJM	10.06.13
3	BUILDING RESTRICTION LINES ADDED	RJM	16.04.13

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

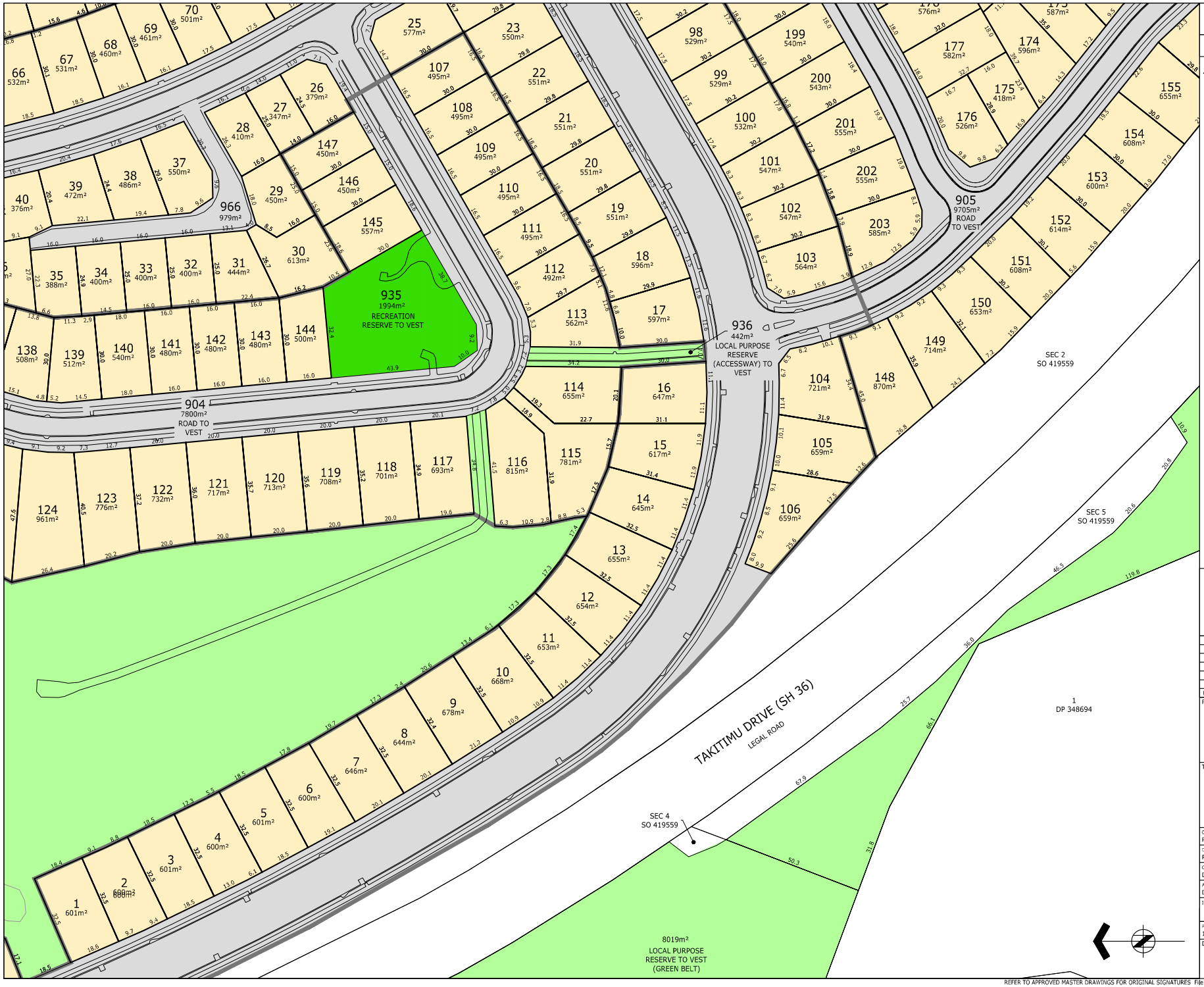
PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: HEH
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 26.05.15
CHECKED: DCN	DATE: 19.05.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.05.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:625 - A1, 1:1250 - A3
A1

DRAWING No: 132631-23-RC102
REV 8



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
   THAT LOT 966 HEREON BE HELD AS TO EIGHT UNDIVIDED ONE EIGHTH SHARES BY THE OWNERS OF LOTS 29 TO 36 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 **PLAN** 13 July 2015

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W www.harrisongrierson.com

REF	REVISIONS	BY	DATE
4	REVISED LOT AND ROAD LAYOUTS IN STAGES 3C, D, E & M, & LOT NUMBERS	HEH	19.05.15
3	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.06.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: HEH
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 26.05.15
CHECKED: DCN	DATE: 19.05.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.05.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

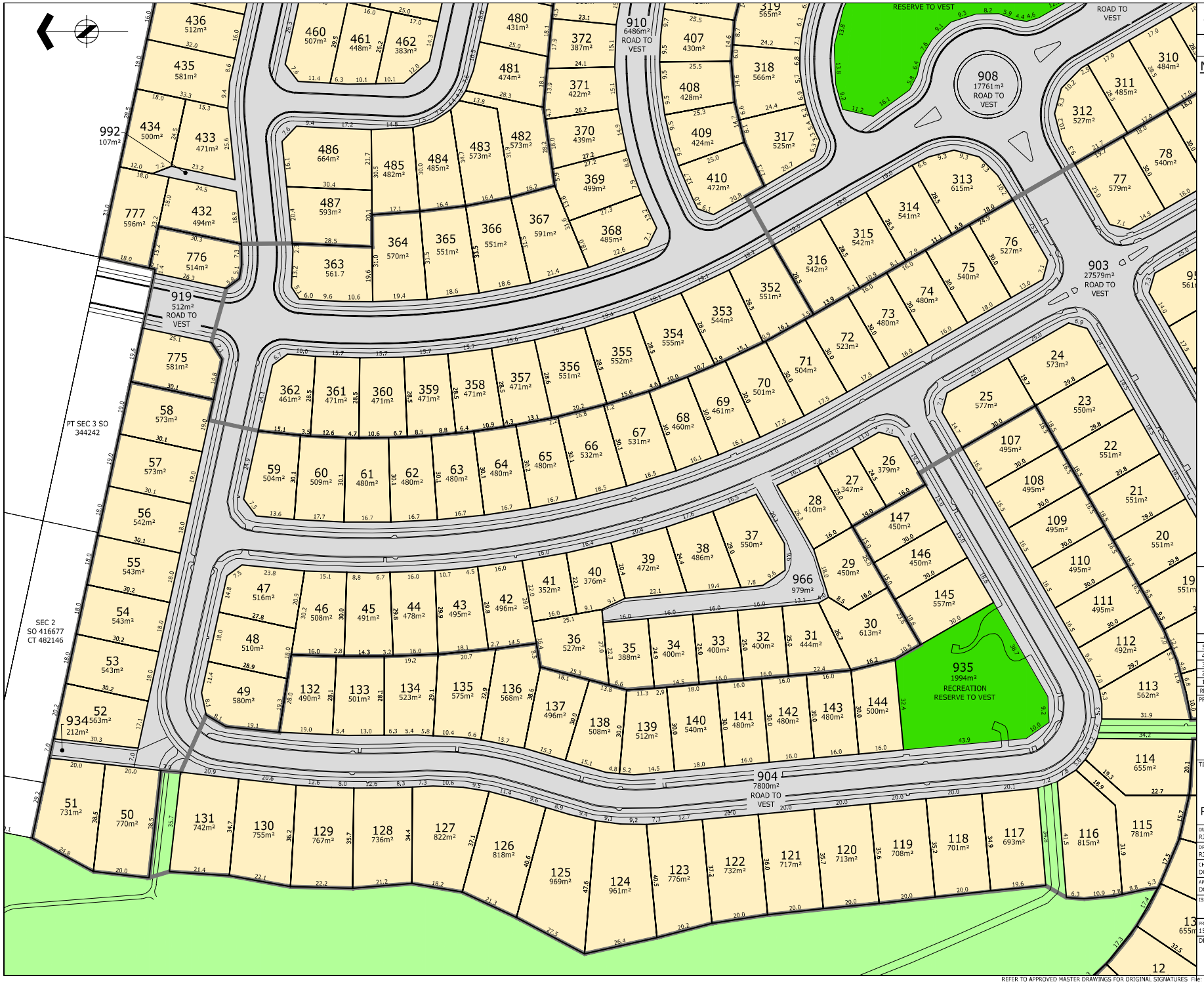
PROJECT No: 1520-132631-01

SCALES: 1:625 - A1, 1:1250 - A3

A1

DRAWING No: 132631-23-RC103

REV 4



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND | ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 934 HEREON BE AMALGAMATED WITH SECTION 2 SO 416677 AND ONE COMPUTER REGISTER BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 992 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 434 AND 777 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 **PLAN** 13 July 2015

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LEVEL 1 HARRISON GRIERSON HOUSE
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5	REVISED AMALGAMTION CONDITIONS	RJM	24.06.15
4	REVISED LOT AND ROAD LAYOUTS IN STAGES 2C, D, E & M, & LOT NUMBERS	HEH	19.05.15
3	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12
REF	REVISIONS	BY	DATE

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

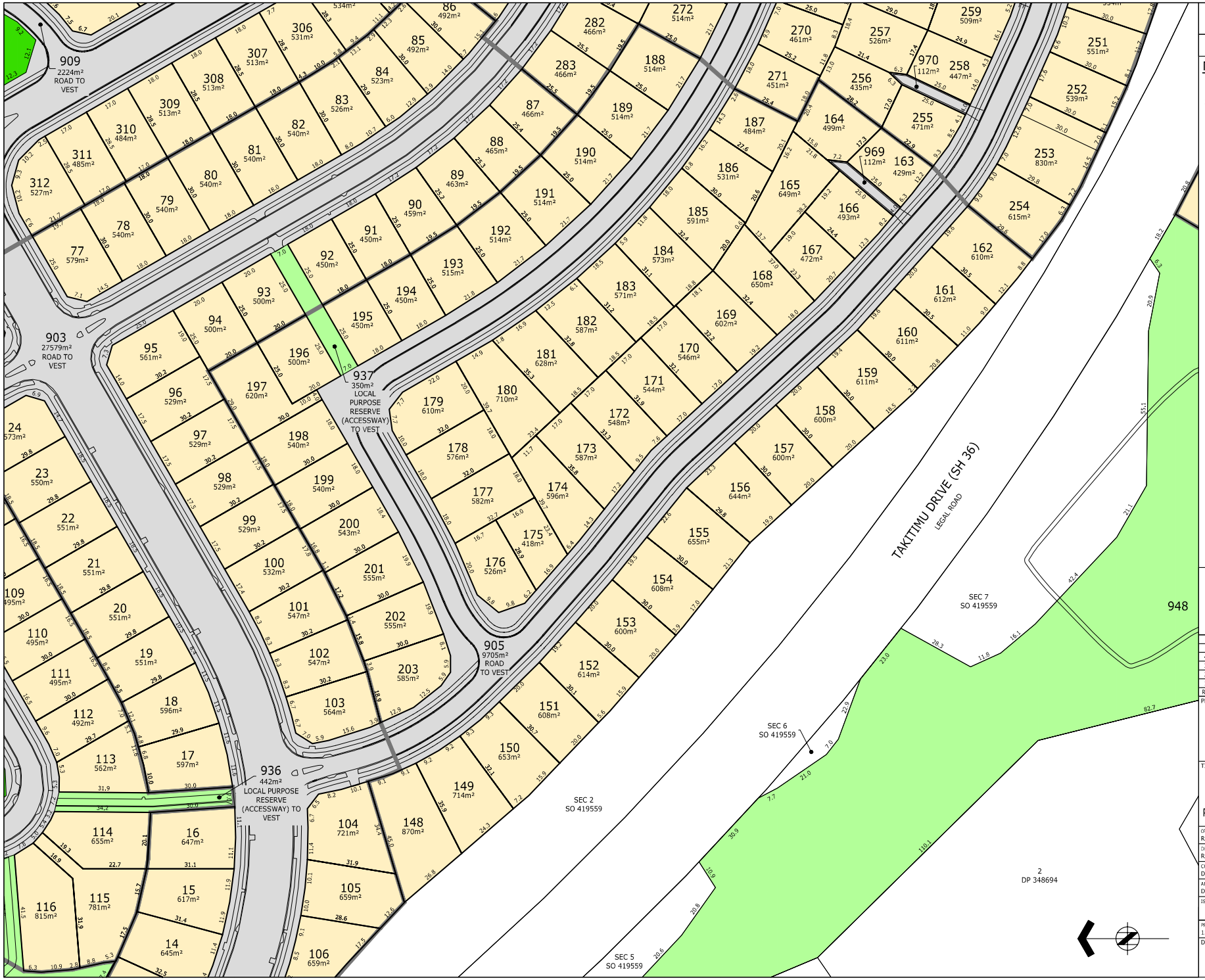
ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 24.06.15
CHECKED: DCN	DATE: 24.06.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 24.06.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01 | SCALES: 1:625 - A1, 1:1250 - A3 | A1

DRAWING No: 132631-23-RC104 | REV 5

REFER TO APPROVED MASTER DRAWINGS FOR ORIGINAL SIGNATURES File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS
THAT LOT 969 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 164 AND 165 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 970 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 256 AND 257 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

Tauranga City Council

APPROVED
Subdivision Consent
RC21332-08 **PLAN** 13 July 2015

TAURANGA OFFICE
LEVEL 1 HARRISON GRIERSON HOUSE
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T +64 7 578 0023
W www.harrisongrierson.com

REF	REVISIONS	BY	DATE
4	REVISED LOT AND ROAD LAYOUTS IN STAGES 3C, D, E & M, & LOT NUMBERS	HEH	19.06.15
3	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
2	NEW EASEMENT A PROPOSED OVER LOT 242	RJM	19.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: HEH
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 26.05.15
CHECKED: DCN	DATE: 19.05.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.05.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:625 - A1, 1:1250 - A3
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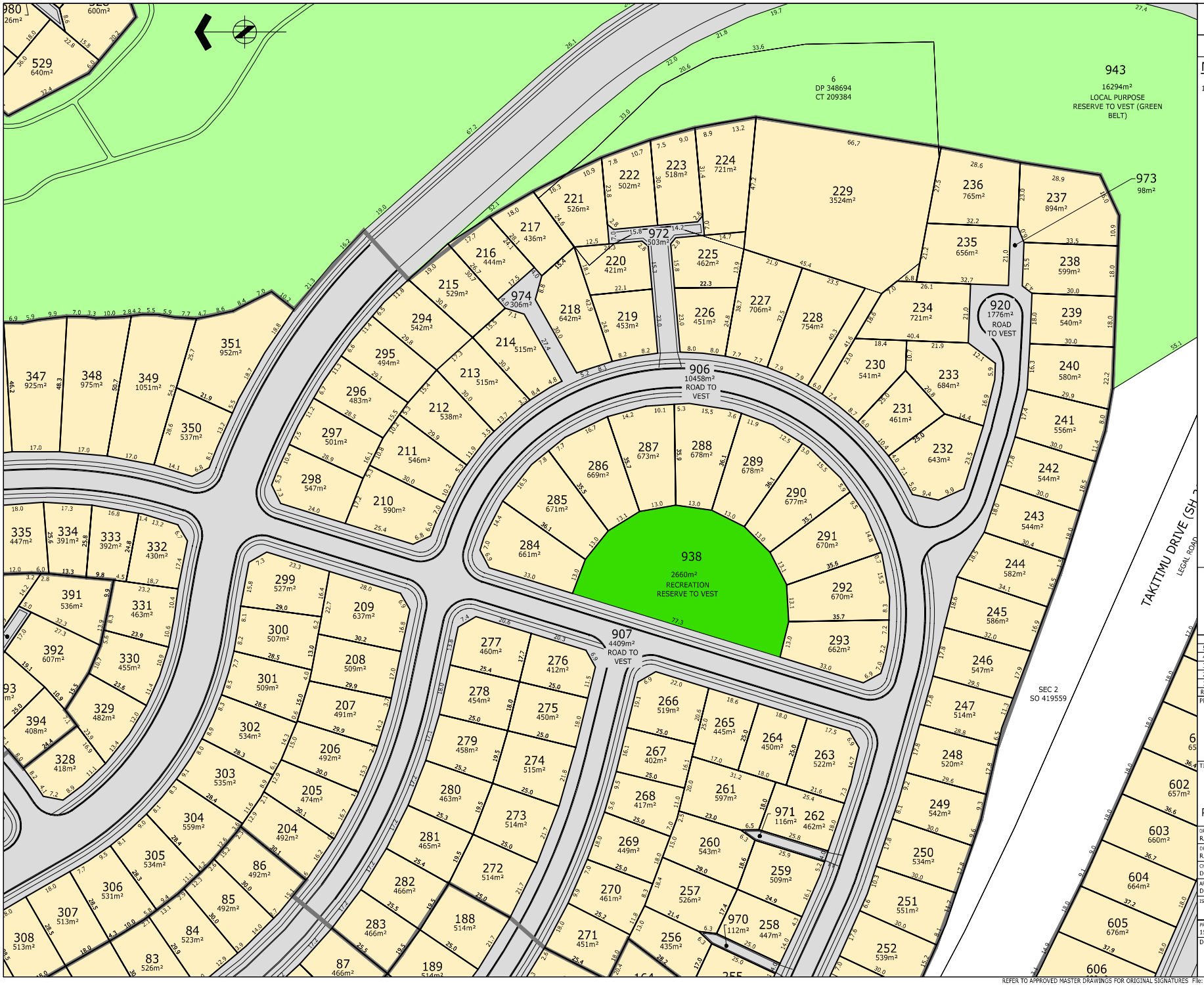
DRAWING No: 132631-23-RC105
REV 4



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND | ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 971 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 260 AND 261 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 972 HEREON BE HELD AS TO SIX UNDIVIDED ONE SIXTH SHARES BY THE OWNERS OF LOTS 220 TO 225 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 973 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 236 AND 237 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 974 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 215, 216 AND 217 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 **PLAN** 13 July 2015

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W www.harrisongrierson.com

REF	REVISIONS	BY	DATE
5	REVISED AMALGAMATION CONDITIONS	RJM	24.06.15
4	REVISED LOT AND ROAD LAYOUTS IN STAGES 2C, D, E & M, & LOT NUMBERS	HEM	19.05.15
3	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

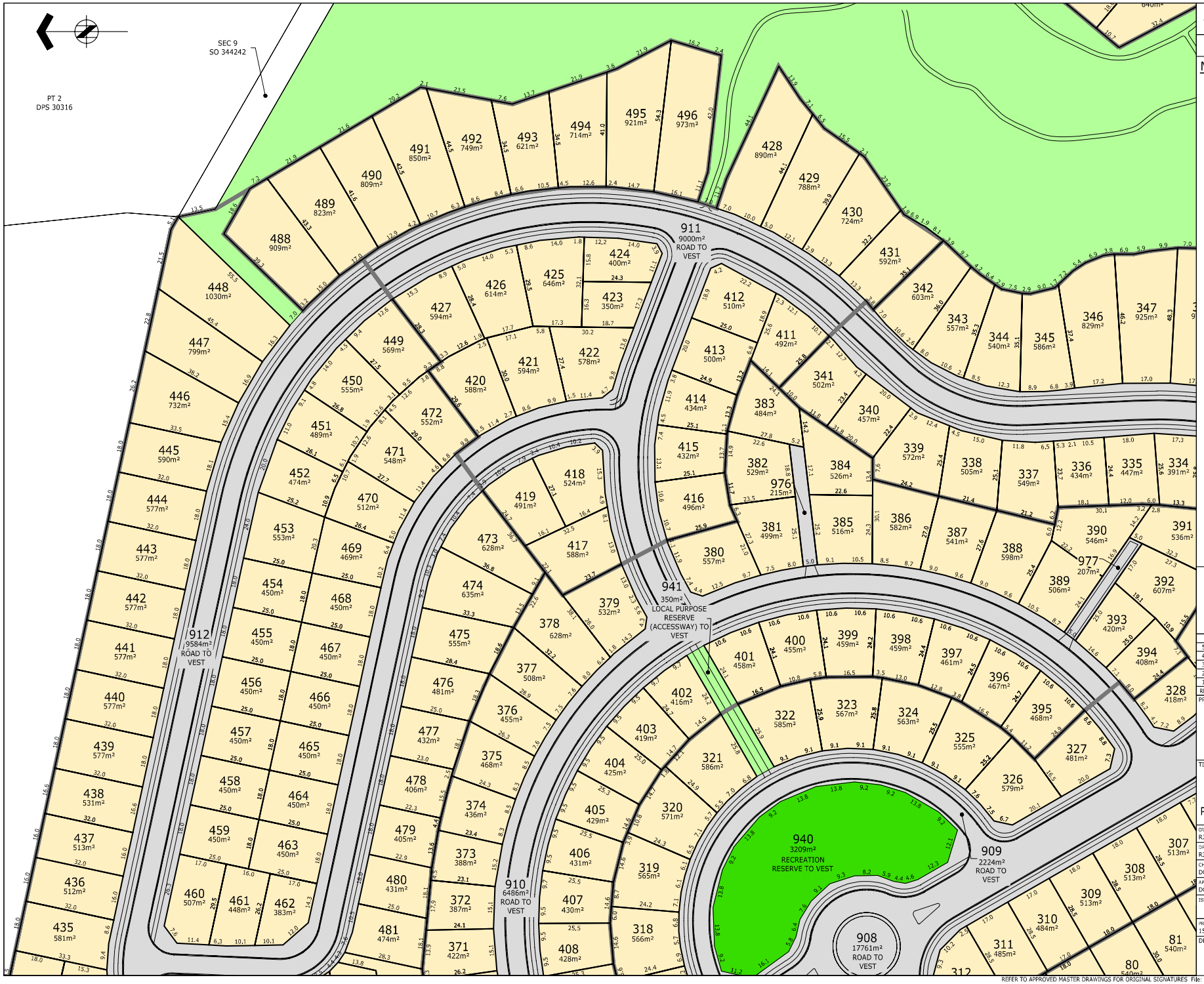
ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 24.06.15
CHECKED: DCN	DATE: 24.06.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 24.06.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01 | SCALES: 1:625 - A1, 1:1250 - A3 | A1

DRAWING No: 132631-23-RC106 | REV 5

REFER TO APPROVED MASTER DRAWINGS FOR ORIGINAL SIGNATURES File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 976 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 382, 383 AND 384 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 977 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 390, 391 AND 392 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 **PLAN** 13 July 2015

TAURANGA OFFICE
LEVEL 1 HARRISON GRIERSON HOUSE
141 CAMERON ROAD TAURANGA 3110
T +64 7 578 0023
W www.harrisongrierson.com

REF	REVISIONS	BY	DATE
5	REVISED LOT AND ROAD LAYOUTS IN STAGES 3C, D, E & M, & LOT NUMBERS	HEH	19.06.15
4	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
3	LOT 942 REMOVED, LOT 469 REVISED FOR RESERVE	RJM	05.06.12
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.06.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

DESIGNATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: HEH
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 26.05.15
CHECKED: DCN	DATE: 19.05.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 19.05.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01

SCALES: 1:625 - A1
1:1250 - A3

A1

DRAWING No: 132631-23-RC107

REV 5

REFER TO APPROVED MASTER DRAWINGS FOR ORIGINAL SIGNATURES File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

   THAT LOT 980 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 527, 528 AND 529 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 **PLAN** 13 July 2015

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REF	REVISIONS	BY	DATE
7	REVISED AMALGAMATION CONDITIONS	RJM	24.06.15
6	REVISED LOT AND ROAD LAYOUTS IN STAGES 3C, D, E & M, & LOT NUMBERS	HEH	15.05.15
5	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
4	LOT 946 REMOVED NOW PART OF LOT 790	RJM	14.12.12
3	AREA OF LOT 945 INCREASED	RJM	5.12.12
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 24.06.15
CHECKED: DCN	DATE: 24.06.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 24.06.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01

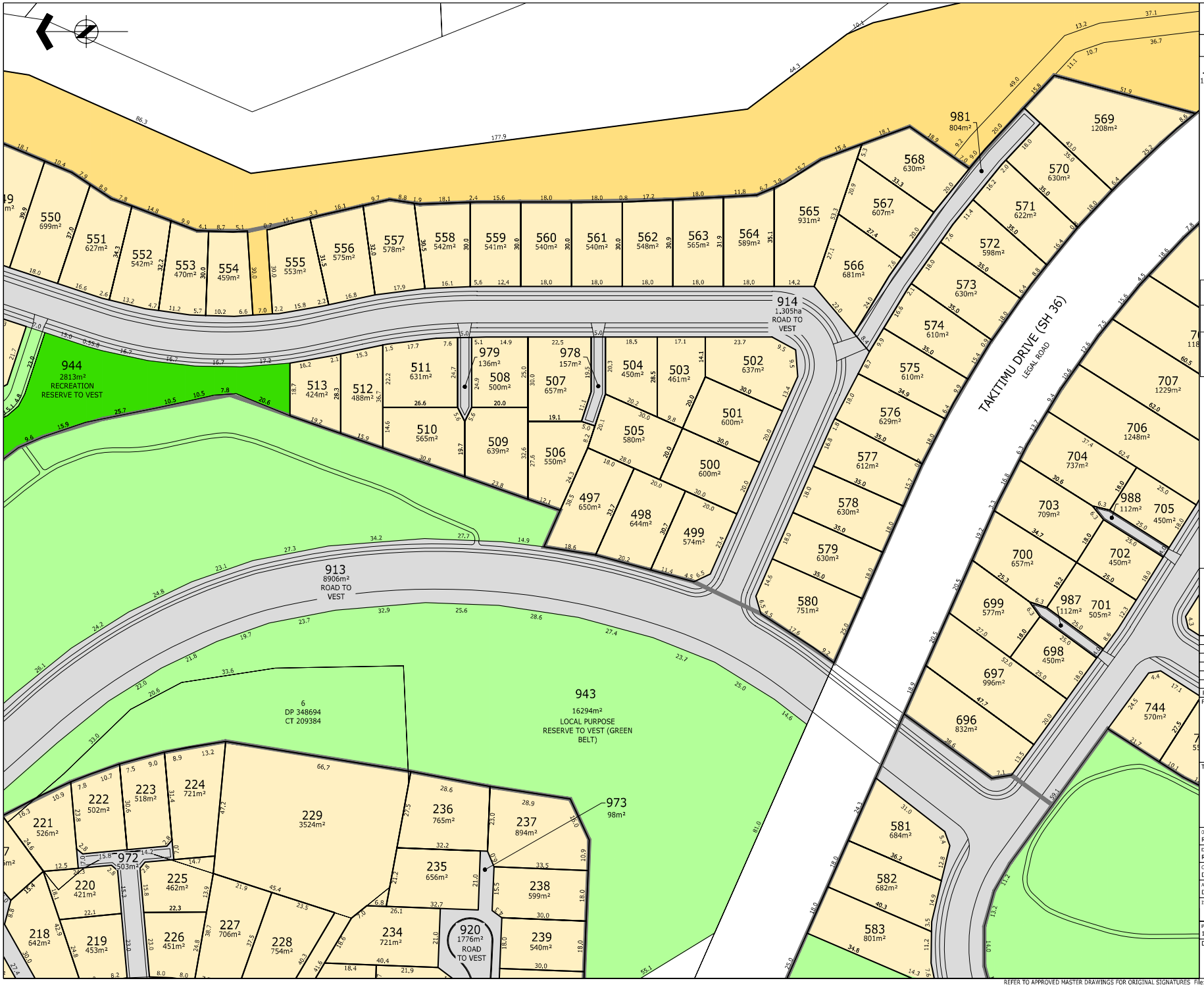
SCALES: 1:625 - A1, 1:1250 - A3

A1

DRAWING No: 132631-23-RC108

REV 7

REFER TO APPROVED MASTER DRAWINGS FOR ORIGINAL SIGNATURES File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 978 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 505 AND 506 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 979 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 509 AND 510 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 981 HEREON BE HELD AS TO EIGHT UNDIVIDED ONE EIGHTH SHARES BY THE OWNERS OF LOTS 567 TO 574 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

PROPOSED MEMORANDUM OF EASEMENT IN GROSS

PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
PEDESTRIAN ACCESSWAY	B	LOT 790 HEREON	TAURANGA CITY COUNCIL
	LOT 981 HEREON	LOT 981 HEREON	

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 PLAN 13 July 2015

TAURANGA OFFICE
LEVEL 1 HARRISON GRIERSON HOUSE
141 CAMERON ROAD TAURANGA 3110
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W www.harrisongrierson.com

REF	REVISIONS	BY	DATE
7	REVISED AMALGAMATION CONDITIONS	RJM	24.06.15
6	REVISED LOT AND ROAD LAYOUTS IN STAGES 2C, D, E & M, & LOT NUMBERS	HEH	19.05.15
5	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
4	PEDESTRIAN ACCESS OVER LOT 981 PROVIDED	RJM	19.12.12
3	LOT 946 REMOVED NOW PART OF LOT 790	RJM	14.12.12
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 24.06.15
CHECKED: DCN	DATE: 24.06.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 24.06.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01

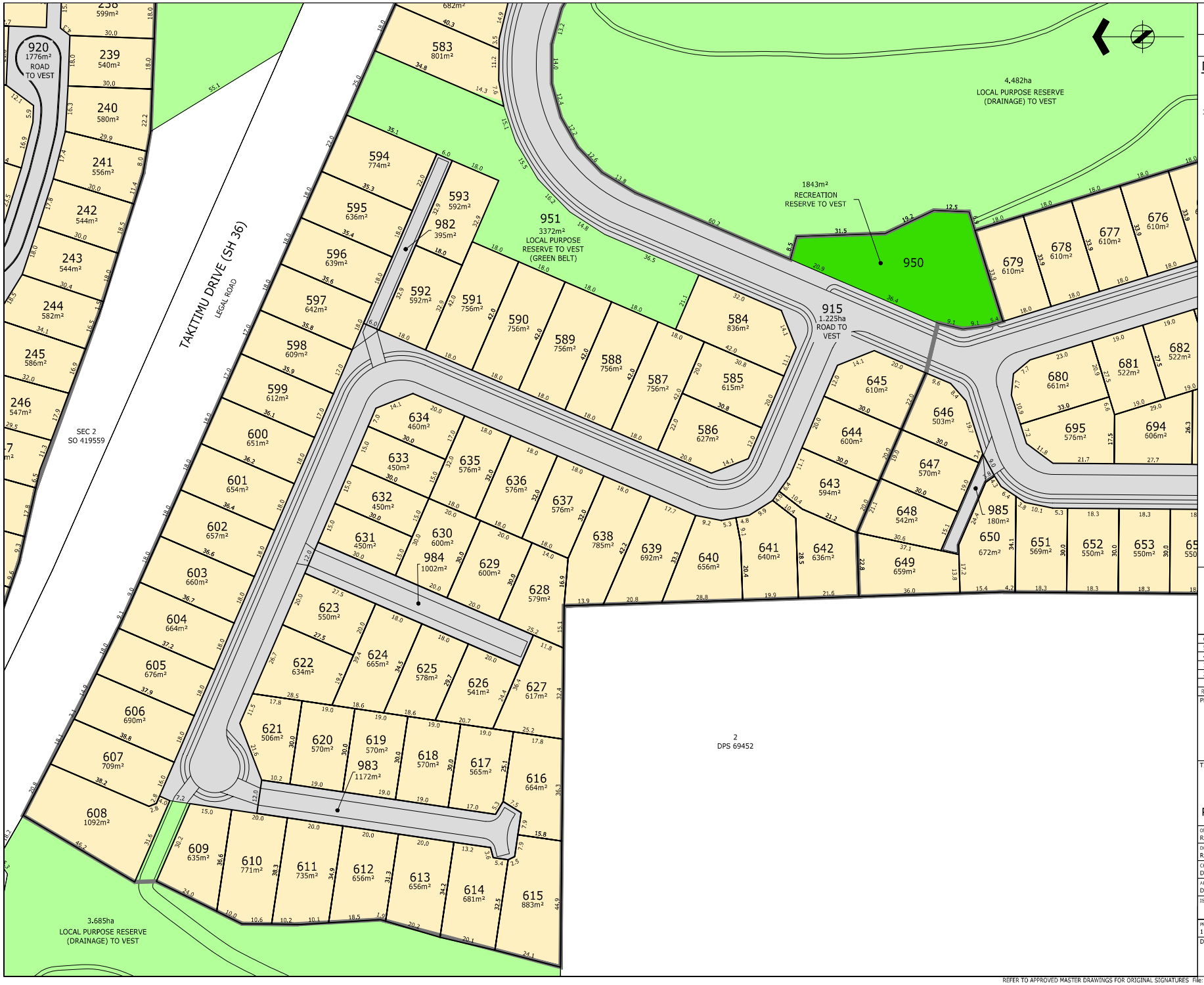
SCALES: 1:625 - A1, 1:1250 - A3

A1

DRAWING No: 132631-23-RC109

REV 7

REFER TO APPROVED MASTER DRAWINGS FOR ORIGINAL SIGNATURES File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 982 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 593 TO 596 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 983 HEREON BE HELD AS TO TWELVE UNDIVIDED ONE TWELFTH SHARES BY THE OWNERS OF LOTS 610 TO 621 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 984 HEREON BE HELD AS TO SEVEN UNDIVIDED ONE SEVENTH SHARES BY THE OWNERS OF LOTS 624 TO 630 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 **PLAN** 13 July 2015

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LEVEL 1 HARRISON GRIERSON HOUSE
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W www.harrisongrierson.com

REF	REVISIONS	BY	DATE
6	REVISED AMALGAMATION CONDITIONS	RJM	24.06.15
5	REVISED LOT AND ROAD LAYOUTS IN STAGES 2C, D, E AND N, AND LOT NUMBERS	HEH	19.06.15
4	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
3	LOT 565 REMOVED, NOW PART OF LOT 951	RJM	14.12.12
2	AREA B ADDED AS GREEN BELT LAND COVENANT	RJM	25.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

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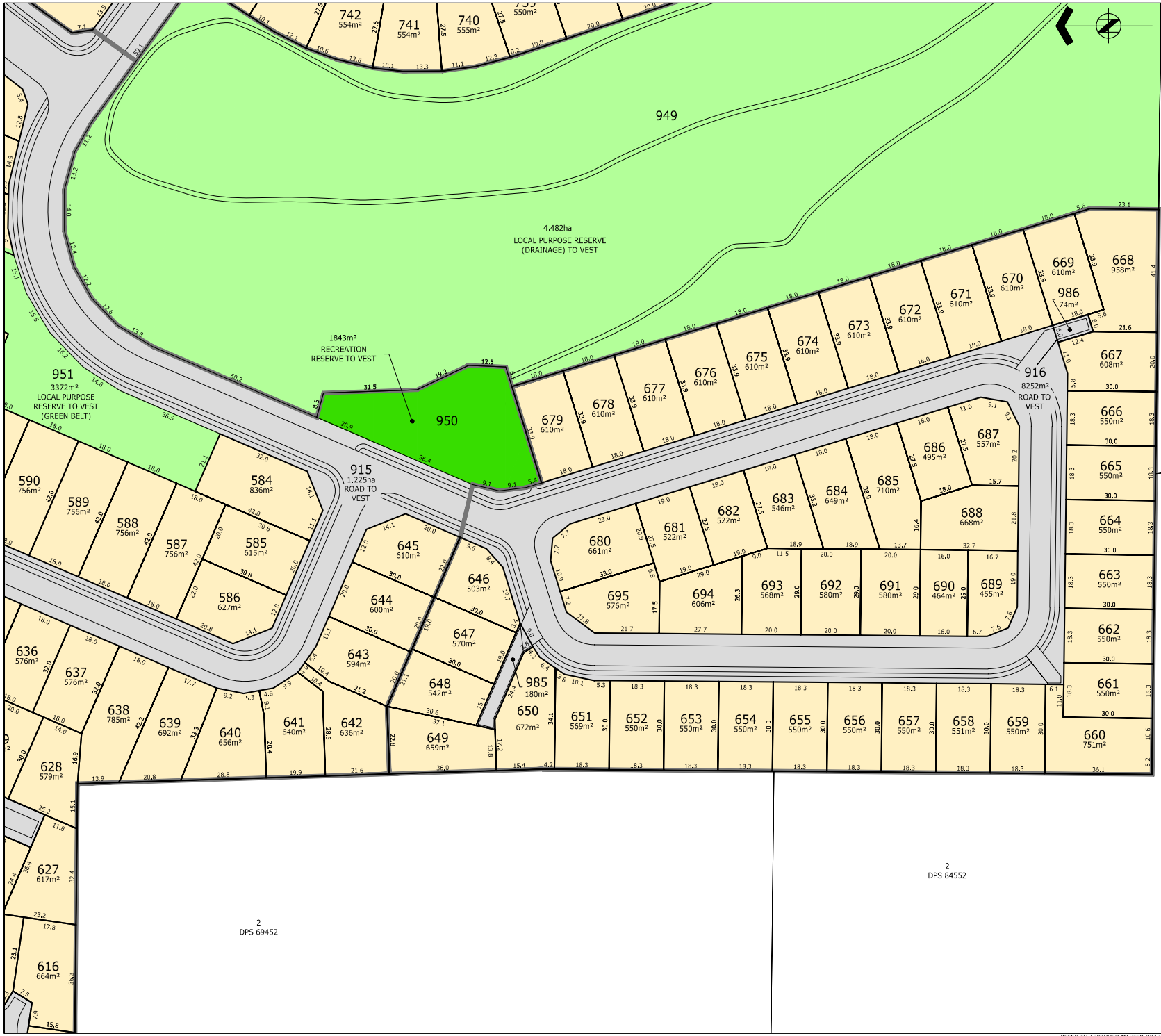
CHECKED: DCN	DATE: 24.06.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 24.06.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01	SCALES: 1:625 - A1 1:1250 - A3	A1
DRAWING No: 132631-23-RC110		REV 6



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 985 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 647, 648 AND 649 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 986 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 668 AND 669 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 **PLAN** 13 July 2015

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3	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
2	REVISED WORDING FOR VESTING OF OPEN SPACE RESERVES	RJM	23.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.06.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
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ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
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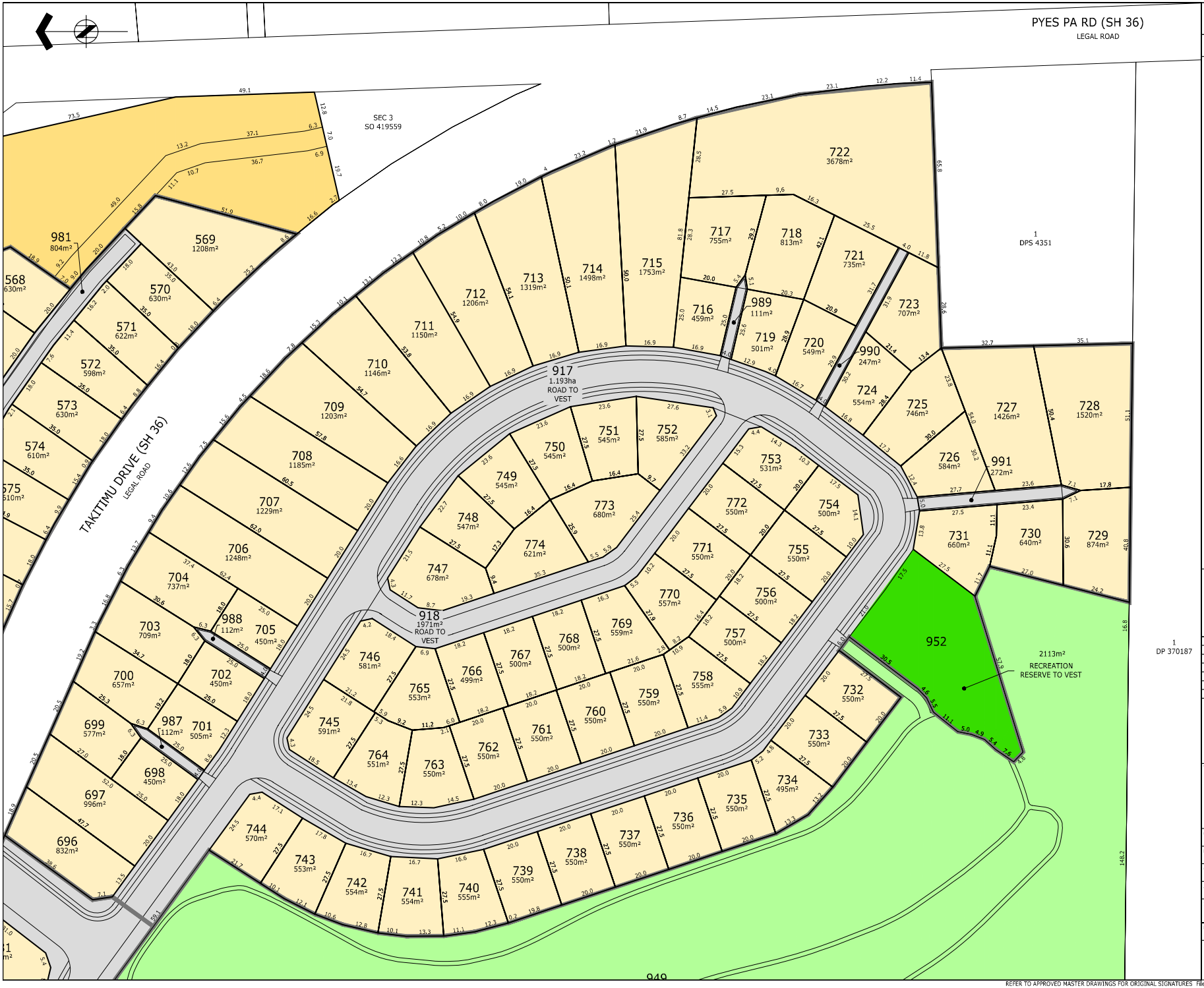
APPROVED: DCN	DATE: 24.06.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01	SCALES: 1:625 - A1 1:1250 - A3	A1
DRAWING No: 132631-23-RC111		REV 5

REFER TO APPROVED MASTER DRAWINGS FOR ORIGINAL SIGNATURES File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG



ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

NOTES:

1. AMALGAMATION CONDITIONS

THAT LOT 987 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 699 AND 670 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 988 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 703 AND 704 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 989 HEREON BE HELD AS TO TWO UNDIVIDED ONE HALF SHARES BY THE OWNERS OF LOTS 717 AND 718 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 990 HEREON BE HELD AS TO THREE UNDIVIDED ONE THIRD SHARES BY THE OWNERS OF LOTS 721, 722 & 723 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 991 HEREON BE HELD AS TO FOUR UNDIVIDED ONE QUARTER SHARES BY THE OWNERS OF LOTS 727 TO 730 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL COMPUTER REGISTERS BE ISSUED IN ACCORDANCE THEREWITH.

Tauranga City Council

APPROVED

Subdivision Consent

RC21332-08 **PLAN** 13 July 2015

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REF	REVISIONS	BY	DATE
5	REVISED AMALGAMATION CONDITIONS	RJM	24.06.15
4	REVISED LOT AND ROAD LAYOUTS IN STAGES 3C, D, E & M, & LOT NUMBERS	HEH	19.05.15
3	REVISED STAGE 3A,B,C,D,G & M LAYOUT & ALL LOT NUMBERS	RJM	25.02.14
2	REVISED LOT LAYOUT	RJM	19.11.12
1	ISSUED FOR RESOURCE CONSENT	RJM	19.10.12

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 2Q - 2T & 3A - 3M

TITLE:

PROPOSED SUBDIVISION OF
PT LOTS 9, 10 & 11 DP 364444,
PT LOT 103 DP 408042 & LOT 6 DP 348694

ORIGINATOR: RJM	DATE: 10.12	SIGNED:	PLOT BY: RJM
DRAWN: RJM	DATE: 10.12	SIGNED:	PLOT DATE: 24.06.15
CHECKED: DCN	DATE: 24.06.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 24.06.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01	SCALES: 1:625 - A1 1:1250 - A3	A1
DRAWING No: 132631-23-RC112		REV 5

REFER TO APPROVED MASTER DRAWINGS FOR ORIGINAL SIGNATURES File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC100.DWG

NOTES:

1. **EXISTING TITLES**
   PT LOTS 9-11 DP 364444
   CT 261821
   THE LAKES 2012 LTD — 84.8420ha

   LOT 6 DP 348694
   CT 209384
   THE LAKES 2012 LTD — 0.8700ha

   PT LOT 103 DP 408042
   CT 428562
   THE LAKES 2012 LTD — 19.0621ha

   TOTAL — 104.7741ha

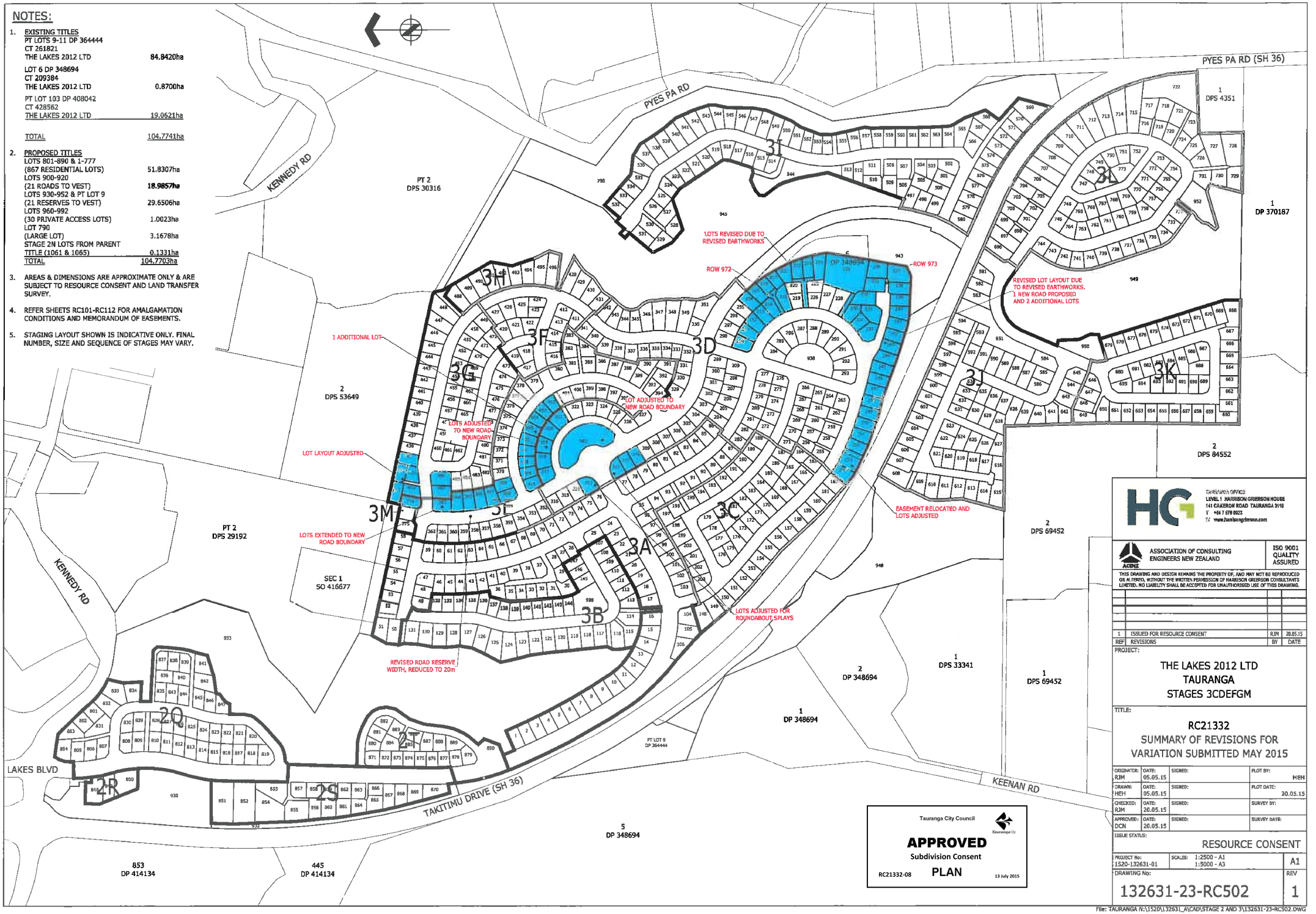
2. **PROPOSED TITLES**

LOTS 801-890 & 1-777 (867 RESIDENTIAL LOTS)	51.8307ha
LOTS 900-920 (21 ROADS TO VEST)	18.9857ha
LOTS 930-952 & PT LOT 9 (21 RESERVES TO VEST)	29.6506ha
LOTS 960-992 (30 PRIVATE ACCESS LOTS)	1.0023ha
LOT 790 (LARGE LOT)	3.1678ha
STAGE 2N LOTS FROM PARENT TITLE (1061 & 1065)	0.1331ha
TOTAL	104.7703ha

3. AREAS & DIMENSIONS ARE APPROXIMATE ONLY & ARE SUBJECT TO RESOURCE CONSENT AND LAND TRANSFER SURVEY.

4. REFER SHEETS RC101-RC112 FOR AMALGAMATION CONDITIONS AND MEMORANDUM OF EASEMENTS.

5. STAGING LAYOUT SHOWN IS INDICATIVE ONLY. FINAL NUMBER, SIZE AND SEQUENCE OF STAGES MAY VARY.



Tauranga City Council

APPROVED
Subdivision Consent
RC21332-08 **PLAN** 13 July 2015

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W www.harrisongrierson.com

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND — ISO 9001 QUALITY ASSURED

REF	REVISIONS	BY	DATE
1	ISSUED FOR RESOURCE CONSENT	RJM	20.05.15

PROJECT:

THE LAKES 2012 LTD
TAURANGA
STAGES 3CDEFGM

TITLE:

RC21332
SUMMARY OF REVISIONS FOR VARIATION SUBMITTED MAY 2015

ORIGINATOR: RJM	DATE: 05.05.15	SIGNED:	PLOT BY: HEH
DRAWN: HEH	DATE: 05.05.15	SIGNED:	PLOT DATE: 20.05.15
CHECKED: RJM	DATE: 20.05.15	SIGNED:	SURVEY BY:
APPROVED: DCN	DATE: 20.05.15	SIGNED:	SURVEY DATE:

ISSUE STATUS: RESOURCE CONSENT

PROJECT No: 1520-132631-01
SCALES: 1:2500 - A1, 1:5000 - A3 — A1
DRAWING No: 132631-23-RC502 — REV 1

File: TAURANGA N:\1520\132631_A\CAD\STAGE 2 AND 3\132631-23-RC502.DWG

Lakes Homes Ltd
C/- S & L Consultants Ltd
PO Box 231
Tauranga 3140

DECISION ON RESOURCE CONSENT APPLICATION – RC25903
Under the Resource Management Act 1991

Tauranga City Council resolves:

That pursuant to Sections 104 and 104B of the Resource Management Act 1991, the application for resource consent made by Lakes Homes Ltd to undertake a two-lot residential subdivision (and associated development complying with Suburban Residential Zone standards) within the Greenbelt Zone at 16 Okataina Street, Pyes Pa legally described as Lot 237 DP 507200 (CFR 769811) is granted.

Reasons for Decision:

It has been determined that allowing this activity, subject to the conditions set out below, will avoid any unacceptable actual and potential effects on the environment. These conditions include those considered necessary for addressing the matters set out under section 106 of the Act.

The activity is considered to be consistent with the relevant provisions of the National Policy Statement on Urban Development Capacity particularly as it relates to the direction set out under policies PA1, PA2 and PA4. The proposal is also consistent with the provisions of the NESCS. Further the proposal is also consistent with the Tauranga City Plan and the Bay of Plenty Regional Policy Statement. For these reasons, it has been determined that granting this application will be consistent with the purpose and principles of the Act as set out under Part 2.

The granting of this resource consent is subject to the following conditions pursuant to Sections 108 and 220 of the RMA 1991:

General

1. *The proposal shall proceed in accordance with the application prepared by S&L Consultants Ltd, ref.21809-RCA, dated June 2017, including:*
   - *S & L Consultants Ltd e-mail, dated 21 July 2017 relating to earthworks*
   - *S & L Consultants Ltd Subdivision Plan Dwg.No.21809-RC1, Rev.2, dated June 2017.*

   *Subject to any changes required through compliance with the following conditions **[see Advice Note 1]**.*

Tauranga City Council
91 Willow Street, Private Bag 12022, Tauranga 3143, New Zealand
Phone 07 577 7000 **Fax** 07 577 7193 **Email** info@tauranga.govt.nz **www.tauranga.govt.nz**

2. *All costs associated with the conditions of this consent, including undertaking works in accordance with the Infrastructure Development Code, shall be met by the consent holder.*

Access and Easements:

3. *That the following amalgamation conditions shall be recorded on the survey plan prior to certification pursuant to Section 223 of the Resource Management Act (LINZ Request: 1459067):*

   - *"That Lot 3 hereon (legal access) be held as to two undivided one half shares by the owners of Lots 1 and 2 hereon and individual certificates of title be issued in accordance therewith."*

   - *"That Lot 973 DP507200 (legal access) be held as two undivided one quarter shares by the owners of Lots 1 and 2 hereon and individual certificates of title be issued in accordance therewith."*

4. *All easements required for underground services (including easements in gross) and rights of way serving lots within the subdivision shall be duly granted or reserved.*

Servicing / Engineering Certification:

5. *All matters and works relating to the servicing of the subdivision shall be designed, supervised, constructed and certified in accordance with requirements of the Council's Infrastructure Development Code* ***[see Advice Notes 3 & 4]****.*

6. *Prior to any works commencing on the site, the consent holder shall submit, to the Council (Team Leader: Land Development Engineering), plans of the proposed activity to and obtain plan approval. The detail to be submitted in accordance with this condition shall include the information and plans required by the Infrastructure Development Code including the location of existing services and connections (including the depth of existing connections; details of all proposed pipework with invert levels and details of access points or rodding eyes; and details of the formation of the proposed shared accessway.*

7. *The consent holder shall construct the shared accessway shown as Area A on the scheme plan in accordance with the Infrastructure Development Code and detail approved in accordance with condition 6 of this consent.*

8. *All residential lots shall be provided with a separate underground connection to the sanitary sewer, water, stormwater and electricity reticulation system in accordance with the Council's Infrastructure Development Code and condition 6 of this consent* ***[see Advice Notes 3 & 4].***

9. *The consent holder shall supply to the Council a set of 'as built' plans of all engineering works in accordance with the Council's Infrastructure Development Code.*

Recommended and Assessed by:

James Danby
Consultant Planner

Delegated Authorisation by:

Brad Bellamy
Team Leader: Environmental Planning

Date: 25 July 2017

Advice Notes:

1. *This consent has been granted on the basis of the proposal being for residential subdivision (and associated residential dwellings) in accordance with the Suburban Residential Zone. Until the City Plan is amended to realign the boundary of Greenbelt Zone (in accordance with the underlying resource consent) it is expected that future development of the subject site will be subject to the relevant standards of the Suburban Residential Zone.*

2. *Under sections 357A and 357B of the Resource Management Act 1991, you have a right of objection to the consent authority in respect of the above decision or any additional fees and charges required in respect of this decision. In accordance with section 357C notice of any such objection must be in writing to the Council within 15 working days of receiving this decision and/or the date on which the invoice is received. Any notice given under section 357C should describe the reasons for the objection.*

3. *For new connections to Council infrastructure (sanitary sewer and water) pipework shall be inspected and approved by Council prior to backfilling*

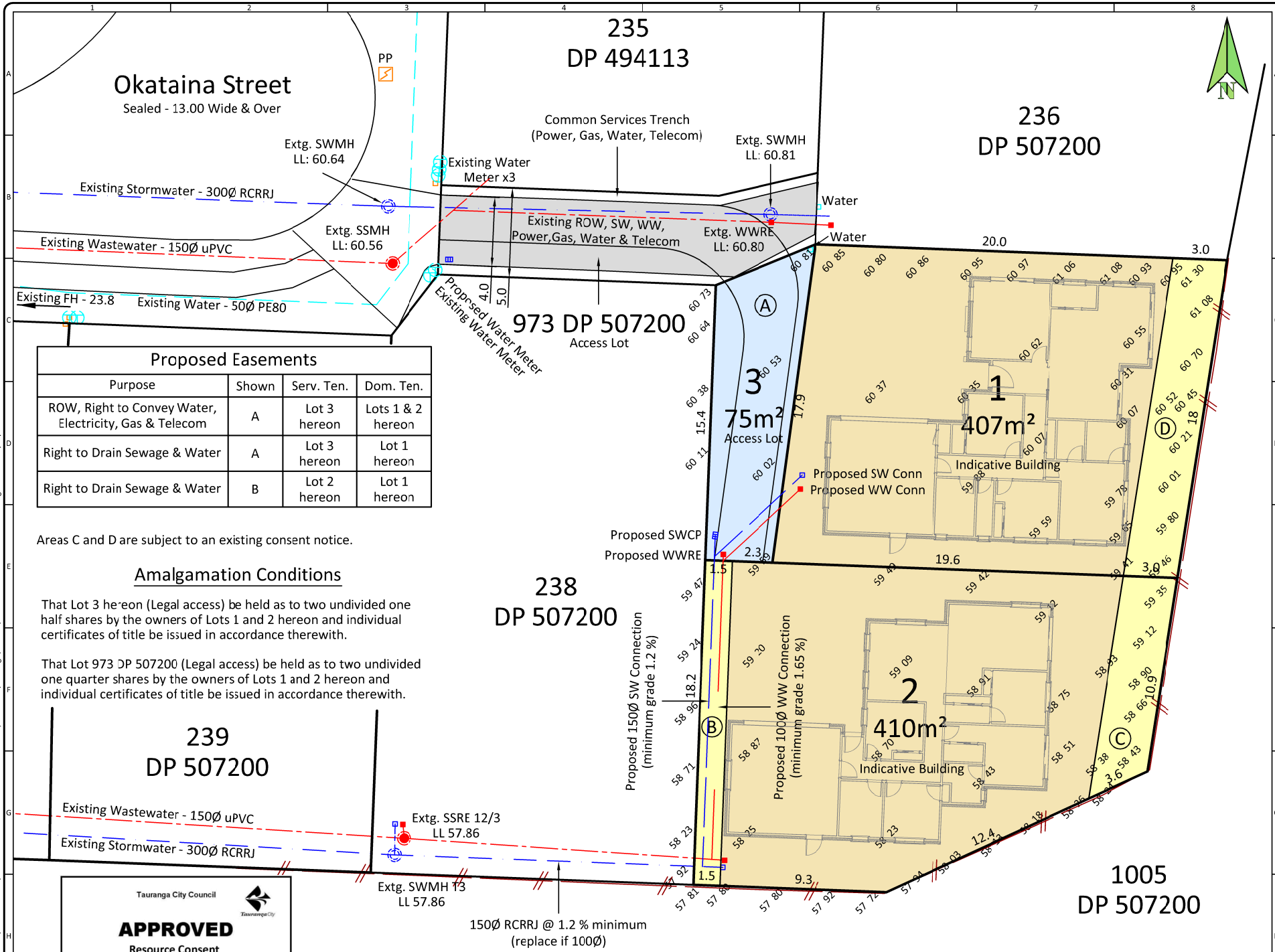
4. *For all new connections to council's infrastructure, a services connection approval is required. Applications can be made to sca@tauranga.govt.nz*

5. *Development contributions under LGA 2002 –*

   Requirement for development contribution: Pursuant to section 198(1)(a) of the Local Government Act 2002, Council requires that a development contribution provided for and in accordance with Council's Development Contributions Policy (which is subject to change), be made (paid) by the consent holder to Council.

6. *Where any building or drainage works are required to satisfy conditions of this consent, all consents required under the Building Act 2004 must be obtained prior to the works being carried out.*

7. *Should the actual processing cost exceed the deposit fee paid at lodgement, if not already accompanying this decision, an invoice may be sent at a later date.*



Proposed Easements

Purpose	Shown	Serv. Ten.	Dom. Ten.
ROW, Right to Convey Water, Electricity, Gas & Telecom	A	Lot 3 hereon	Lots 1 & 2 hereon
Right to Drain Sewage & Water	A	Lot 3 hereon	Lot 1 hereon
Right to Drain Sewage & Water	B	Lot 2 hereon	Lot 1 hereon

Areas C and D are subject to an existing consent notice.

Amalgamation Conditions

That Lot 3 hereon (Legal access) be held as to two undivided one half shares by the owners of Lots 1 and 2 hereon and individual certificates of title be issued in accordance therewith.

That Lot 973 DP 507200 (Legal access) be held as to two undivided one quarter shares by the owners of Lots 1 and 2 hereon and individual certificates of title be issued in accordance therewith.

Tauranga City Council

APPROVED

Resource Consent

PLAN

RC25903 25-Jul-2017

Areas and dimensions are approximate only and subject to survey.

This plan has been prepared for the purposes of Section 88 of the Resource Management Act 1991 and should not be relied on for any other purpose.

Rev No.	Description	Date
2	Issued for Consent	06/17
1	Issued to Client	03/17

	Name	Date	Signed
Surveyed	AJW	03/17	
Designed	CJH	03/17	
Drawn	NDP	03/17	
Checked	CJH	03/17	
Approved			

References

Heights are in terms with Moturiki Datum.
Origin : TCC BM 1341 RL 56.47

S & L CONSULTANTS LTD
SURVEYORS - ENGINEERS - PLANNERS
102 Hamilton Street, Tauranga, New Zealand
P.O. Box 231 Ph.(07)577-6069
Fax(07)577-6065
Email: slconsultants@sltga.co.nz
Web Site: www.sltga.co.nz

Title

Proposed Subdn of Lot 237 DP 507200

16 Okataina Street

Comprised in CT 769811
Lakes Homes Ltd

Original Scales @ A3	Date
1:200	06/17
Do Not Scale Dimensions	
Drawing No	Revision
21809 - RC1	2

A8045030

H:\21000 - 21999\21800 - 21899\21809 - Bella Vista Homes - Okataina Street, The Lakes\Drawings\Scheme\21809 - RC1 - Scheme Plan - Rev 2.dwg - Plotted: 26/06/2017

Land Development

Tauranga City

General Description of Landform within Tauranga District

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

(a) Minimum Building Platform Levels

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

(b) Low-lying Land

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

(c) Sloping Ground

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

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

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

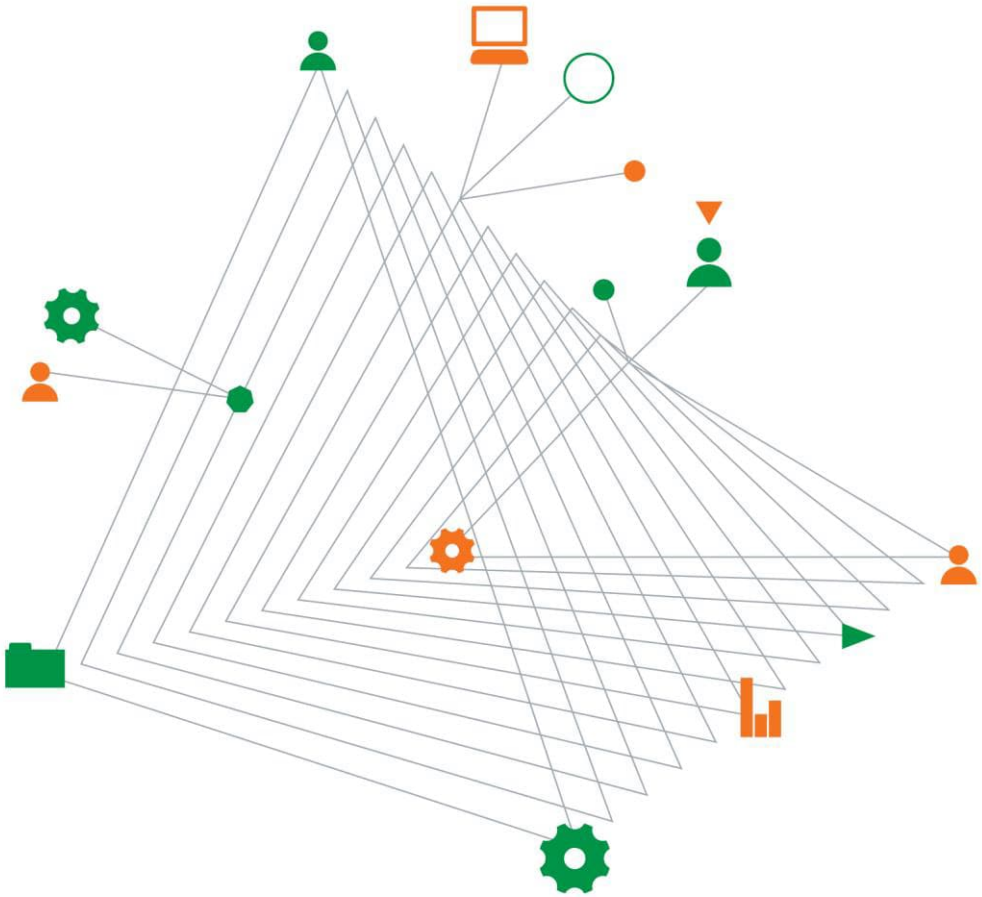
The majority of other failures on modest to steeply sloping ground are shallow failures (involving the top 1m to 3m of soil), but are nonetheless of serious consequence to any building development. Such failures are usually initiated by extreme climatic conditions. Any sloping ground greater than 15-degree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

The Lakes (2012) Ltd

The Lakes - Stages 3G, 3H & Lots 236-239 (Stage D)

Geotechnical Completion Report

17 February 2017



Experience comes to life when it is powered by expertise

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The Lakes - Stages 3G, 3H & Lots 236-239 (Stage D)

Prepared for
The Lakes (2012) Ltd
C/- Harrison Grierson Consultants Ltd
PO Box 13 025
Tauranga 3141
Tauranga

Prepared by
Coffey Services (NZ) Ltd
96 Cameron Road, Tauranga
Tauranga Central 3110 New Zealand
t: +64 7 577 42866081

17 February 2017

Document authorisation

Our ref: GENZTAUC13086AP-AK

For and on behalf of Coffey

David Cullen
Engineering Geologist

Quality information

Revision history

Revision	Description	Date	Author	Reviewer	Signatory
Draft	Draft for review	23 Jan 2017	D Cullen	D Sullivan	D Cullen
Final	Final for issue	17 Feb 2017	D Cullen	D Sullivan	D Cullen

Distribution

Report Status	No. of copies	Format	Distributed to	Date
Final	1	PDF	The Lakes (2012) Ltd	17 Feb 2017
Final	1	PDF	Harrison Grierson Consultants Ltd	17 Feb 2017
Final	2	Hardcopy	Tauranga City Council	17 Feb 2017

Table of contents

Important information about your Coffey Report

Appendices

1. INTRODUCTION AND SCOPE

This Geotechnical Completion Report (GCR) has been prepared by Coffey Services (NZ) Ltd (Coffey) for the Lakes (2012) Limited following completion of earthworks for Stage 3G, Stage 3H (collectively known as 3GH) and Lots 236 to 239 within Stage D of the Lakes Subdivision and in general accordance with the conditions of Council resource consent number RC21332.

This GCR contains the results of site investigations together with as-built plans derived from Harrison Grierson Consultants Ltd (HGCL) topographical data. It describes bulk earthworks completed during the 2007-2008, 2013-2014 and 2014-2015 earthworks seasons.

The extent of earthworks observed by Coffey is shown on the appended plans (Figures 1 to 6, Appendix A). A Statement of Professional Opinion (Form G2) and Summary of Technical Data (Form G3) for the works described herein are also appended.

2. DESCRIPTION OF SUBDIVISION

Stages 3GH and Lots 236 to 239 within Stage D of the Lakes subdivision are located near the intersection of Pyes Pa Road and Takitimu Drive (State Highway SH26) in Pyes Pa, Tauranga. The site location and original ground contours are shown on Figures 1 (Stage 3GH) and 4 (Lots 236 to 239) in Appendix A. Stage 3G, Stage 3H and Lots 236 to 239 consists a total of 80, 11 and 4 lots respectively.

Before earthworks began, the majority of Stage 3G consisted of a flat or gently rolling north-south oriented plateau at approximately RL 55-65m (Moturiki Datum, 1953). During the 2013-2014 earthworks season, filling was placed over the northern portion of Stage 3G. The following 2014-2015 earthworks season, excavation of the elevated plateau was undertaken in the southeast of Stage 3G and additional filling was placed in the north and eastern extent. Combined cut/fill contours of the works completed are shown on Figure 2.

Stage H comprised a sloping terrace on the edge of the plateau before earthworks proceeded, dipping from approximately RL 59m in the western extents to approximately RL 49m in the east. During the 2014 to 2015 earthworks season, filling commenced over much of Stage 3H, with the exception of minor cut in the north-western and south-western extents.

Lots 236 to 239 within Stage 3D originally comprised of steeply sloping ground over much of the lots, dipping in a southeast and western direction where a deeply incised gully extended into the lots. Earthworks commenced in this area with the placement of fill over Lots 237 to 239 during the 2007 to 2008 earthworks season, followed by unsupervised filling thereafter, likely between 2010 and 2012 and discussed later in this report. Cut/fill contours are shown on Figure 4. The 2012 ground surface is shown on Figure 5. Further earthworks were completed during the 2014-2015 work season, with cut/fill contours for the 2014-2015 earthworks also shown on Figure 5.

Construction of a cantilever timber pole retaining wall was completed in 2017 adjacent to the northern perimeter of Stage 3G. Additionally in 2016, a stormwater pipe was thrust beneath the slope to the east of Stage 3H to an outlet structure above the stream in the valley below. The location of the stormwater pipe and indicative location of the retaining wall is shown on Figure 3.

Civil infrastructure for these stages and lots of the subdivision was installed in 2015 and 2016. The finished ground surface is shown on Figures 3 and 6.

3. RELATED REPORTS

The following documents were prepared prior to or during the design and development of Stages 3G, 3H & Lots 236-239 (Stage D):

1. *'Pyes Pa West Urbanisation Development, Tauranga – Geotechnical Assessment Report'*, report prepared by S&L Consultants Ltd (Ref: 16944, dated October 2003).
2. *'Geotechnical Investigation Report for the Lakes Subdivision – Stage 3 (Phase 1) at Pyes Pa, Tauranga',* report prepared by Coffey (Ref: GENZTAUC13086AF-AA, dated 29 April 2013).
3. *'Geotechnical Investigation Report for the Lakes Subdivision – Stage 3 Zone 2 at Pyes Pa, Tauranga',* report prepared by Coffey (Ref: GENZTAUC13086AK-AC, dated 7 April 2014).
4. *'The Lakes Subdivision Stage 3 Zone 1 Earthworks Completion Report'*, report prepared by Coffey (Ref: GENZTAUC13086AF-AE, dated 15 August 2014).
5. *'The Lakes Stage 3 - Zone 3, Geotechnical Investigation Report (Addendum 1)',* report prepared by Coffey (Ref: GENZTAUC13086AQ-AB, dated 10 July 2015).
6. *'Building Restriction Lines above Western Slope and Collector Road, The Lakes Subdivision Stage 3 – Zone 2'*, memo prepared by Coffey (Ref: GENZTAUC13086AQ-AC, dated 25 August 2015).
7. *'Retaining Wall Design Report for Stage 3G The Lakes, The Lakes Subdivision, Tauriko'*, report prepared by Coffey (Ref: GENZTAUC13086AB-AB, dated 16 June 2016).

Key conclusions of the main documents are summarised below.

3.1. Geotechnical Assessments

The original geotechnical assessment for the Lakes subdivision was completed by S&L Consultants Ltd and contained an overview of geotechnical conditions for the entire Lakes project. The report concluded that the site was generally adequate for subdivision and residential development, subject to appropriate design and construction.

Subsequent geotechnical investigation reports by Coffey in April 2013 and April 2014 summarised additional investigations that were completed to specifically assess the Stage 3 area. These investigations generally confirmed the S&L conclusion that the site was adequate for subdivision.

3.2. Earthworks Completion Report

The August 2014 Earthworks Completion Report (ECR) concluded that the bulk earthworks undertaken in 2007-2008 and 2013-2014 were generally completed in accordance with the relevant standards and guidelines including NZS 4431 (Code of Practice for Earth Fill for Residential Development) and the Tauranga City Council Infrastructure Development Code (TCC IDC). The report did however identify several areas that needed to be re-visited in this GCR. These were:

1. Some of the fill materials placed towards the end of the 2013-2014 season did not pass the required Nuclear Density Meter (NDM) tests. The failed tests were attributed to the highly variable source materials being used (silts, sands and clays) which resulted in fills that could not be easily assessed with a NDM. It was therefore decided that the affected fill would be re-tested using hand-auger boreholes with undrained shear strength measurements and/or Dynamic Cone Penetrometer (DCP) testing as appropriate for the individual soils.
2. The ECR also commented on the presence of undocumented filling that was encountered during excavations in 2013 within lots 238 & 239 and elsewhere within the Lakes development. This filling is understood to have been placed between 2010 and 2012, when

works on site were not closely managed by either Grasshopper Farms Ltd or The Lakes (2012) Ltd.

3. Finally, the ECR recommended that the stability of the eastern slope should be reassessed in the GCR and an appropriate Building Restriction Line (BRL) be defined for lots along the crest of this slope.

These issues are addressed in the following sections of this report.

The ECR also referred to the presence of subsurface erosion features ('tomos') found in other stages of the Lakes Subdivision, indicating soils below the plateau may be subject to erosion and scouring. While 'tomos' have not been observed within these subject Stages and Lots, it is possible erosional features may be encountered during construction on these lots.

4. INVESTIGATIONS COMPLETED

Geotechnical investigations have been undertaken on this and adjacent sites during each stage of the Lakes subdivision's design and construction. The investigations used for this report are listed below. Logs of each investigation are included in Appendix C.

- Three test pits excavated in 2012 within or near Stage 3G to maximum depths of up to 5m to assess shallow ground conditions before the 2013-2014 work season (Coffey, TP07–TP09 on Figure 1);
- One Cone Penetrometer Test (CPT) to a depth of approximately 13 meters below the existing ground level using a truck mounted rig supplied by Geotech Drilling Limited (Coffey, CPT314 on Figure 1);
- One machine borehole drilled to a depth of approximately 20.0m. Standard Penetration Tests (SPT) were carried out at 1.5m intervals (Coffey, MH301 on Figure 1);
- Two flight-auger machine boreholes drilled to a maximum depth of 20.0m within Stage 3H. SPT tests were conducted at specific depths within these boreholes to provide strength estimates and relatively undisturbed samples of key lithologies encountered (Coffey, CFA04 & CFA05 on Figure 1).

On completion of the bulk earthworks in 2016, Coffey drilled a total of 50 hand-auger boreholes to target depths of 2m or 2.5m (and in some cases, up to 5m depth) on approximately every second lot to confirm finished subgrade conditions. The location of each borehole is shown on Figures 3 & 6. Although labels are not shown on the plan, the boreholes are numbered according to the relevant lot number. For example, the hand auger borehole on Lot 413 in Stage 3G is referred to as HAL413. Logs of these boreholes are included in Appendix D.

5. OVERVIEW OF GEOLOGICAL CONDITIONS

The subject areas of Stage 3G and Lots 236 to 239 within Stage 3D are located on an elevated, gently sloping plateau. Below the topsoil layer, the pre-development soil profile across this plateau comprised of volcanic ashes including the Hamilton Ash and Rotoehu Ash. This ash sequence is common throughout the Tauranga area. At this location the volcanic ashes overlie ancient alluvial deposits of the Matua Sub-Group and weakly cemented pumice sands of the Te Ranga Ignimbrite.

Stage 3H is located on a gently to moderately sloping terrace formed from ancient alluvial deposits of the Matua Subgroup.

Excavations during the 2013-2015 period reduced the thickness of the volcanic ashes across the southeast of the Stage 3G plateau by up to 7m. The subsoils below many of the finished lots therefore

comprise volcanic ash silts but in some areas excavations have penetrated through the ash layers and the finished lots are underlain by variable Matua Sub-Group soils. These include silts, sands and clays which can be highly sensitive to reworking. Areas underlain by fill are discussed in Section 6.2.

6. EARTHWORKS OPERATIONS

6.1. Plant

Earthworks during the 2007-2008 season were completed by Bob Hicks Earthmovers Ltd. The contractor for the 2013-2014 and 2014-2015 seasons was JMC Civil Construction Ltd.

The main items of plant used during each of the bulk earthworks phase comprised Terex motor-scrapers and bulldozer or tractor towed 'scoops', hydraulic excavators, bulldozers, articulated all-terrain dump trucks (ADT's) and sheep's-foot rollers.

6.2. Construction Programme

6.2.1. 2007 – 2012

Under ownership of Grasshopper Farms Ltd, earthworks during this period included excavations of up to 1m depth over Lot 237 (Stage D) as shown on Figure 4. Filling took place over Lots 237 to 239 (Stage D), however as cut & fill contours for this period are not available, fill contours were calculated by HGCL (Harrison Grierson Consultants Ltd) by subtracting the original ground surface (surveyed in 2007) from a survey completed by HGCL in 2012. This resulted in indicated fill depths of up to 11m across the lots.

Excavations in the filling in Lots 237 to 239 encountered soils that consisted of highly sensitive silts and clays with a relatively high moisture content and low undrained shear strength. Based on a series of unlogged test pits within the fill, it was considered that the non-engineered filling could remain in place provided that later fill in these areas was placed appropriately and that static settlements were monitored and reviewed prior to issue of the GCR. This later filling is discussed in more detail below.

No cut or fill took place over Stages 3GH during 2007 to 2012.

6.2.2. 2013 – 2014 & 2014 – 2015 Earthworks Seasons

In 2012 ownership of the Lakes subdivision passed from Grasshopper Farms Ltd to The Lakes (2012) Ltd. During this period the remaining earthworks were completed to form the current ground surface. Earthworks during the 2013-14 and 2014-15 summers included excavations of up to 7m depth on the main plateau of Stage 3G and 1m cuts in the north and south of Stage 3H, as shown on Figure 2.

Excavated material was used for filling up to approximately 2m deep in the northern portion of Stage 3G during both summer periods, and up to 4m deep along the eastern boundary of Stage 3G and over much of Stage 3H during the 2014-15 season.

Further cut and fill was undertaken over Lots 236 to 239 of Stage D. Lot 236 and 237 underwent cut of up to 1m and all of the lots had fill placed to varying depths, with filling of up to 8m deep in places as shown on Figure 5.

7. QUALITY CONTROL

7.1. Site Preparation Observations

During 2013-2014 and 2014-2015, Coffey undertook regular observations of fill areas to ensure topsoil, vegetation or unsuitable materials had been removed before filling.

7.2. Fill Control

As mentioned previously, filling placed over Lots 237 to 239 of Stage 3D during 2007-2012 was not tested or certified by Coffey and no other records or test results have been located.

For Stages 3GH and Lots 236 to 239 of Stage 3D in the 2013-2014 and 2014-2015 seasons, Nuclear Density Meter (NDM), laboratory moisture content and undrained shear strength tests were carried out by Geotechnics & Fulton Hogan on behalf of JMC Limited. The locations of the tests completed are shown on Figure 2 and 5.

In cases where of the above tests recorded low undrained shear strengths, retests were undertaken to assess the ground conditions and fill strength, either as additional NDM tests or subsequent hand-auger boreholes in close proximity to the original test.

7.2.1. Compaction Control Criteria

The compaction control criteria for this project were specified using the 'minimum allowable shear strength and maximum allowable air voids' method as defined below:

- Air voids percentage (defined in NZS 4402:1986 and as measured by NDM) targeting an average value less than 10% over any 10 consecutive tests and maximum single value no greater than 12%.
- Undrained shear strength measured by hand held shear vane calibrated using the NZGS 2001 method. A single undrained shear strength 'test' was defined as the average of four individual shear vane readings at each NDM location. The target test values were an average value greater than 150kPa and minimum single value no less than 140kPa.

The hand-auger boreholes drilled to re-test filling used field shear vane measurements with the same target result as above.

7.2.2. Test Results

Summary tables showing the results of the laboratory fill tests for bulk earthworks at Stages 3G, 3H & Lots 236-239 (Stage D) are included in Appendix E and the locations of the tests are shown on Figures 2 and 5. The majority of tests met or exceeded the compaction control criteria given above. Failed tests are shown in red on the relevant figures.

Three tests during the 2013-2014 season did not meet the required values, with test numbers A-05, A-12, and A-41 being deemed to have failed due to low undrained shear strength readings. The fill surrounding these tests were either reworked or retested with hand-auger boreholes at a later date (passing thereafter), indicating the failed result was either due to an incorrect test value or an isolated pocket of filling.

During the 2014-2005 season, three tests being B-01, B-05 and B-13 initially failed due to low undrained shear strength readings but were retested and subsequently passed. As these tests were superseded by later testing, the tests are not showing as failed results on the site plan.

Two further tests, B-08 and B-09, failed due to low undrained shear strength readings and were retested with hand-auger boreholes at a later date, again with passing results indicating the failed tests were either due to an incorrect test value or an isolated pocket of filling.

8. ENGINEERING EVALUATION AND RECOMMENDATIONS

8.1. Fill Quality

Based on the appended earth fill quality control test data and reliance on the diligence of the bulk earthworks contractor at times when engineering staff were not present on site, results indicate that the compaction control criteria were generally met during the bulk earthworks periods in 2013-2014 and 2014-2015.

8.2. Static Settlement

The majority of the area, specifically Stage 3G, was either located in zones of cut or received evenly distributed filling over volcanic ashes with soils not expected to be subject to significant settlement. Static settlements were therefore not monitored in Stage 3G.

However, Stage 3H and Lots 236-239 (Stage D) received up to 4m and 8m of fill material respectively during the 2013-14 season. Settlement monitoring points were therefore installed in these areas. The monitoring pins consisted of steel rods attached to plates installed at the base of the filling. The data from these pins are presented graphically in Appendix F and settlement marker locations shown on Figures 2 and 6 for Stage 3H and Lots 236-239 (Stage D) respectively.

8.2.1. Stage 3H

Static settlements below the 2014 filling were monitored at two locations shown as SM26 and SM27 on Figure 2. Measured settlements were 205mm and 390mm for SM26 and SM27.

The data show the majority of consolidation settlement below the filling occurred within 2 to 3 months of earthworks being completed. Thereafter, settlement entered a long term ‘creep’ phase. Extrapolating the data out for a period of 50 years indicated that lots in this area may be affected by up to 100mm of future creep settlement over the assumed life of the proposed dwellings. However, differential settlements within the affected lots would be expected to be within the allowable range recommended by MBIE (i.e. 25mm/6m length), provided additional fill does not exceed 0.6m.

8.2.2. Lots 236-239 (Stage D)

Static settlements were monitored over Lots 236-239 during and after the 2013-2014 and 2014-2015 work seasons.

Three settlement markers were installed, SM15, SM28, and SM28A as shown on Figure 6, however only SM28 remained functional during the whole monitoring period as the other two markers were either damaged or moved during fill placement.

In regards to SM28, monitoring from April 2015 to August 2016 indicated the filling had induced static settlements of 68mm and that settlement was ongoing. Extrapolating the data out for 50 years indicated long-term settlement may exceed 60mm, with a high likelihood of excessive differential settlement beneath the building platforms.

The area was therefore pre-loaded with 2m of topsoil in April 2016 as shown in Figure 6. Continuing monitoring indicated this pre-load induced an additional settlement of up to 47mm. Following the completion of monitoring in August 2016, the pre-load was removed.

Following preloading we consider that the potential for future static settlements beneath these lots has been reduced, and long term differential settlements would be expected to be within accepted limits, provided additional fill does not exceed 1.0m.

8.2.3. Fill Development Restrictions

To reduce possible future settlements, any additional filling the lots listed below should not exceed the following depths without the approval of the TCC Category 1 or 2 Geo-Professional:

- 1.0m for lots 236-239
- 0.6m for lots 495-502

8.3. Slope Stability

While the majority of proposed lots within Stage 3G are located on gently sloping ground, the lots within this stage adjacent to the eastern perimeter and all lots within Stage 3H are located above a steeper slope. Lots 236-239 are also positioned above steeper slopes to the east and south of the lot boundaries.

8.3.1. Lots 413, 458, 460 and 493-503

The adjacent slope below the plateau exhibited a few areas of instability. Colluvial soils were encountered in hand auger boreholes and test pits in this area and topographic evidence also suggested that this slope has been affected by larger scale ancient instability.

Stability analyses of this slope noted that values were generally less than required by the IDC for residential development and indicated that further instability may occur on this slope in the future during extreme rainfall events or under seismic loads.

As the slope is insufficiently stable for residential development, the lots are subject to a building restriction line (BRL) as shown on Figure 3. The BRL has been defined by either projecting a 1V:2.5H line from the toe of the steepest adjacent slope, or by measuring 15m back from the slope crest, whichever is smaller. The proposed setback distance is considered adequate for the residential development in this area.

8.3.2. Lots 236-239 (Stage 3D)

Slopes adjacent to Lots 236-237 have been engineered with a gradient of 1V:2.5H for which this gradient is considered to be an adequately stable slope angle for Tauranga soils. However, this does not allow for surcharge from residential buildings or fill and therefore a BRL has been placed on these lots, setback 3-5m from the slope crest as shown on Figure 6.

The slope south of lots 237-239 have been engineered with a gradient of 1V:3H and therefore are adequate for residential development without a BRL.

8.3.3. Slope Development Restrictions

For lots 236-237, 413, 458, 460 and 493-503, it should be understood that the inclusion of a BRL on a lot does not specifically preclude development beyond the restriction line. However, any development between the BRL and slope will require specific geotechnical input and may need additional slope protection works such as retaining walls, deepened foundations, etc. The following restrictions are recommended for these lots:

- Any part of a dwelling or structure which extends beyond the BRL must be reviewed and approved by a TCC Category 1 Geo-Professional prior to the building consent application. A geotechnical report must be provided including the specific design of any mitigation works proposed.

- Any filling between the BRL and slope must be reviewed and approved by a TCC Category 1 Geo-Professional with a report to be provided to Council before work begins.

- Stormwater from any paved or impermeable surfaces including roofs and driveways on these lots must be collected and piped to the site's stormwater system. Stormwater must not be disposed via ground soakage on these lots and any concentration of runoff over the slope must be avoided.

8.4. Stage 3G Retaining Wall

The construction of the timber pole retaining wall along the northern boundary of Stage 3G was observed by Coffey. This included regular site visits to confirm borehole and post dimensions and ground conditions along the wall alignment as specified in the retaining wall design report.

Based on our observations we consider the wall has been built in accordance with the design. A separate certification letter has been provided for the wall, a copy of which is included in Appendix G.

8.4.1. Retaining Wall BRL

As the wall has not been designed for additional surcharge loads, a BRL has been defined with a setback distance equal to the height of the wall. The BRL has been assigned to lots 441, 442, 444 to 455, 457 and 458 within Stage 3G as shown on Figure 3.

8.4.2. Retaining Wall Development Restrictions

Specifically for lots 441, 442, 444 to 455, 457 and 458, in regards to the BRL adjacent to the Stage 3G retaining wall, the following restrictions are recommended:

- Any part of a dwelling or structure which extends beyond the BRL must be reviewed and approved by a TCC Category 1 or 2 Geo-Professional prior to the building consent application. A geotechnical report must be provided including the specific design of any mitigation works proposed. Specific design may include, deepened foundations past the 45° zone of influence from the toe of the retaining wall.

- No filling is to take place between the BRL and crest of wall without review and approval by a TCC Category 1 or 2 Geo-Professional. Due to the height of the existing retaining wall, any additional filling or retaining structures above the wall and within the BRL may require a Resource Consent.

- Stormwater from any paved or impermeable surfaces including roofs and driveways on these lots must be collected and piped to the site's stormwater system and not allowed to flow over the the retaining wall.

8.5. Stage 3H Stormwater Pipe Line

As mentioned in Section 2, a stormwater pipeline was horizontally drilled or 'thrust' beneath the slope to the east of Stage 3H as part of the civil infrastructure installation in 2016. The pipeline was designed by Harrison Grierson Consultants Ltd. Coffey provided advice regarding the pipeline alignment and recommended the pipe was installed at least 3.0m below existing ground level to reduce the risk of damage in the event of slope failure

A copy of Harrison Grierson's design drawings for the pipeline is included in Appendix G. Based on our observations during drilling and as-built survey information from Harrison Grierson, we consider the pipeline has been installed along an appropriate alignment. The survey data indicate the pipe is at least 3.0m deep below the existing ground surface as recommended.

8.6. Foundation Design & Bearing Capacity

The lots within Stage 3G and Lots 236-239 (Stage D) are underlain by either engineered fill or natural soils that meet or exceed the conditions for 'good ground' as defined by NZS 3604. Dwellings on these sites may therefore be supported on standard shallow foundations designed for a geotechnical ultimate bearing capacity of 300kPa.

Lots 493 to 503 within Stage 3H also meet or exceed the conditions for 'good ground' as defined by NZS 3604. However, as the lots are moderately steeply sloping, development on these lots may require deep excavation to form a level building platform. We recommend that whenever the proposed depth of excavation exceeds 1.5m, additional investigation should be undertaken by a TCC Category 1 or 2 Geo-Professional at the design/building consent stage to confirm soil conditions below the proposed foundations. A consent notice to this effect should be added to the affected lots (see Form G3, Appendix B).

It should be understood that due to the volcanic nature of the natural soils on this site, it is possible that local soil conditions may vary from those discussed above. Some soils observed onsite are also potentially prone to sub-surface erosion (e.g. 'tomos). It is therefore important that any potentially soft or unsuitable soils encountered in the foundation excavations are brought to the attention of a geotechnical professional.

8.7. Stormwater Management

To further reduce the potential for surface and sub-surface erosion, all stormwater from impervious areas within the development will need to be carefully collected and piped to a safe disposal point or to the reticulated network. Particular care should be taken to avoid areas of ponded stormwater or concentrated flows around and under buildings or structures.

9. CONCLUSION

Based on the observations and investigations presented in this report and with reliance on the diligence of the earthworks contractors, it is concluded that the earthworks and subdivision of Stages 3GH and Lots 236-239 of Stage 3D have been completed in general accordance with previous recommendations and current Tauranga City Council Infrastructure Development Code.

This report presents site-specific recommendations including Building Restriction Lines (BRLs) on some lots located above steeper slopes or adjacent to retaining walls. Provided these recommendations are followed and prudent development practices are adopted, it is considered that the finished lots are at low risk of erosion, falling debris, subsidence, inundation or liquefaction and these sites are therefore adequate for residential development without the need for Section 72 restrictions under the New Zealand Building Act.

Development outside the BRL (i.e. between the restriction line and the slope/retaining wall) is subject to further geotechnical input per Sections 8.3.3 and 8.4.2 of this report. The placement of additional filling is also restricted on some lots as per Section 8.2.3. The need for a Section 72 restriction on affected lots may therefore need to be re-assessed at the building consent stage.

10. LIMITATIONS

This report has been prepared solely for the use of the client, The Lakes (2012) 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 owners of this property 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 the post construction factual evidence has been obtained solely from boreholes and test pits, 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.

For and on behalf of Coffey

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Geotechnical Suitability Statement Signed By:

R TELFORD
TCC Category 2 Geotechnical Engineer

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Important information about your **Coffey** Report

As a client of Coffey you should know that site subsurface conditions cause more construction problems than any other factor. These notes have been prepared by Coffey to help you interpret and understand the limitations of your report.

Your report is based on project specific criteria

Your report has been developed on the basis of your unique project specific requirements as understood by Coffey and applies only to the site investigated. Project criteria typically include the general nature of the project; its size and configuration; the location of any structures on the site; other site improvements; the presence of underground utilities; and the additional risk imposed by scope-of-service limitations imposed by the client. Your report should not be used if there are any changes to the project without first asking Coffey to assess how factors that changed subsequent to the date of the report affect the report's recommendations. Coffey cannot accept responsibility for problems that may occur due to changed factors if they are not consulted.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project.

Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from literature and external data source review, sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, owners should retain the services of Coffey through the development stage, to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. Your report should not be applied to any project other than that originally specified at the time the report was issued.

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Important information about your **Coffey** Report

Interpretation by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other project design professionals who are affected by the report. Have Coffey explain the report implications to design professionals affected by them and then review plans and specifications produced to see how they incorporate the report findings.

Data should not be separated from the report*

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way.

Logs, figures, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples. These logs etc. should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Geoenvironmental concerns are not at issue

Your report is not likely to relate any findings, conclusions, or recommendations about the potential for hazardous materials existing at the site unless specifically required to do so by the client. Specialist equipment, techniques, and personnel are used to perform a geoenvironmental assessment.
Contamination can create major health, safety and environmental risks. If you have no information about the potential for your site to be contaminated or create an environmental hazard, you are advised to contact Coffey for information relating to geoenvironmental issues.

Rely on Coffey for additional assistance

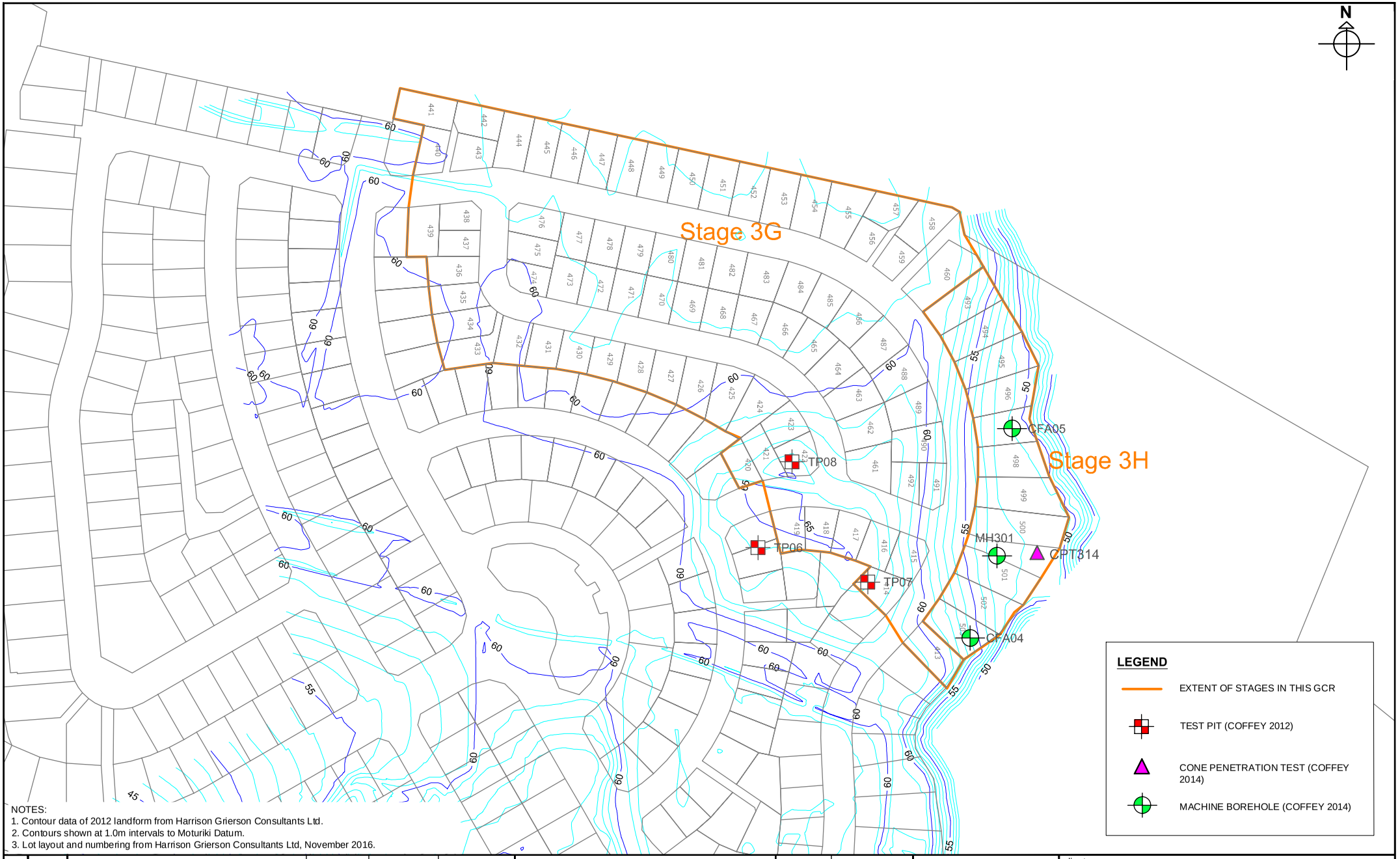
Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a project, from design to construction. It is common that not all approaches will be necessarily dealt with in your site assessment report due to concepts proposed at that time. As the project progresses through design towards construction, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

Responsibility

Reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than the design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffey to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.

* For further information on this aspect reference should be made to "Guidelines for the Provision of Geotechnical information in Construction Contracts" published by the Institution of Engineers Australia, National headquarters, Canberra, 1987.

Appendix A - Figures



NOTES:
1. Contour data of 2012 landform from Harrison Grierson Consultants Ltd.
2. Contours shown at 1.0m intervals to Moturiki Datum.
3. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.

revision	rev	description	drawn	approved	date

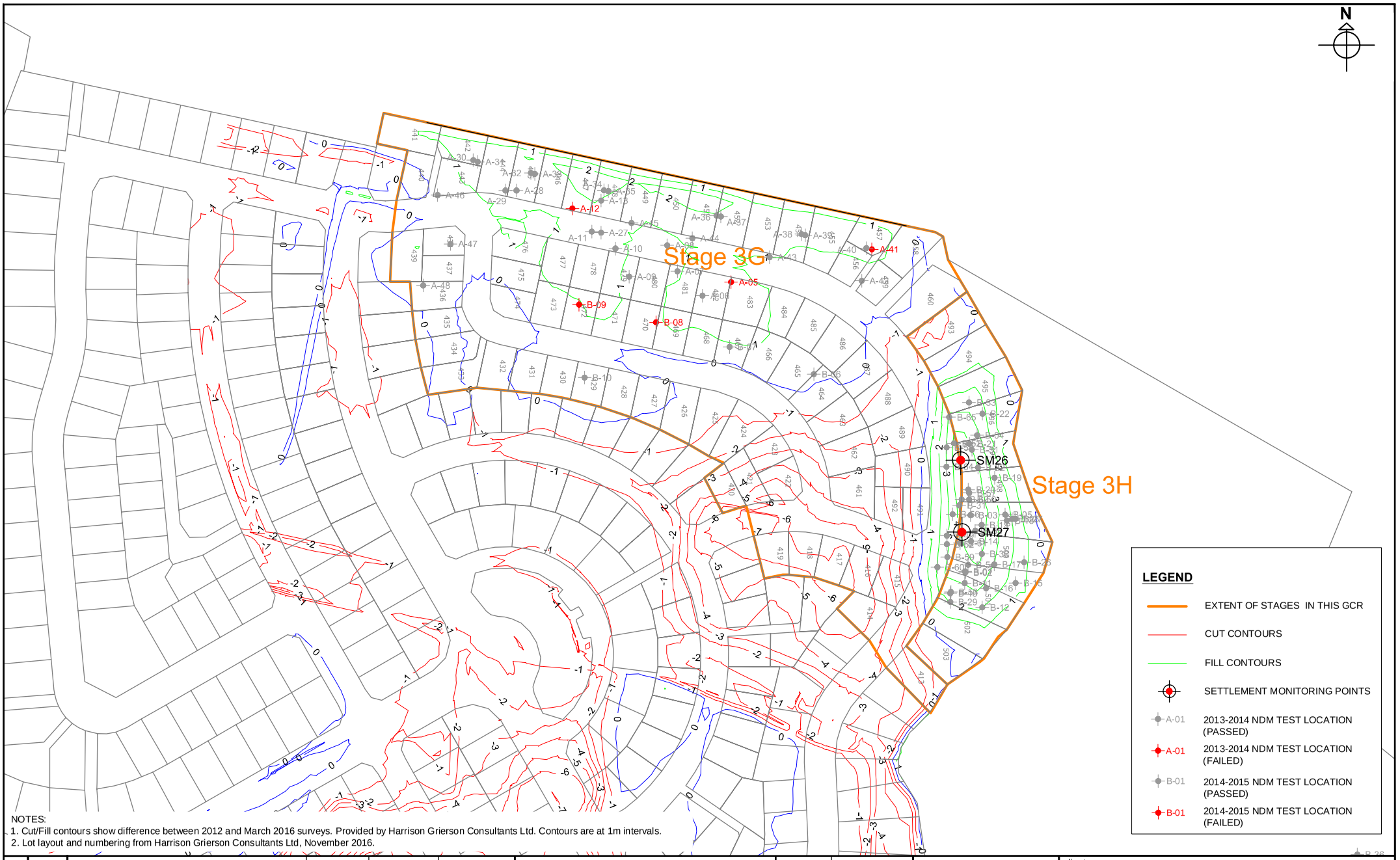
0 30.0 60.0 90.0 120.0
Horizontal Scale (metres)
0 30.0 60.0 90.0 120.0
Vertical Scale (metres)

drawn	ODS / DBC
approved	RBT
date	17-2-2017
scale	1:2000
original size	A3

coffey
A TETRA TECH COMPANY

client:	The Lakes (2012) Ltd
project:	The Lakes Stage 3G & 3H Geotechnical Completion Report
title:	Original Contour Plan
project no:	13086AP-AK
figure no:	1
rev:	-

16/08/2016F:\1.GENZ\1.GEOTECHNICS PROJECTS\13086AP THE LAKES STAGE 3 GCRS\6. DRAWINGS\CGL DRAWINGS\WORKING\STAGES 3GH & LOTS 236-239 (STAGE D) GCR\13086AP STAGE 3GH & LOTS 236-239 GCR 12-01-2017.DWG



NOTES:
1. Cut/Fill contours show difference between 2012 and March 2016 surveys. Provided by Harrison Grierson Consultants Ltd. Contours are at 1m intervals.
2. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.

revision	rev	description	drawn	approved	date

0 30.0 60.0 90.0 120.0
Horizontal Scale (metres)
0 30.0 60.0 90.0 120.0
Vertical Scale (metres)

drawn	ODS / DBC
approved	RBT
date	17-2-2017
scale	1:2000
original size	A3

coffey
A TETRA TECH COMPANY

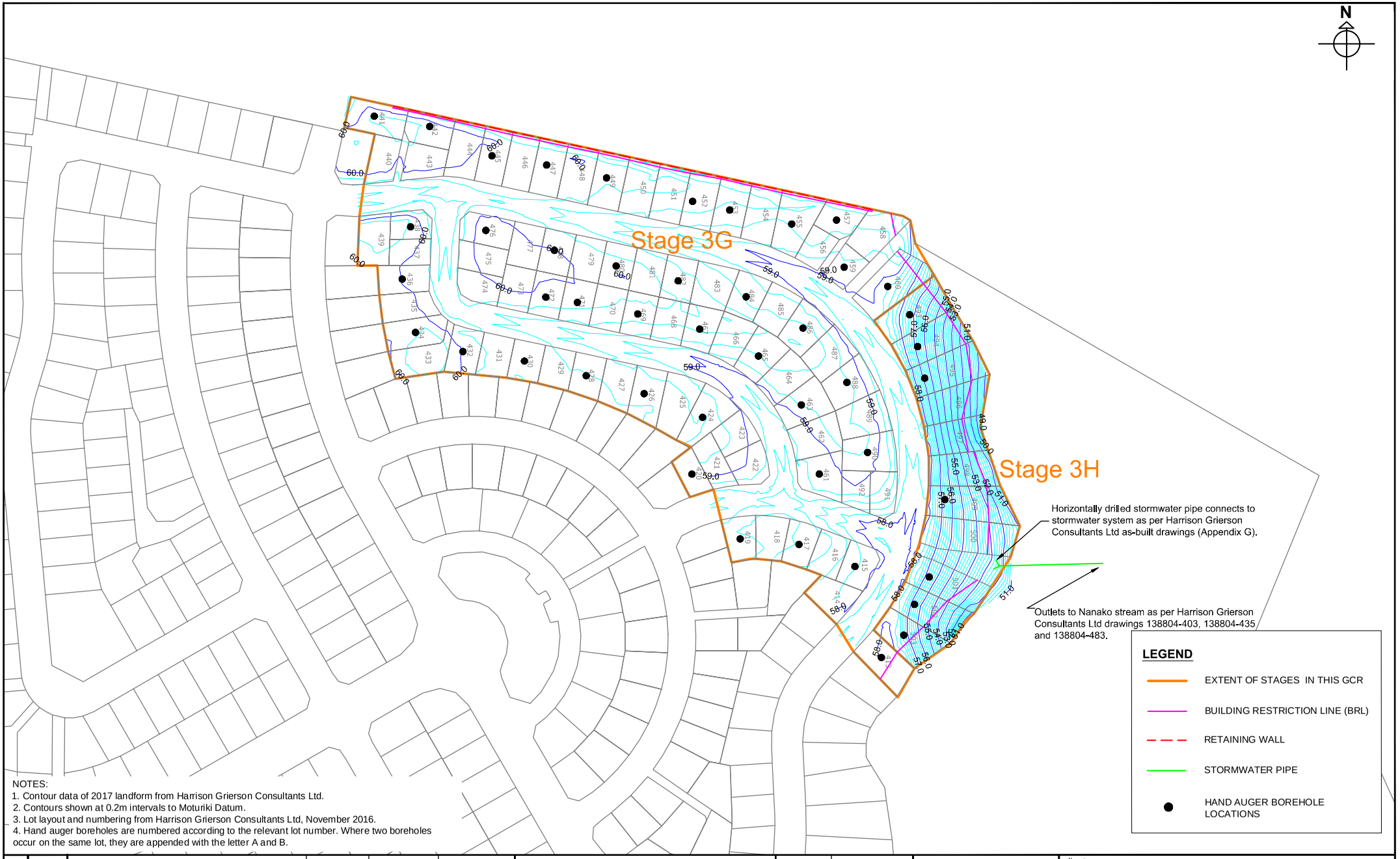
client: The Lakes (2012) Ltd

project: The Lakes Stage 3G & 3H
Geotechnical Completion Report

title: 2013-2015 Earthworks Contour & Settlement Monitoring Plan

project no: 13086AP-AK | figure no: 2 | rev: -

16/08/2016F:\1.GENZ\1.GEOTECHNICS PROJECTS\13086AP THE LAKES STAGE 3 GCRS\6. DRAWINGS\CGL DRAWINGS\WORKING\STAGES 3GH & LOTS 236-239 (STAGE D) GCR\13086AP STAGE 3GH & LOTS 236-239 GCR 12-01-2017.DWG



NOTES:
1. Contour data of 2017 landform from Harrison Grierson Consultants Ltd.
2. Contours shown at 0.2m intervals to Moturiki Datum.
3. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.
4. Hand auger boreholes are numbered according to the relevant lot number. Where two boreholes occur on the same lot, they are appended with the letter A and B.

revision	rev	description	drawn	approved	date

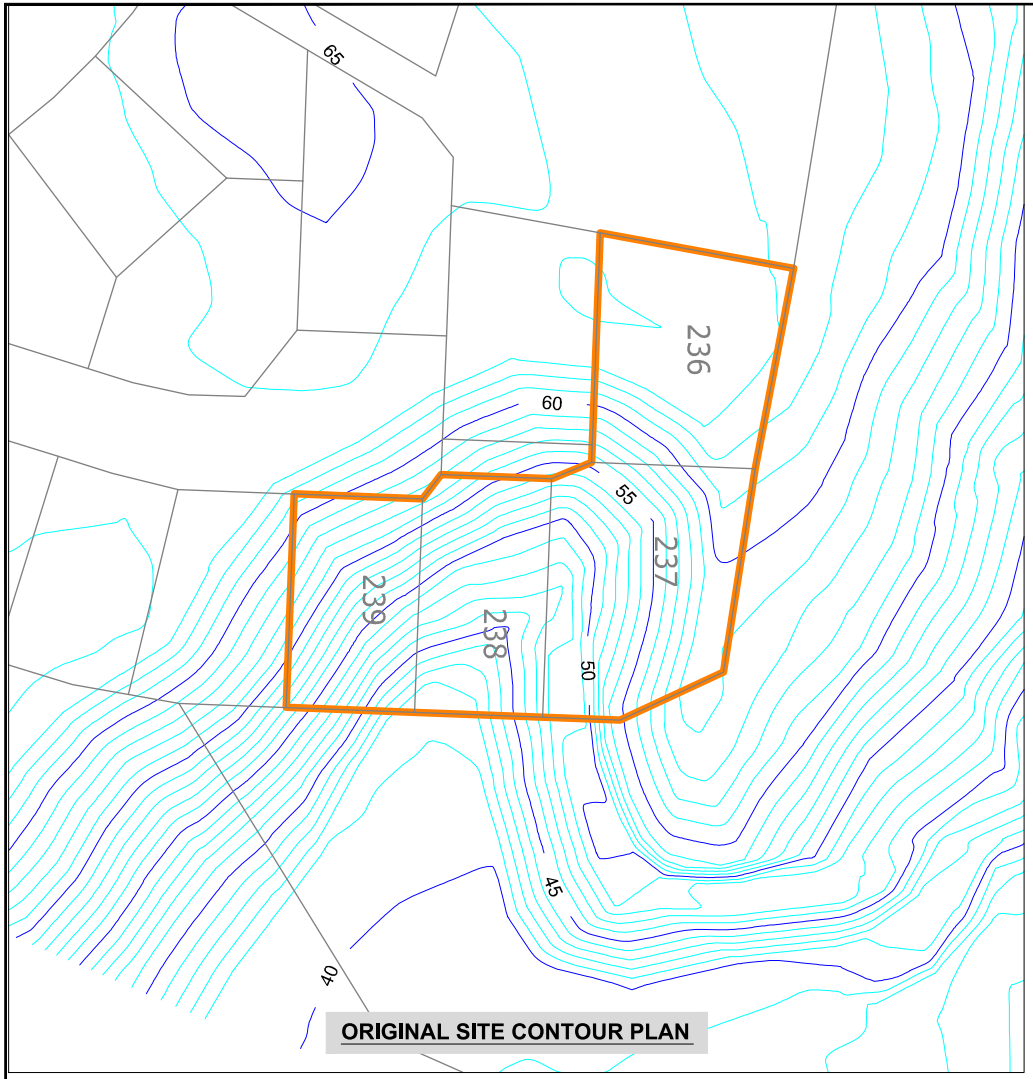
0 30.0 60.0 90.0 120.0
Horizontal Scale (metres)
0 30.0 60.0 90.0 120.0
Vertical Scale (metres)

drawn	ODS / DBC
approved	RBT
date	17-2-2017
scale	1:2000
original size	A3

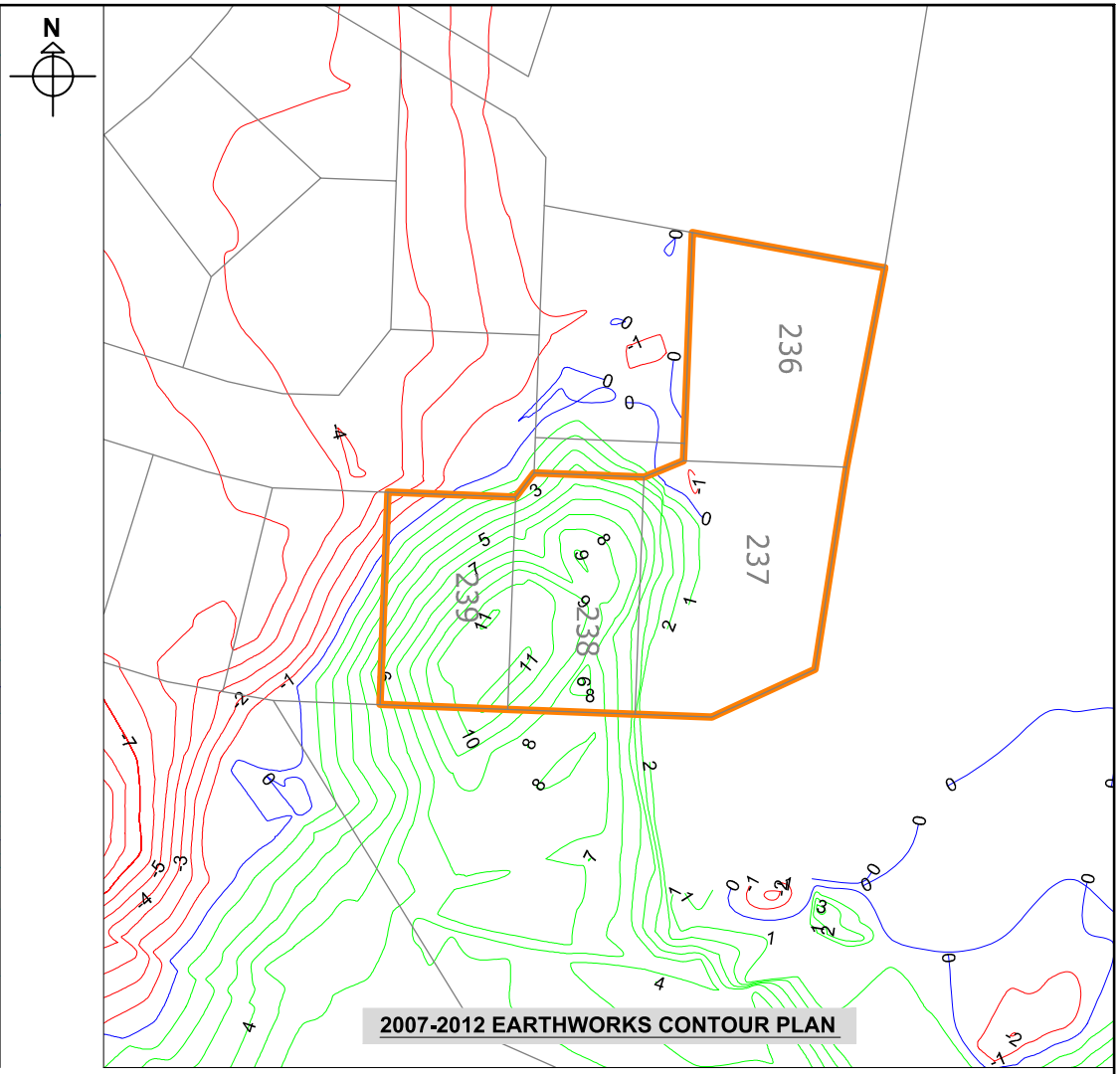
coffey
A TETRA TECH COMPANY

client:	The Lakes (2012) Ltd
project:	The Lakes Stage 3G & 3H Geotechnical Completion Report
title:	2017 Contour Plan
project no:	13086AP-AK
figure no:	3
rev:	-

16/08/2016F:\1.GENZ\1.GEOTECHNICS PROJECTS\13086AP THE LAKES STAGE 3 GCRS\6. DRAWINGS\CGL DRAWINGS\WORKING\STAGES 3GH & LOTS 236-239 (STAGE D) GCR\13086AP STAGE 3GH & LOTS 236-239 GCR 12-01-2017.DWG



ORIGINAL SITE CONTOUR PLAN



2007-2012 EARTHWORKS CONTOUR PLAN

NOTES:
1. Contour data of original pre-earthworks landform from Harrison Grierson Consultants Ltd, May 2007.
2. Contours shown at 1.0m intervals to Moturiki Datum.
3. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.

NOTES:
1. Cut/Fill contours show difference between 2007 and March 2012 surveys. Provided by Harrison Grierson Consultants Ltd. Contours are at 1m intervals.
2. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.

LEGEND

- EXTENT OF STAGES IN THIS GCR
- CUT CONTOURS
- FILL CONTOURS

revision	rev	description	drawn	approved	date

0 15.0 30.0 45.0
Horizontal Scale (metres)
0 15.0 30.0 45.0
Vertical Scale (metres)

drawn	DBC
approved	RBT
date	17-2-2017
scale	1:750
original size	A3

coffey
A TETRA TECH COMPANY

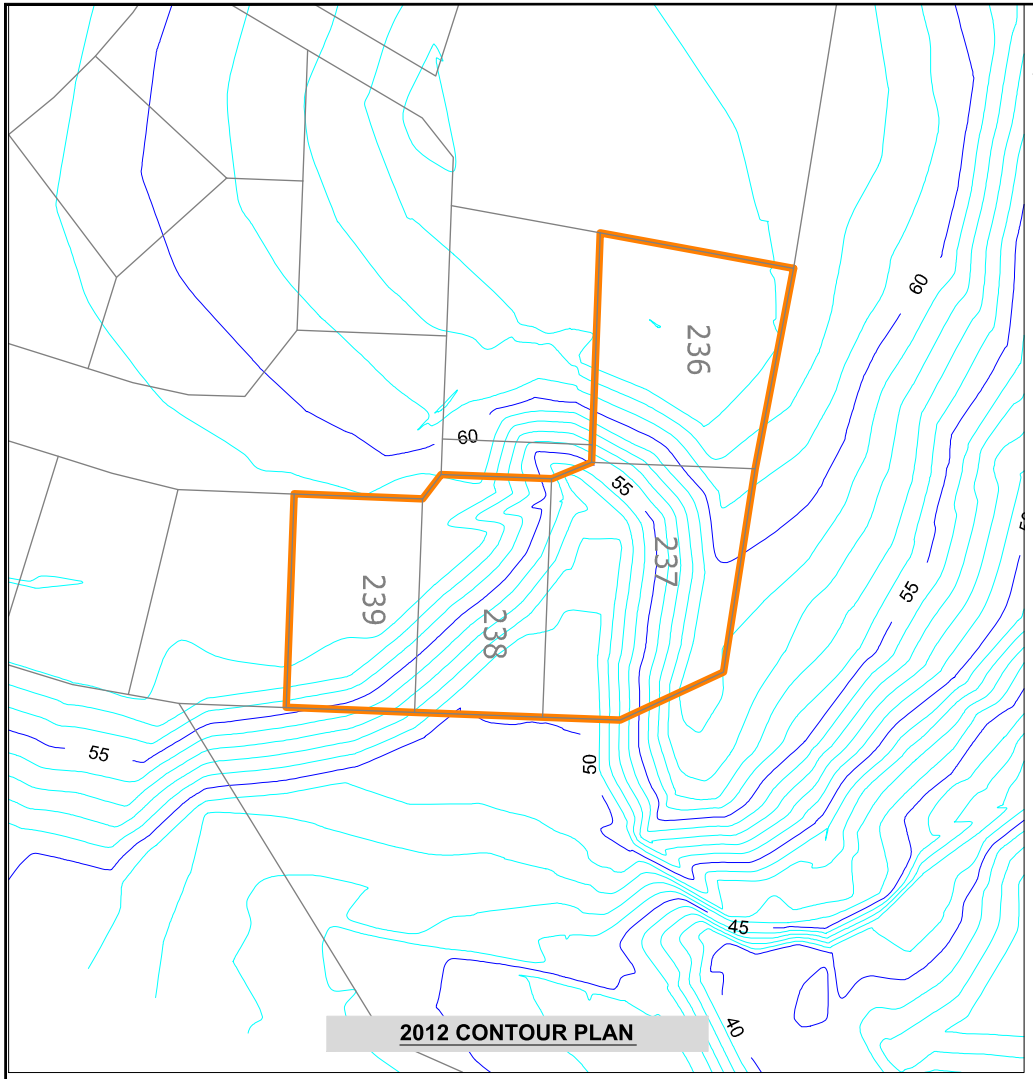
client: The Lakes (2012) Ltd

project: The Lakes - Lots 236 to 239 of Stage 3D Geotechnical Completion Report

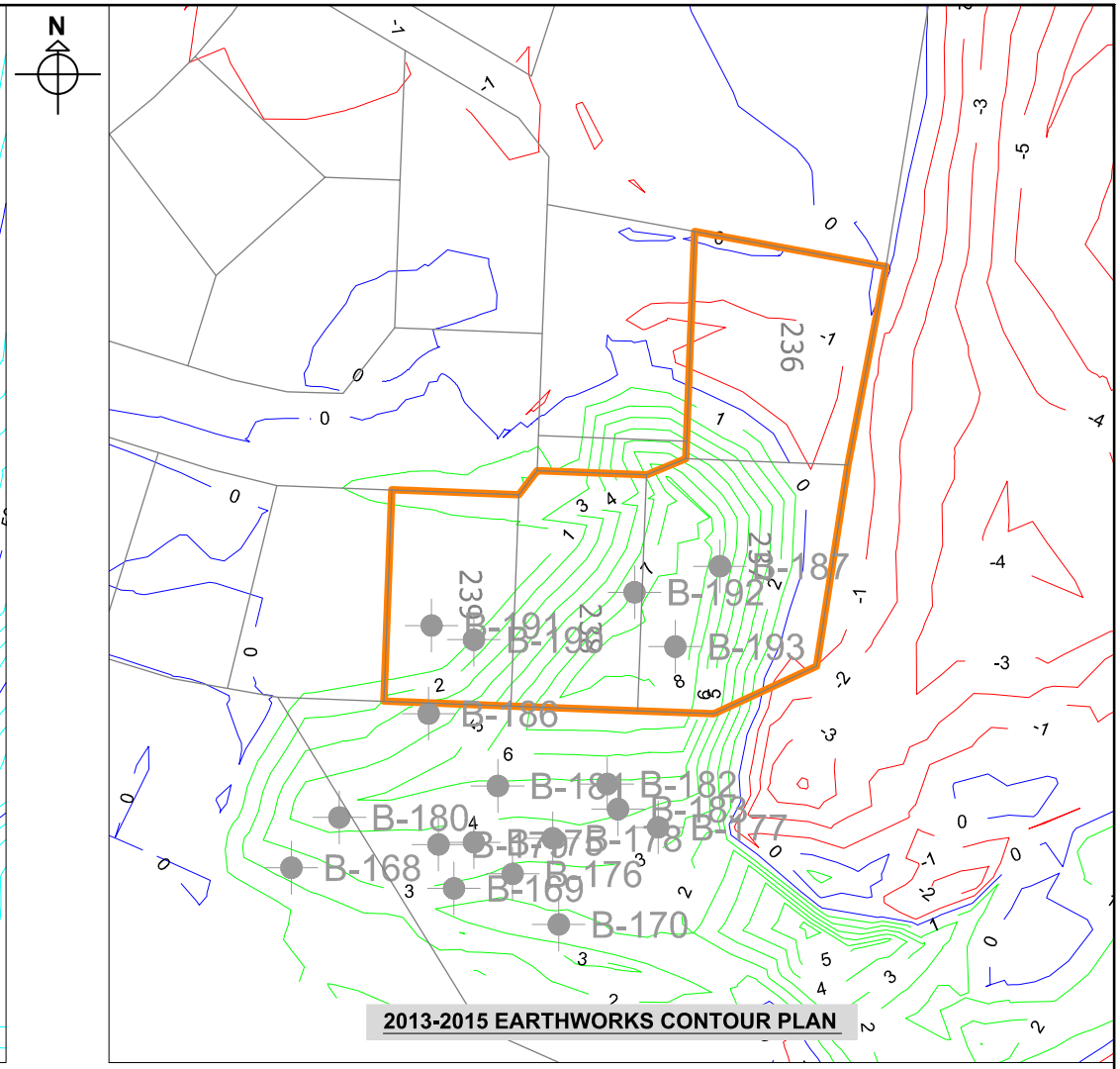
title: Original Contour & 2007-2012 Earthworks Plan

project no: 13086AP-AK | figure no: 4 | rev: -

16/08/2016F:\1.GENZ\1.GEOTECHNICS PROJECTS\13086AP THE LAKES STAGE 3 GCRS\6. DRAWINGS\CGL DRAWINGS\WORKING\STAGES 3GH & LOTS 236-239 (STAGE D) GCR\13086AP STAGE 3GH & LOTS 236-239 GCR 12-01-2017.DWG



2012 CONTOUR PLAN



2013-2015 EARTHWORKS CONTOUR PLAN

NOTES:
1. Contour data of 2012 landform from Harrison Grierson Consultants Ltd.
2. Contours shown at 1.0m intervals to Moturiki Datum.
3. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.

NOTES:
1. Cut/Fill contours show difference between 2012 and March 2016 surveys. Provided by Harrison Grierson Consultants Ltd. Contours are at 1m intervals.
2. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.

LEGEND

- EXTENT OF STAGES IN THIS GCR
- CUT CONTOURS
- FILL CONTOURS
- B-01 2014-2015 NDM TEST LOCATION (PASSED)
- B-01 2014-2015 NDM TEST LOCATION (FAILED)

revision	rev	description	drawn	approved	date

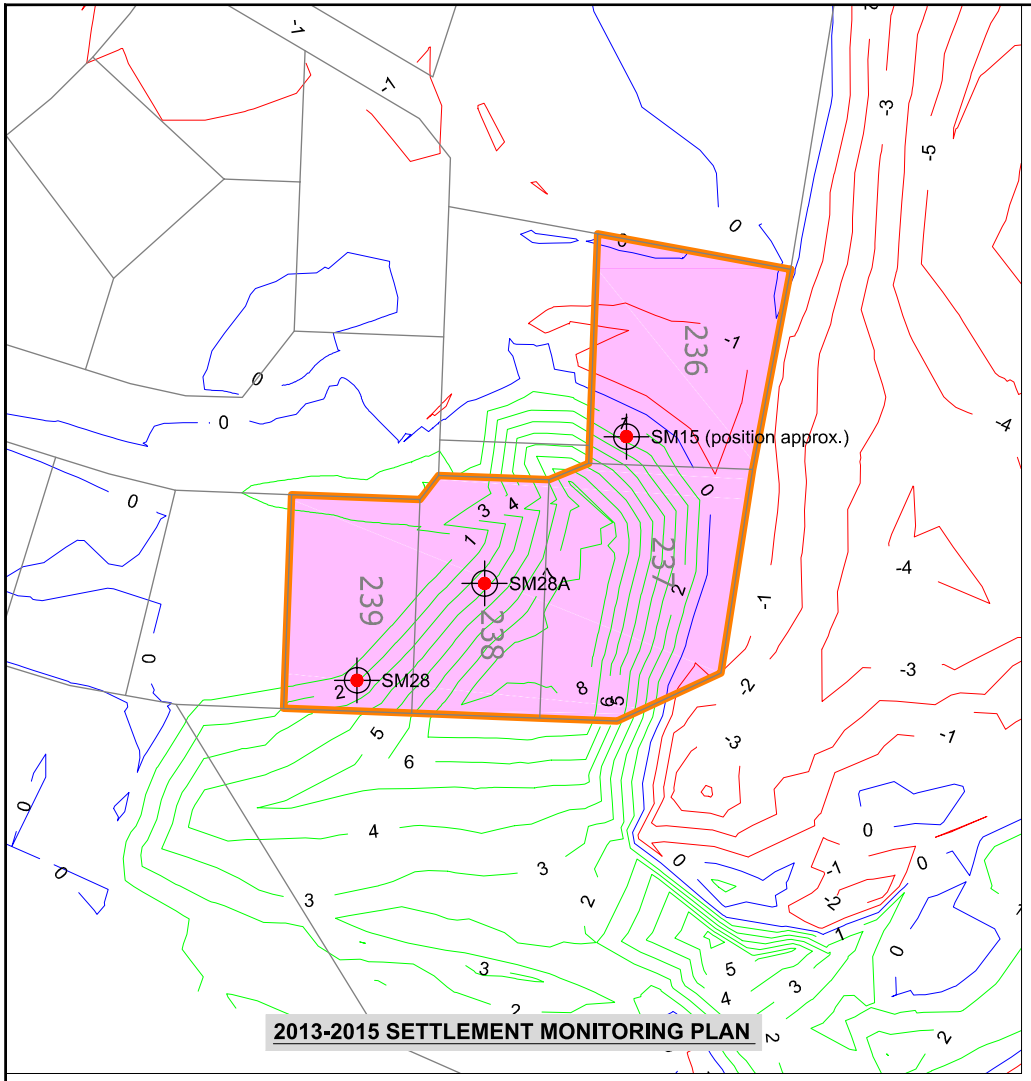
0 15.0 30.0 45.0
Horizontal Scale (metres)
0 15.0 30.0 45.0
Vertical Scale (metres)

drawn	DBC
approved	RBT
date	17-2-2017
scale	1:750
original size	A3

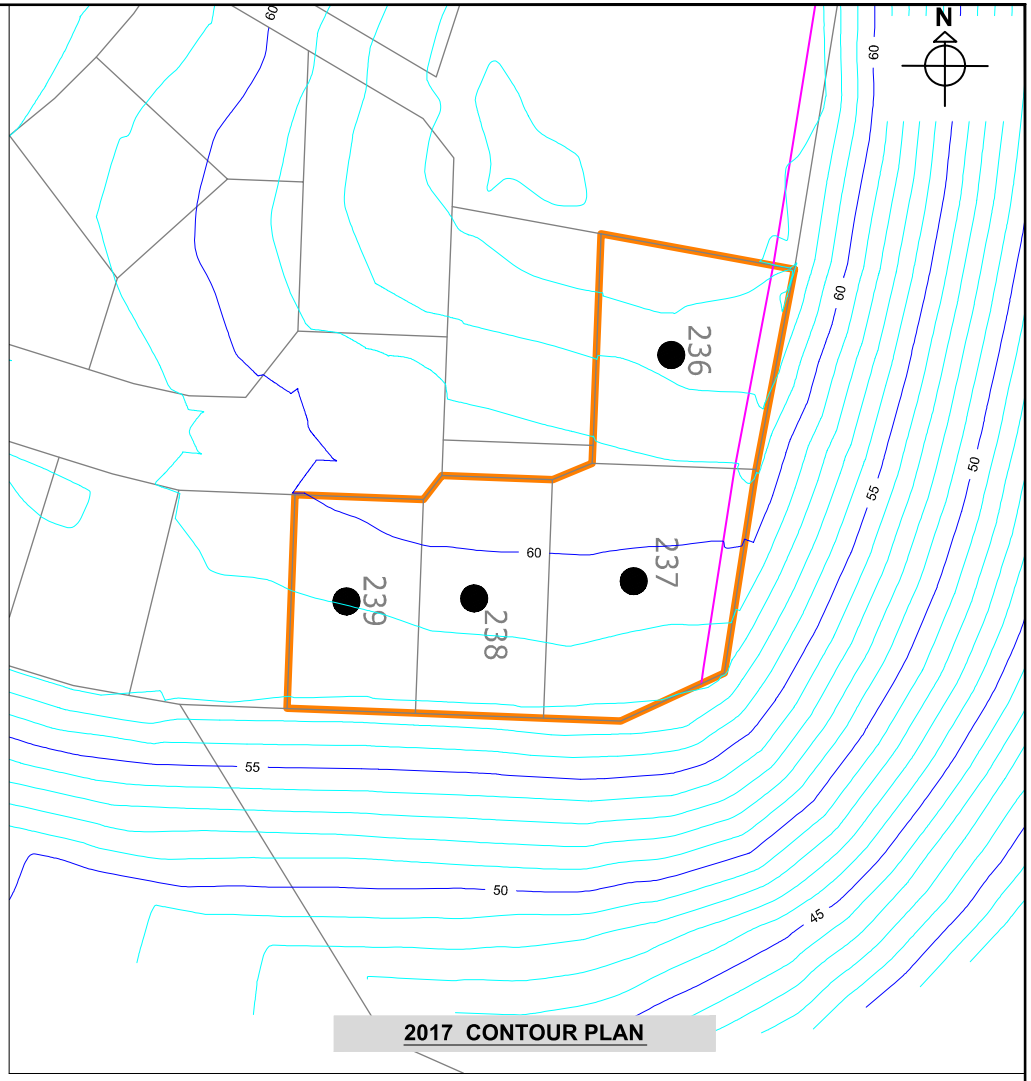
coffey
A TETRA TECH COMPANY

client: The Lakes (2012) Ltd
project: The Lakes - Lots 236 to 239 of Stage 3D Geotechnical Completion Report
title: 2012 Contour & 2013-2015 Earthworks Plan
project no: 13086AP-AK
figure no: 5
rev: -

16/08/2016F:\1.GENZ\1.GEOTECHNICS PROJECTS\13086AP THE LAKES STAGE 3 GCRS\6. DRAWINGS\CGL DRAWINGS\WORKING\STAGES 3GH & LOTS 236-239 (STAGE D) GCR\13086AP STAGE 3GH & LOTS 236-239 GCR 12-01-2017.DWG



2013-2015 SETTLEMENT MONITORING PLAN



2017 CONTOUR PLAN

NOTES:
1. Cut/Fill contours show difference between 2012 and March 2016 surveys. Provided by Harrison Grierson Consultants Ltd. Contours are at 1m intervals.
2. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.
3. Settlement Monitoring Point locations provided by Harrison Grierson Consultants Ltd.

NOTES:
1. Contour data of February 2017 landform from Harrison Grierson Consultants Ltd.
2. Contours shown at 1.0m intervals to Moturiki Datum.
3. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.
4. Hand auger boreholes are numbered according to the relevant lot number.

LEGEND

- EXTENT OF STAGES IN THIS GCR
- SETTLEMENT MONITORING POINTS
- CUT CONTOURS
- FILL CONTOURS
- EXTENT OF 2m TOPSOIL PRELOAD
- BUILDING RESTRICTION LINE (BRL)
- HAND AUGER BOREHOLE LOCATIONS

revision	rev	description	drawn	approved	date

0 15.0 30.0 45.0
Horizontal Scale (metres)
0 15.0 30.0 45.0
Vertical Scale (metres)

drawn	DBC
approved	RBT
date	17-2-2017
scale	1:750
original size	A3

coffey
A TETRA TECH COMPANY

client: The Lakes (2012) Ltd

project: The Lakes - Lots 236 to 239 of Stage 3D Geotechnical Completion Report

title: Settlement Monitoring & 2016 Contour Plan

project no: 13086AP-AK | figure no: 6 | rev: -

16/08/2016F:\1.GENZ\1.GEOTECHNICS PROJECTS\13086AP THE LAKES STAGE 3 GCRS\6. DRAWINGS\CGL DRAWINGS\WORKING\STAGES 3GH & LOTS 236-239 (STAGE D) GCR\13086AP STAGE 3GH & LOTS 236-239 GCR 12-01-2017.DWG

Appendix B - Geotechnical Suitability Statement & Geotechnical Data Summary Table

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

NAME OF SUBDIVISION	The Lakes Subdivision – Stages 3G, 3H & Lots 236-239 (Stage D)
COUNCIL FILE NUMBER RC No:	RC21332
ENGINEER RESPONSIBLE FOR DEVELOPMENT	Robert Telford
QUALIFICATIONS:	TCC Category 2 Geotechnical Engineer

I, Robert Telford of Coffey Services (NZ) Ltd, 96 Cameron Road, Tauranga, hereby confirm that:

1) I am a professional person, appropriately qualified with experience in geomechanics to ascertain the suitability of the land for building development and was retained as the Soils Engineer to the above development.
2) An appropriate level of site investigation and construction supervision has been carried out under my direction and is described in our development evaluation reports dated 29 April 2013, 7 April 2014 and 10 July 2015.
3) In my professional opinion, not to be construed as a guarantee, I consider that;
   a) The areas shown in my report dated 17 February 2017 of each new allotment are suitable for the erection thereon of the building types appropriate to the zoning of the land, provided that reference is made to my Geotechnical Completion Report Ref. GENZTAUC13086AP-AK, dated 17 February 2017.
   b) The earth fills shown on the attached Plans ref Figure 2, Figure 5 and Figure 6 have been placed in general 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 subject to the recommendations presented in my Geotechnical Completion Report Ref. GENZTAUC13086AP-AK, dated 17 February 2017.
   e) The original ground not affected by filling is suitable for the erection thereon of residential buildings not requiring specific design subject to the recommendations presented in my Geotechnical Completion Report Ref. GENZTAUC13086AP-AK, dated 17 February 2017.
4) This professional opinion is furnished to the Council and the owner for their purposes alone, on the express condition that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection for any dwelling.

Signed

Date: 17 February 2017

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling		Natural Topography Unworked	Natural Topography Earthworked		Conventional Shallow Foundation to NZS 3604:2011	Specific Design										
			Y/N	Depth (m)	Y/N	Y/N	Depth (m)	Y/N/NA	Y/N/NA										
236	765	147	Y	5	N	Y	1	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to fill depth restrictions per Section 8.2.3 of Coffey GCR ref:GENZTAUC13086AP-AK. Development subject to Slope BRL restrictions per Section 8.3.3 of Coffey GCR ref:GENZTAUC13086AP-AK.
237	894	DCP	Y	14	N	Y	1	Y	N	Y	N	N	Y	N	N	N	N	Y	
238	599	>240	Y	19	N	N	-	Y	N	N	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to fill depth restrictions per Section 8.2.3 of Coffey GCR ref:GENZTAUC13086AP-AK.
239	540	>183	Y	16	N	Y	2	Y	N	N	N	N	Y	N	N	N	N	Y	
413	605	190	N	-	N	Y	3	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to Slope BRL restrictions per Section 8.3.3 of Coffey GCR ref:GENZTAUC13086AP-AK.
414	487	N/T	N	-	N	Y	5	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
415	455	>202	N	-	N	Y	5	Y	N	N	N	N	Y	N	N	N	N	N	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
416	450	N/T	N	-	N	Y	6	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
417	433	>202	N	-	N	Y	6	Y	N	N	N	N	Y	N	N	N	N	N	
418	432	N/T	N	-	N	Y	6	Y	N	N	N	N	Y	N	N	N	N	N	
419	433	112	N	-	N	Y	6	Y	N	N	N	N	Y	N	N	N	N	N	
420	353	>202	N	-	N	Y	6	Y	N	N	N	N	Y	N	N	N	N	N	
421	433	N/T	N	-	N	Y	6	Y	N	N	N	N	Y	N	N	N	N	N	
422	445	N/T	N	-	N	Y	6	Y	N	N	N	N	Y	N	N	N	N	N	
423	433	N/T	N	-	N	Y	4	Y	N	N	N	N	Y	N	N	N	N	N	
424	629	148	N	-	N	Y	2	Y	N	N	N	N	Y	N	N	N	N	N	
425	634	N/T	N	-	N	Y	1	Y	N	N	N	N	Y	N	N	N	N	N	
426	555	>202	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
427	481	N/T	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
428	432	>202	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
429	407	N/T	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
430	407	>182	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
431	431	N/T	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
432	473	156	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
433	573	N/T	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
434	569	>202	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
435	473	N/T	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
436	473	>202	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
437	358	N/T	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
438	372	>202	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
439	529	N/T	Y	1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
440	430	N/T	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
441	610	>182	Y	1	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
442	482	>202	Y	1	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	Development subject to Retaining Wall BRL restrictions per Section 8.4.2 of Coffey GCR ref:GENZTAUC13086AP-AK.
443	450	N/T	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
444	582	N/T	Y	1	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
445	512	>182	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
446	512	N/T	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	Development subject to Retaining Wall BRL restrictions per Section 8.4.2 of Coffey GCR ref:GENZTAUC13086AP-AK.
447	530	166	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
448	576	N/T	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to Retaining Wall BRL restrictions per Section 8.4.2 of Coffey GCR ref:GENZTAUC13086AP-AK.
449	576	UTP	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
450	576	N/T	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
451	576	N/T	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
452	576	>202	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
453	576	>202	Y	1	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
454	587	N/T	Y	1	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
455	732	>202	Y	1	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
456	353	N/T	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
457	437	>202	Y	1	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to Retaining Wall BRL restrictions per Section 8.4.2 of Coffey GCR ref:GENZTAUC13086AP-AK.
458	586	N/T	Y	1	N	Y	<1	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to Slope BRL restrictions per Section 8.3.3 of Coffey GCR ref:GENZTAUC13086AP-AK. Development subject to Retaining Wall BRL restrictions per Section 8.4.2 of Coffey GCR ref:GENZTAUC13086AP-AK.
459	353	>202	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
460	913	177	Y	<1	N	Y	<1	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to Slope BRL restrictions per Section 8.3.3 of Coffey GCR ref:GENZTAUC13086AP-AK.

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
461	580	>202	N	-	N	Y	4	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
462	599	N/T	N	-	N	Y	2	Y	N	N	N	N	Y	N	N	N	N	N	
463	581	184	N	-	N	Y	1	Y	N	N	N	N	Y	N	N	N	N	N	
464	548	N/T	Y	<1	N	Y	1	Y	N	N	N	N	Y	N	N	N	N	N	
465	545	>202	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
466	509	N/T	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
467	469	>202	Y	1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
468	449	N/T	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
469	450	>202	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
470	450	N/T	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
471	450	>202	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
472	450	>202	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
473	450	N/T	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
474	407	N/T	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
475	447	N/T	Y	1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
476	508	>182	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
477	450	N/T	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
478	450	>202	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
479	450	N/T	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
480	450	>202	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
481	450	N/T	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
482	450	>202	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
483	554	N/T	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
484	480	>202	Y	1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
485	489	N/T	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
486	553	>202	Y	<1	N	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
487	567	N/T	Y	<1	N	Y	<1	Y	N	N	N	N	Y	N	N	N	N	N	
488	596	190	N	-	N	Y	1	Y	N	N	N	N	Y	N	N	N	N	N	
489	601	N/T	N	-	N	Y	2	Y	N	N	N	N	Y	N	N	N	N	N	
490	638	173	Y	<1	N	Y	3	Y	N	N	N	N	Y	N	N	N	N	N	
491	383	N/T	Y	<1	N	Y	2	Y	N	N	N	N	Y	N	N	N	N	N	
492	350	N/T	N	-	N	Y	3	Y	N	N	N	N	Y	N	N	N	N	N	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
493	824	130	Y	<1	N	Y	1	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to Slope BRL restrictions per Section 8.3.3 of Coffey GCR ref:GENZTAUC13086AP-AK. Additional geotechnical investigation required if excavation depth >1.5m, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
494	813	>202	Y	1	N	Y	<1	Y	N	Y	N	N	Y	N	N	N	N	Y	
495	840	>202	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to fill depth restrictions per Section 8.2.3 of Coffey GCR ref:GENZTAUC13086AP-AK. Development subject to Slope BRL restrictions per Section 8.3.3 of Coffey GCR ref:GENZTAUC13086AP-AK. Additional geotechnical investigation required if excavation depth >1.5m, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
496	753	N/T	Y	4	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
497	625	N/T	Y	4	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
498	718	N/T	Y	4	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
499	931	>202	Y	4	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
500	975	N/T	Y	4	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	
501	827	>202	Y	2	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	

DP No:	Lot 1001 DP486181	Property Address	310 Lakes Boulevard, Pyes Pa	RC No:	21332

Lot No:	Area (m^2)	Subsurface data						Foundations		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	Comments
		Shear Strength (kPa) at 0.5m depth	Subdivision Filling Y/N	Subdivision Filling Depth (m)	Natural Topography Unworked Y/N	Natural Topography Earthworked Y/N	Natural Topography Earthworked Depth (m)	Conventional Shallow Foundation to NZS 3604:2011 Y/N/NA	Specific Design Y/N/NA										
502	804	>202	Y	1	N	N	-	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to fill depth restrictions per Section 8.2.3 of Coffey GCR ref:GENZTAUC13086AP-AK. Development subject to Slope BRL restrictions per Section 8.3.3 of Coffey GCR ref:GENZTAUC13086AP-AK. Additional geotechnical investigation required if excavation depth >1.5m, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.
503	719	>202	Y	<1	N	Y	1	Y	N	Y	N	N	Y	N	N	N	N	Y	Suitable for standard foundations designed in accordance with NZS 3604, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK. Development subject to Slope BRL restrictions per Section 8.3.3 of Coffey GCR ref:GENZTAUC13086AP-AK. Additional geotechnical investigation required if excavation depth >1.5m, as per Section 8.6 of Coffey GCR ref: GENZTAUC13086AP-AK.

Key:

DCP = Tested with Dynamic Cone Penetration (Scala); N/T = Not Tested; UTP = Unable To Penetrate

Appendix C - Pre Development Investigation Data

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Engineering Log - Trial Pit

Trial Pit No. **TP06**

Sheet 1 of 1

Project No: **GENZTAUC13086AF**

Client: **THE LAKES 2012 LTD**

Date started: **14.3.2013**

Principal:

Date completed: **14.3.2013**

Project: **THE LAKES STAGE 3 CONSTRUCTION**

Logged by: **KB**

Trial pit location: **Refer to site plan**

Checked by: **RBT**

Equipment type:

Pit Orientation:

Easting: 368704.4 m

R.L. Surface:

Excavation dimensions: m long m wide

Vane No: DR2244

Northing: 799943.7 m

Datum:

excavation information | **material substance**

stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: Soil - Soil type; colour, structure. Grading; bedding; plasticity, sensitivity. Secondary and minor components. Rock - Colour, fabric, rock type; discontinuities, additional information.	moisture condition	consistency/ density index	vane shear (remoulded /peak) kPa (25 50 75 100 125 150 175)	structure and additional observations
						OL	TOPSOIL	D			
Younger Ash	Groundwater not encountered	Sample 17		1		ML	SILT; light brown. Friable and dry.			● 125: ×	
		Sample 18					- becoming orange brown and moist below 1.0m.	M			
		Sample 19		2		ML	SILT with trace fine sand and clay; orange brown. Greasy when reworked.				
						ML	SILT with minor sand and trace clay; bright orange. Low plasticity.				
RA				3		SP	Fine to coarse SAND with trace silt; orange brown. Occasional silty lenses. Sand is well graded.				
							- becoming white/light brown below 3.2m.				
		Sample 20									
Hamilton Ash				4		ML	Clayey SILT; brown. Medium plasticity, very stiff, greasy when reworked.			150: UTP	
		Sample 21					- becoming orange brown and less stiff.				
				5							
				6			(Target depth) RA = Rotoehu Ash Test pit TP06 terminated at 5 metres.				

Sketch

classification symbols and soil description
based on New Zealand Geotechnical Society Inc 2005

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
Bs	bulk sample
E	environmental sample
R	refusal

vane shear (kPa)

●	remoulded
×	peak
>>×	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		

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Engineering Log - Trial Pit

Trial Pit No. **TP07**

Sheet 1 of 1

Project No: **GENZTAUC13086AF**

Client: **THE LAKES 2012 LTD**

Date started: **14.3.2013**

Principal:

Date completed: **14.3.2013**

Project: **THE LAKES STAGE 3 CONSTRUCTION**

Logged by: **KB**

Trial pit location: **Refer to site plan**

Checked by: **RBT**

Equipment type:

Pit Orientation:

Easting: 368767.5 m

R.L. Surface:

Excavation dimensions: m long m wide

Vane No: DR2244

Northing: 799923.9 m

Datum:

excavation information | **material substance**

stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: Soil - Soil type; colour, structure. Grading; bedding; plasticity, sensitivity. Secondary and minor components. Rock - Colour, fabric, rock type; discontinuities, additional information.	moisture condition	consistency/ density index	vane shear (remoulded /peak) kPa (25 50 75 100 125 150 175)	structure and additional observations
		Sample 22				OL	TOPSOIL	D			
Younger Ash	Groundwater not encountered	Sample 23		1		ML	SILT; light brown. Friable and dry. - becoming orange brown with trace sand and moist below 1.0m.	M		● × ● ×	
		Sample 24		2		ML	SILT with trace sand and clay; orange brown. Greasy when reworked.				
						ML	SILT with minor sand; bright orange.				
RA				3		SP	Fine to coarse SAND with trace silt; orange brown. Pumiceous, well graded. - becoming light brown/white below 3.1m.				
HA		Sample 25		4		ML	Clayey SILT; brown. Medium plasticity and greasy when reworked. - becoming orange brown below 4.0m.				
		Sample 26		5							
				6			(Target depth) RA = Rotoehu Ash HA = Hamilton Ash Test pit TP07 terminated at 5 metres.				

Sketch

classification symbols and soil description
based on New Zealand Geotechnical Society Inc 2005

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
Bs	bulk sample
E	environmental sample
R	refusal

vane shear (kPa)

●	remoulded
×	peak
>>×	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		

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Engineering Log - Trial Pit

Trial Pit No. **TP08**

Sheet 1 of 1

Project No: **GENZTAUC13086AF**

Client: **THE LAKES 2012 LTD**

Date started: **15.3.2013**

Principal:

Date completed: **15.3.2013**

Project: **THE LAKES STAGE 3 CONSTRUCTION**

Logged by: **RBT**

Trial pit location: **Refer to site plan**

Checked by: **RBT**

Equipment type:

Pit Orientation:

Easting: 368724 m

R.L. Surface:

Excavation dimensions: m long m wide

Vane No: DR2244

Northing: 799993 m

Datum:

excavation information | **material substance**

stratigraphy	water	notes samples, tests, etc	RL	depth metres	graphic log	classification symbol	material: Soil - Soil type; colour, structure. Grading; bedding; plasticity, sensitivity. Secondary and minor components. Rock - Colour, fabric, rock type; discontinuities, additional information.	moisture condition	consistency/ density index	vane shear (remoulded /peak) kPa (25 50 75 100 125 150 175)	structure and additional observations
		Sample 27				OL	Organic SILT with numerous fine rootlets; greyish brown.	D			
Younger Ash	Groundwater not encountered			1		ML	SILT with trace to minor clay, some fine rootlets; yellowish brown. Stiff, dry, friable.				
		Sample 28					- becoming moist, minor clay, occasional rootlets below 1.0m. - becoming mottled yellow/orange brown below 1.3m.	M			
		Sample 29		2			- trace very fine sand, moist below 1.7m.				
RA						SP	Fine to coarse SAND with trace silt; yellow/brown with black flecks.				
				3		SP	Fine to medium SAND with minor silt; pale yellow/white. Pockets rework to soft sandy silt with some clay, slightly plastic.	M-W			
		Sample 30				CL	Silty CLAY; chocolate brown with white flecks. Stiff to very stiff in-situ, soft and with medium to high plasticity when reworked.				
HA		Sample 31		4		ML	SILT with trace clay and trace fine sand; yellowish brown. Very stiff to hard, non plastic and moist.				
				5		ML	SILT with minor clay; orangish brown. Reworks to silty clay, moderately plastic, soft to firm.				
		Sample 32					(Target depth) RA = Rotoehu Ash HA = Hamilton Ash Test pit TP08 terminated at 5.2 metres.				
				6							

Sketch

classification symbols and soil description
based on New Zealand Geotechnical Society Inc 2005

notes, samples, tests

U_{50}	undisturbed sample 50mm diameter
U_{63}	undisturbed sample 63mm diameter
D	disturbed sample
Bs	bulk sample
E	environmental sample
R	refusal

vane shear (kPa)

●	remoulded
×	peak
>>×	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		

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Engineering Log - Machine Borehole

Machine Borehole No. **CFA04**

Sheet 1 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **7.3.2014**

Principal:

Date completed: **7.3.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **SLC**

Machine Borehole Location: **Crest of western slope**

Checked by: **RBT**

Drill model & mounting: Flight auger JD2 | Easting: 368826.5 m | Slope: -90° | R.L. Surface: 56 m | Vane No:

Hole diameter: 100 mm | Drilling fluid: | Northing: 799891.63 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information | **material substance** | **rock mass defects**

stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description	moisture condition	consistency/ density index	weathering alteration	estimated strength	vane shear (remoulded /peak) kPa	recovery %	RQD %	defect spacing mm	defect description particular	defect description general
VOLCANIC ASHES	AD	N	groundwater not encountered		55	1			SILT, low plasticity, brown; trace fine sand.	D									
					54	2			-2.0m, becoming pale brown.										
									Sandy SILT, low plasticity, pale brown, sand is fine to medium.										
HAMITON ASH					53	3			Clayey SILT, low plasticity, dark brown with some manganese inclusions.	D-M									
					52	4													
									-4.5m, becoming brown.	M									
					51	5													
					50	6													

method
- AD auger drilling
- OB open barrel
- TT triple tube
- W washbore

support
- N nil
- C casing

vane shear (kPa)
- ● remoulded
- × peak
- >>× peak greater than 200kPa
- UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- N* SPT - sample recovered
- Nc SPT with solid cone
- Bs bulk sample
- E environmental sample

water
- 10/1/98 water level on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss

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

weathering
- UW unweathered
- SW slightly weathered
- MW moderately weathered
- HW highly weathered
- CW completely weathered
- RS residual soil

rock mass strength
- EW extremely weak
- VW very weak
- W weak
- MS moderately strong
- S strong
- VS very strong
- ES extremely strong

coffey

Machine Borehole No. **CFA04**

Engineering Log - Machine Borehole

Sheet 2 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **7.3.2014**

Principal:

Date completed: **7.3.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **SLC**

Machine Borehole Location: **Crest of western slope**

Checked by: **RBT**

Drill model & mounting: Flight auger JD2 | Easting: 368826.5 m | Slope: -90° | R.L. Surface: 56 m | Vane No:

Hole diameter: 100 mm | Drilling fluid: | Northing: 799891.63 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information | **material substance** | **rock mass defects**

stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log / core recovery	classification symbol	Material Description (Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.)	moisture condition	consistency/ density index	weathering alteration	estimated strength (EW VW W MS S VS ES)	vane shear (remoulded /peak) kPa (25 50 75 100 125 150 175)	recovery %	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: particular	defect description: general
MATUA SUB-GROUP	AD	N	groundwater not encountered	SPT 1,2,2 N*=4	49	7			Clayey SILT, low plasticity, dark brown with some manganese inclusions. *(continued)* Clayey SILT, medium plasticity, pale brown with black flecks. Clayey SILT, medium plasticity, pale brown with black flecks. *(continued)* -6.5m, becoming sticky.	M					40				
				SPT 1,2,2 N*=4	48	8			Sandy SILT, low plasticity, orange brown with black and pale grey flecks; some clay. -8.5m, becoming cream brown, sticky, moist to wet, sand is fine to coarse.	M-W					40				
				SPT 0,0,0 N*=0	47	9			Sandy SILT, low plasticity, pale brown grey with dark brown manganese inclusions, some clay.						40				
					46	10													
				SPT 0,0,1 N*=1	45	11									50				
					44	12													

method
- AD auger drilling
- OB open barrel
- TT triple tube
- W washbore

support
- N nil
- C casing

vane shear (kPa)
- ● remoulded
- × peak
- >>× peak greater than 200kPa
- UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- N* SPT - sample recovered
- Nc SPT with solid cone
- Bs bulk sample
- E environmental sample

water
- 10/1/98 water level on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss

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

weathering

UW	unweathered
SW	slightly weathered
MW	moderately weathered
HW	highly weathered
CW	completely weathered
RS	residual soil

rock mass strength

EW	extremely weak
VW	very weak
W	weak
MS	moderately strong
S	strong
VS	very strong
ES	extremely strong

coffey

Engineering Log - Machine Borehole

Machine Borehole No. **CFA04**

Sheet 3 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **7.3.2014**

Principal:

Date completed: **7.3.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **SLC**

Machine Borehole Location: **Crest of western slope**

Checked by: **RBT**

Drill model & mounting: Flight auger JD2 | Easting: 368826.5 m | Slope: -90° | R.L. Surface: 56 m | Vane No:

Hole diameter: 100 mm | Drilling fluid: | Northing: 799891.63 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information | **material substance** | **rock mass defects**

stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description: Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.	moisture condition	consistency/ density index	weathering alteration	estimated strength (EW VW W MS S VS ES)	vane shear (remoulded /peak) kPa (25 50 75 100 125 150 175)	recovery %	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: number, type, orientation, shape, roughness, aperture, infill description (refer to defect description explanation sheet) particular / general
MATUA SUB-GROUP	AD	N	groundwater not encountered	SPT 0,0,1 N*=1	43	13			Sandy SILT, low plasticity, pale brown grey with dark brown manganese inclusions, some clay. *(continued)*	M-W					50			
				SPT 0,0,0 N*=0	42	14									50			
				SPT 0,0,0 N*=0	41	15			Clay SILT, medium plasticity, pale grey.	W					30			
					40	16												
				SPT 0,0,0 N*=0	39	17									30			
					38	18												

method
AD auger drilling
OB open barrel
TT triple tube
W washbore

support
N nil
C casing

vane shear (kPa)
● remoulded
× peak
>>× peak greater than 200kPa
UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
N* SPT - sample recovered
Nc SPT with solid cone
Bs bulk sample
E environmental sample

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss

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

weathering
UW unweathered
SW slightly weathered
MW moderately weathered
HW highly weathered
CW completely weathered
RS residual soil

rock mass strength
EW extremely weak
VW very weak
W weak
MS moderately strong
S strong
VS very strong
ES extremely strong

MACHINE BOREHOLE 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

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coffey

Machine Borehole No. **CFA04**

Engineering Log - Machine Borehole

Sheet 4 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **7.3.2014**

Principal:

Date completed: **7.3.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **SLC**

Machine Borehole Location: **Crest of western slope**

Checked by: **RBT**

Drill model & mounting: Flight auger JD2 | Easting: 368826.5 m | Slope: -90° | R.L. Surface: 56 m | Vane No:

Hole diameter: 100 mm | Drilling fluid: | Northing: 799891.63 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information							material substance										rock mass defects			
stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description: Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.	moisture condition	consistency/ density index	weathering alteration	estimated strength EW VW W MS S VS ES	vane shear (remoulded /peak) kPa 25 50 75 100 125 150 175	recovery %	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: number, type, orientation, shape, roughness, aperture, infill description (refer to defect description explanation sheet) particular / general
MATUA SUB-GROUP	AD	N	groundwater not encountered	SPT 0,0,0 N*=0	37	19			Clay SILT, medium plasticity, pale grey. *(continued)*	W					50			
				SPT 0,0,1 N*=1	36	20			EOBH, target depth. CFA04 terminated at 19.95 metres.						60			
					35	21												
					34	22												
					33	23												
					32	24												

method
- AD auger drilling
- OB open barrel
- TT triple tube
- W washbore

support
- N nil
- C casing

vane shear (kPa)
- ● remoulded
- × peak
- >>× peak greater than 200kPa
- UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- N* SPT - sample recovered
- Nc SPT with solid cone
- Bs bulk sample
- E environmental sample

water
- 10/1/98 water level on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss

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

weathering
- UW unweathered
- SW slightly weathered
- MW moderately weathered
- HW highly weathered
- CW completely weathered
- RS residual soil

rock mass strength
- EW extremely weak
- VW very weak
- W weak
- MS moderately strong
- S strong
- VS very strong
- ES extremely strong

coffey

Engineering Log - Machine Borehole

Machine Borehole No. **CFA05**

Sheet 1 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **7.3.2014**

Principal:

Date completed: **7.3.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **SLC**

Machine Borehole Location: **Crest of western slope**

Checked by: **RBT**

Drill model & mounting: Flight auger JD2 | Easting: 368826.5 m | Slope: -90° | R.L. Surface: 51 m | Vane No:

Hole diameter: 100 mm | Drilling fluid: | Northing: 800012.1 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information | **material substance** | **rock mass defects**

stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description: Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.	moisture condition	consistency/ density index	weathering alteration	estimated strength (EW VW W MS S VS ES)	vane shear (remoulded /peak) kPa (25 50 75 100 125 150 175)	recovery %	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: number, type, orientation, shape, roughness, aperture, infill description (refer to defect description explanation sheet) particular / general
VOLCANIC ASHES	AD	N	groundwater not encountered		50	1			SILT, low plasticity, brown; trace fine sand.	D							
					49	2											
					48	3			Silty SAND, fine to coarse, pale brown.	M							
					47	4			Sandy SILT, non plastic, pale brown with orange brown mottles, sand is fine to medium. Reworks to low plasticity.								
MATUA SUB-GROUP					46	5			Silty SAND, fine to medium, dark brown.								
									Sandy SILT, low plasticity, dark brown (non organic), some clay, sand is fine to coarse (possible remnants of lower Hamilton Ash). -4.5m, becoming pale brown.								
									Silty SAND, fine to medium, pale brown, pumiceous.	W							
									Sandy SILT, low plasticity, pale grey brown, wet, sand is fine to coarse. -5.3m, dark brown and orange brown mottles and streaks.	M							
					45	6			Clayey SILT, low to medium plasticity, pale grey.								

method
AD auger drilling
OB open barrel
TT triple tube
W washbore

support
N nil
C casing

vane shear (kPa)
● remoulded
× peak
>>× peak greater than 200kPa
UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
N* SPT - sample recovered
Nc SPT with solid cone
Bs bulk sample
E environmental sample

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss

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

weathering
UW unweathered
SW slightly weathered
MW moderately weathered
HW highly weathered
CW completely weathered
RS residual soil

rock mass strength
EW extremely weak
VW very weak
W weak
MS moderately strong
S strong
VS very strong
ES extremely strong

MACHINE BOREHOLE 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

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Machine Borehole No. **CFA05**

Engineering Log - Machine Borehole

Sheet 2 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **7.3.2014**

Principal:

Date completed: **7.3.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **SLC**

Machine Borehole Location: **Crest of western slope**

Checked by: **RBT**

Drill model & mounting: Flight auger JD2 | Easting: 368826.5 m | Slope: -90° | R.L. Surface: 51 m | Vane No:

Hole diameter: 100 mm | Drilling fluid: | Northing: 800012.1 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information | **material substance** | **rock mass defects**

stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log / core recovery	classification symbol	Material Description	moisture condition	consistency/ density index	weathering alteration	estimated strength	vane shear (remoulded /peak) kPa	recovery %	RQD %	defect spacing mm	defect description particular	defect description general
MATUA SUB-GROUP	AD	N	groundwater not encountered		44	7			Clayey SILT, low to medium plasticity, pale grey. *(continued)* -6.0m, becoming medium plasticity.	M									
					43	8			-7.5m, some manganese inclusions. -7.8m, becoming brown orange with pale grey and dark brown manganese inclusions.										
					42	9													
					41	10			-9.4m, becoming very dark brown with brown, pale brown, orange brown and pale grey mottles. Manganese rich lense @ <80%.										
					40	11			SILT, medium plasticity, orange, some clay and medium to coarse sand.										
					39	12			-11.6m, becoming brown with dark brown manganese deposits.										

method
AD auger drilling
OB open barrel
TT triple tube
W washbore

support
N nil
C casing

vane shear (kPa)
● remoulded
× peak
>>× peak greater than 200kPa
UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
N* SPT - sample recovered
Nc SPT with solid cone
Bs bulk sample
E environmental sample

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss

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

weathering
UW unweathered
SW slightly weathered
MW moderately weathered
HW highly weathered
CW completely weathered
RS residual soil

rock mass strength
EW extremely weak
VW very weak
W weak
MS moderately strong
S strong
VS very strong
ES extremely strong

MACHINE BOREHOLE 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

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Engineering Log - Machine Borehole

Machine Borehole No. **CFA05**

Sheet 3 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **7.3.2014**

Principal:

Date completed: **7.3.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **SLC**

Machine Borehole Location: **Crest of western slope**

Checked by: **RBT**

Drill model & mounting: Flight auger JD2 | Easting: 368826.5 m | Slope: -90° | R.L. Surface: 51 m | Vane No:

Hole diameter: 100 mm | Drilling fluid: | Northing: 800012.1 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information | **material substance** | **rock mass defects**

stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description (Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.)	moisture condition	consistency/ density index	weathering alteration	estimated strength (EW VW W MS S VS ES)	vane shear (remoulded /peak) kPa (25 50 75 100 125 150 175)	recovery %	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description (number, type, orientation, shape, roughness, aperture, infill description (refer to defect description explanation sheet)) particular / general
MATUA SUB-GROUP	AD	N	groundwater not encountered		38	13			Sandy SILT, non plastic, brown, wet, sand is fine to coarse.	W								
									-13.0m, sand fraction increasing.									
									-13.5m, low plasticity.									
					37	14												
					36	15			-15.0m, becoming brown with dark brown manganese mottles.						95			
				SPT 0,1,2 N*=3														
					35	16												
				SPT 0,2,5 N*=7					-16.5m, poor recovery.						80			
					34	17												
					33	18												

method
- AD auger drilling
- OB open barrel
- TT triple tube
- W washbore

support
- N nil
- C casing

vane shear (kPa)
- ● remoulded
- × peak
- >>× peak greater than 200kPa
- UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- N* SPT - sample recovered
- Nc SPT with solid cone
- Bs bulk sample
- E environmental sample

water
- 10/1/98 water level on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss

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

weathering
- UW unweathered
- SW slightly weathered
- MW moderately weathered
- HW highly weathered
- CW completely weathered
- RS residual soil

rock mass strength
- EW extremely weak
- VW very weak
- W weak
- MS moderately strong
- S strong
- VS very strong
- ES extremely strong

coffey

Machine Borehole No. **CFA05**

Engineering Log - Machine Borehole

Sheet 4 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **7.3.2014**

Principal:

Date completed: **7.3.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **SLC**

Machine Borehole Location: **Crest of western slope**

Checked by: **RBT**

Drill model & mounting: Flight auger JD2 | Easting: 368826.5 m | Slope: -90° | R.L. Surface: 51 m | Vane No:

Hole diameter: 100 mm | Drilling fluid: | Northing: 800012.1 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information							material substance										rock mass defects			
stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description: Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.	moisture condition	consistency/ density index	weathering alteration	estimated strength (EW VW W MS S VS ES)	vane shear (remoulded /peak) kPa (25 50 75 100 125 150 175)	recovery %	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: number, type, orientation, shape, roughness, aperture, infill description (refer to defect description explanation sheet) particular / general
MATUA SUB-GROUP	AD	N	groundwater not encountered	SPT 0,2,3 N*=5	32	19			Sandy Clayey SILT, medium plasticity, brown and grey with dark brown manganese deposits, sand is medium to coarse. *(continued)*	W					95			
				SPT 1,1,2 N*=3	31	20			Silty CLAY, medium to high plasticity, pale grey. - no recovery below 19.4m. Silty CLAY continuation inferred below 19.						70			
					30	21			EOBH, target depth. CFA05 terminated at 19.95 metres.									
					29	22												
					28	23												
					27	24												

method
- AD auger drilling
- OB open barrel
- TT triple tube
- W washbore

support
- N nil
- C casing

vane shear (kPa)
- ● remoulded
- × peak
- >>× peak greater than 200kPa
- UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- N* SPT - sample recovered
- Nc SPT with solid cone
- Bs bulk sample
- E environmental sample

water
- 10/1/98 water level on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss

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

weathering
- UW unweathered
- SW slightly weathered
- MW moderately weathered
- HW highly weathered
- CW completely weathered
- RS residual soil

rock mass strength
- EW extremely weak
- VW very weak
- W weak
- MS moderately strong
- S strong
- VS very strong
- ES extremely strong

coffey

Machine Borehole No. **MH301**

Engineering Log - Machine Borehole

Sheet 1 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **15.1.2014**

Principal:

Date completed: **15.1.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **KMJ**

Machine Borehole Location: **Crest of Section A-A**

Checked by: **RBT**

Drill model & mounting: T2 Tractor Mount | Easting: 368841.822 m | Slope: -90° | R.L. Surface: 53 m | Vane No:

Hole diameter: mm | Drilling fluid: | Northing: 799939.797 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information							material substance									rock mass defects			
stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description: Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.	moisture condition	consistency/ density index	weathering alteration	estimated strength EW VW W MS S VS ES	vane shear (remoulded /peak) kPa 25 50 75 100 125 150 175	recovery %	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: number, type, orientation, shape, roughness, aperture, infill description (refer to defect description explanation sheet) particular / general
TP	TT	C						OL	Organic SILT, no plasticity, organic odor, rootlets (TOPSOIL).	M	F							
VOLCANIC ASHES					52.5	0.5		ML	SILT, no plasticity, yellow-brown, trace fine sand, minor rootlets.						67			
					52.0	1.0			- becoming orange-brown, low plasticity									
					51.5	1.5												
				SPT 1,0,1 N*=1					- becoming pale brown & wet, trace rootlets - increasing plasticity from 1.5 to 2.6m	M-W					100			
					51.0	2.0												
					50.5	2.5			- becoming brown to orange-brown, black specks									
				SPT 1,1,0 N*=1	50.0	3.0									100			
					49.5	3.5												
					49.0	4.0			- increasing sand content									
					48.5	4.5		SP	SAND, fine to medium grained, pale grey, black & white specks, some silt.									
				SPT 9,11,8 N*=19				ML	Sandy SILT, no plasticity, yellow-brown, white & black specks, sand is fine grained.	W	F-St				93			
					48.0	5.0												
					47.5	5.5		ML	SILT, pink-grey, low plasticity, minor orange streaks.									
								SP			VL							

MACHINE BOREHOLE 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

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method
- AD auger drilling
- OB open barrel
- TT triple tube
- W washbore

support
- N nil
- C casing

vane shear (kPa)
- ● remoulded
- × peak
- >>× peak greater than 200kPa
- UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- N* SPT - sample recovered
- Nc SPT with solid cone
- Bs bulk sample
- E environmental sample

water
- 10/1/98 water level on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss

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

weathering
- UW unweathered
- SW slightly weathered
- MW moderately weathered
- HW highly weathered
- CW completely weathered
- RS residual soil

rock mass strength
- EW extremely weak
- VW very weak
- W weak
- MS moderately strong
- S strong
- VS very strong
- ES extremely strong

coffey

Machine Borehole No. **MH301**

Engineering Log - Machine Borehole

Sheet 2 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **15.1.2014**

Principal:

Date completed: **15.1.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **KMJ**

Machine Borehole Location: **Crest of Section A-A**

Checked by: **RBT**

Drill model & mounting: T2 Tractor Mount | Easting: 368841.822 m | Slope: -90° | R.L. Surface: 53 m | Vane No:

Hole diameter: mm | Drilling fluid: | Northing: 799939.797 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information							material substance										rock mass defects			
stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description: Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.	moisture condition	consistency/ density index	weathering alteration	estimated strength EW VW W MS S VS ES	vane shear (remoulded /peak) kPa 25 50 75 100 125 150 175	recovery %	RQD %	defect spacing mm 30 100 300 1000 3000	defect description: number, type, orientation, shape, roughness, aperture, infill description (refer to defect description explanation sheet) particular / general
VOLCANIC ASHES	TT	C			47.0	6.0		SP (cont)	SAND, fine to medium grained, brown, mottled orange/black/white. *(continued)*	W	VL					93			
				SPT 1,1,0 N*=1	46.5	6.5		CH	Clayey SILT/Silty CLAY, medium to high plasticity, trace fine sand. - sand pockets, fine grained from 6.6 to 6.7m		F					100			
MATUA SUBGROUP					46.0	7.0													
				SPT 0,1,1 N*=2	45.5	7.5													
					45.0	8.0			- increasing sand content from 8 to 8.5m							100			
					44.5	8.5			- becoming pale grey, minor yellow-green mottles from 8.5 to 8.7m - becoming dry to moist, non to low plasticity from 8.7m	D-M									
				SPT 2,3,4 N*=7	44.0	9.0													
					43.5	9.5										73			
					43.0	10.0													
					42.5	10.5			- pale orange staining from 10.3 to 10.5m										
				SPT 1,1,1 N*=2	42.0	11.0		ML	SILT, low plasticity, pink-grey, mottled orange-brown, black specks.	M-W						100			

method
- AD auger drilling
- OB open barrel
- TT triple tube
- W washbore

support
- N nil
- C casing

vane shear (kPa)
- ● remoulded
- × peak
- >>× peak greater than 200kPa
- UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
- U_{50} undisturbed sample 50mm diameter
- U_{63} undisturbed sample 63mm diameter
- D disturbed sample
- N* SPT - sample recovered
- Nc SPT with solid cone
- Bs bulk sample
- E environmental sample

water
- 10/1/98 water level on date shown
- water inflow
- partial drill fluid loss
- complete drill fluid loss

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

weathering
- UW unweathered
- SW slightly weathered
- MW moderately weathered
- HW highly weathered
- CW completely weathered
- RS residual soil

rock mass strength
- EW extremely weak
- VW very weak
- W weak
- MS moderately strong
- S strong
- VS very strong
- ES extremely strong

coffey

Engineering Log - Machine Borehole

Machine Borehole No. **MH301**

Sheet 3 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **15.1.2014**

Principal:

Date completed: **15.1.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **KMJ**

Machine Borehole Location: **Crest of Section A-A**

Checked by: **RBT**

Drill model & mounting: T2 Tractor Mount | Easting: 368841.822 m | Slope: -90° | R.L. Surface: 53 m | Vane No:

Hole diameter: mm | Drilling fluid: | Northing: 799939.797 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information | **material substance** | **rock mass defects**

stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description (Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.)	moisture condition	consistency/ density index	weathering alteration	estimated strength	vane shear (remoulded /peak) kPa	recovery %	RQD %	defect spacing mm	defect description particular	defect description general
MATUA SUBGROUP	TT	C			41.5	11.5		ML (cont)	SILT, low plasticity, pink-grey, mottled orange-brown, black specks. *(continued)* - orange staining - becoming pale grey with orange staining	M-W	F				100			
				SPT 0,0,0 N*=0	41.0	12.0		ML	SILT, non to low plasticity, pink-orange with black & orange staining, mottled grey & black.									
			15/1/2014		40.5	12.5			- grey silt mottles from 12.8 to 13.0m						100			
					40.0	13.0			- trace fine sand									
				SPT 0,0,0 N*=0	39.5	13.5		ML SM	SILT, no plasticity, dark orange-brown with significant limonite staining, trace to minor sand, very stiff to hard. Sample has fragmented to angular, hard & soft pieces in silt/sand matrix.		S							
					39.0	14.0		ML	Mixed silts & sands with some clay seams, brown, dark orange & black; soft, wet to saturated. Sample probably disturbed by SPT.						27			
					38.5	14.5			Sandy Clayey SILT, low plasticity, pink-orange, dark orange staining; sand is fine grained, dark orange-brown. - increasing clay content, high plasticity; minor sand									
					38.0	15.0			- increasing dark orange sand content, low to medium plasticity									
				SPT 1,0,1 N*=1				MH	SILT, medium to high plasticity, orange-grey, trace fine sand.									
					37.5	15.5			- some dark orange sand pockets, with some dark orange staining - becoming low to medium plasticity						100			
					37.0	16.0		SM	Silty SAND, fine to medium grained, black, trace silt. - becoming orange-brown, mottled black & orange	W								
								MH	SILT, medium to high plasticity, pink-orange grey.		F							
					36.5	16.5												

method
AD auger drilling
OB open barrel
TT triple tube
W washbore

support
N nil
C casing

vane shear (kPa)
● remoulded
× peak
>>× peak greater than 200kPa
UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
N* SPT - sample recovered
Nc SPT with solid cone
Bs bulk sample
E environmental sample

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss

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

weathering
UW unweathered
SW slightly weathered
MW moderately weathered
HW highly weathered
CW completely weathered
RS residual soil

rock mass strength
EW extremely weak
VW very weak
W weak
MS moderately strong
S strong
VS very strong
ES extremely strong

MACHINE BOREHOLE 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

Form GEO 5.3 Rev.6

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Machine Borehole No. **MH301**

Engineering Log - Machine Borehole

Sheet 4 of 4

Project No: **GENZTAUC13086AK**

Client: **THE LAKES LTD (2012)**

Date started: **15.1.2014**

Principal:

Date completed: **15.1.2014**

Project: **STAGE 3 - ZONE 2**

Logged by: **KMJ**

Machine Borehole Location: **Crest of Section A-A**

Checked by: **RBT**

Drill model & mounting: T2 Tractor Mount | Easting: 368841.822 m | Slope: -90° | R.L. Surface: 53 m | Vane No:

Hole diameter: mm | Drilling fluid: | Northing: 799939.797 m | Bearing: | Datum: x/y = BOPC2000, z = Moturiki

drilling information / material substance / rock mass defects

stratigraphy	method	support	water	notes samples, tests, etc	RL	depth metres	graphic log core recovery	classification symbol	Material Description (Soil name; plasticity or grading, colour, secondary components. Moisture, sensitivity, strength. Structure, bedding, cementation, defects. Origin, additional observations. Rock name; grain size & type, colour, fabric, inclusions & minor components. Weathering, moisture, strength, defects.)	moisture condition	consistency/ density index	weathering alteration	estimated strength (EW VW W MS S VS ES)	vane shear (remoulded /peak) kPa (25 50 75 100 125 150 175)	recovery %	RQD %	defect spacing mm (30 100 300 1000 3000)	defect description: number, type, orientation, shape, roughness, aperture, infill description (refer to defect description explanation sheet) particular / general
MATUA SUBGROUP	TT	C		SPT 1,0,1 N*=1	36.0	17.0		MH	- increasing sand content - 50mm fine brown sand lenses/layers - black specks, heavy orange staining	W	F							
									Sandy SILT, medium to high plasticity, dark pink-brown, dark orange staining, abundant black specks; sand is fine to medium grained, orange-brown. - decreasing sand content - becoming low plasticity, dark brown, black specks and orange mottles						100			
					35.5	17.5												
					35.0	18.0												
				SPT 0,0,0 N*=0				MH	SILT, medium to high plasticity, pink-orange, some black mottles.									
					34.5	18.5									100			
									- increasing sand content									
					34.0	19.0		ML	Sandy SILT/ Silty SAND, low plasticity, pink-orange brown, white & black specks, sand is fine to medium grained. - increasing sand content, orange & black staining									
				SPT 1,1,3 N*=4	33.5	19.5												
					33.0	20.0			EOBH @ 19.95m, target depth TS = TOPSOIL MH301 terminated at 19.95 metres.						87			
					32.5	20.5												
					32.0	21.0												
					31.5	21.5												
					31.0	22.0												

method
AD auger drilling
OB open barrel
TT triple tube
W washbore

support
N nil
C casing

vane shear (kPa)
● remoulded
× peak
>>× peak greater than 200kPa
UTP unable to penetrate

classification symbols and soil description
based on Field Description of Soil and Rock, New Zealand Geotechnical Society Inc 2005

notes, samples, tests
U_{50} undisturbed sample 50mm diameter
U_{63} undisturbed sample 63mm diameter
D disturbed sample
N* SPT - sample recovered
Nc SPT with solid cone
Bs bulk sample
E environmental sample

water
10/1/98 water level on date shown
water inflow
partial drill fluid loss
complete drill fluid loss

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

weathering
UW unweathered
SW slightly weathered
MW moderately weathered
HW highly weathered
CW completely weathered
RS residual soil

rock mass strength
EW extremely weak
VW very weak
W weak
MS moderately strong
S strong
VS very strong
ES extremely strong

MACHINE BOREHOLE 13086AK_INVESTIGATION DATA.GPJ COFFEY.GDT 28.3.14

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Appendix D - Post Development Investigation Data

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Engineering Log - Hand Auger

Borehole ID.	**HAL413**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 413**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
								SILT: non plastic to low plasticity, orange brown with mottled grey and brown, with trace fine to coarse grained sand.				**FILL**
			VS 190/ 41 kPa		0.5			**SILT**: non plastic to low plasticity, pale brown, with trace fine to coarse grained sand and with trace clay.	M			**MATUA SUBGROUP**
			VS 160/ 18 kPa					0.6 m: with minor to some fine to coarse grained sand				
					1.0			0.8 m: with minor to some fine grained sand				
			VS >202 kPa					**SAND**: fine to coarse grained, pale brown, with trace silt.				
			VS >202 kPa					**Clayey SILT**: low to medium plasticity, brown, with trace fine grained sand.				
					1.5			**SILT**: low plasticity, orange brown, with trace clay and with trace fine grained sand.				
			VS >202 kPa					1.8 m: with some clay				
			VS >202 kPa		2.0			2.0 m: sand becomes absent				
			VS 163/ 46 kPa									
			VS >202 kPa		2.5			2.5 m: low to medium plasticity				
			VS 122/ 32 kPa									
			VS >202 kPa		3.0							
			VS 178/ 46 kPa		3.5			Hand Auger HAL413 terminated at 3.5 m Target depth				
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remoulded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL415**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 415**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (kPa) remoulded ⊕ peak ⊙ 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D	VSt to H	⊙	**TOPSOIL**
			VS >202 kPa					**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand.	D to M		⊙	**MATUA SUBGROUP**
			VS >202 kPa		0.5			**Clayey SILT**: low to medium plasticity, brown.	M		⊙	
			VS >202 kPa		1.0			1.0 m: becoming orange brown, low plasticity			⊙	
			VS >202 kPa		1.5						⊙	
			VS 122/ 29 kPa		2.0			1.8 m: becoming medium plasticity			⊕ ⊙	
			VS 102/ 42 kPa		2.5			Hand Auger HAL415 terminated at 2.5 m Target depth			⊕ ⊙	
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL417**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 417**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0			**ORGANIC SILT**: non plastic, black.	D	St to VSt		**TOPSOIL**
								SILT: low plasticity, orange brown, with minor clay and with trace manganese.	D to M			**MATUA SUBGROUP**
			VS 165/ 25 kPa		0.5			0.5 m: with some clay. Becomes greasy when reworked	M			
			VS 125/ 15 kPa		1.0			0.9 m: with trace fine to coarse sand 1.0 to 1.6 m: sensitive when disturbed				
			VS 85/ 15 kPa					1.2 m: sand becomes absent				
			VS 173/ 58 kPa		1.5							
			VS 122/ 32 kPa		2.0			1.8 m: becoming pinky brown and sensitive when disturbed				
			VS 79/ 24 kPa					2.1 m: becoming pink				
			VS 98/ 29 kPa		2.5			Hand Auger HAL417 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey
A TETRA TECH COMPANY

Engineering Log - Hand Auger

Borehole ID.	**HAL419**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 419**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	M	St to VSt		**TOPSOIL**
								SILT: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine grained sand.				**FILL**
			VS 112/ 19 kPa		0.5			**SILT**: low plasticity, orange brown, with some clay and with trace fine to coarse grained sand.				**MATUA SUBGROUP**
			VS 85/ 15 kPa		1.0			0.8 m: with trace manganese 0.9 m: becomes sticky/greasy when reworked				
			VS 83/ 19 kPa									
			VS 117/ 35 kPa		1.5							
			VS 124/ 29 kPa									
			VS 112/ 18 kPa		2.0			**Clayey SILT**: low plasticity, pink orange-brown, with trace fine grained sand. Sticky.				
			VS 102/ 26 kPa		2.5			Hand Auger HAL419 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL420**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 420**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA, N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand. 0.5 m: with trace clay	M			**YOUNGER ASH DEPOSIT**
			VS >202 kPa									
			VS 177/ 29 kPa		1.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine to coarse grained sand, with trace clay and with trace manganese. Greasy when reworked.				**MATUA SUBGROUP**
			VS 98/ 26 kPa		1.5			**Sandy SILT**: non plastic, orange brown, sand is fine to coarse grained.		St		
			VS 78/ 26 kPa					**SILT**: low plasticity, orange brown, with minor clay and with trace fine to coarse grained sand.				
			VS 71/ 24 kPa		2.0							
			VS 71/ 25 kPa		2.5			Hand Auger HAL420 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL424**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 424**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	M	VSt to H		**TOPSOIL**
			VS 148/ 41 kPa		0.5			**SILT**: low plasticity, orange brown, with trace fine grained sand and trace clay. 0.7 m: with minor clay. Low to medium plasticity				**YOUNGER ASH DEPOSIT**
			VS 139/ 19 kPa		1.0							
			VS >202 kPa		1.5			1.5 m: with trace clay and with trace fine grained sand. Non to low plasticity				
			VS >202 kPa					**SILT**: non plastic, orange brown, with some fine to coarse grained sand.				**MATUA SUBGROUP**
					2.0			**SAND**: fine to coarse grained, yellow brown, with trace silt. 1.9 m: with some silt				
			VS 173/ 46 kPa					**SILT**: non plastic to low plasticity, brown, with trace fine to coarse grained sand and with trace clay. Sticky.				
			VS 146/ 29 kPa		2.5			Hand Auger HAL424 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL426**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 426**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H	⊙	**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand.	M		⊙	**YOUNGER ASH DEPOSIT**
			VS 156/ 35 kPa		1.0			0.9 m: with trace clay. Low plasticity			⊕ ⊙	
			VS >202 kPa		1.5			1.2 m: sand becomes absent 1.4 m: with minor to some clay. Low to medium plasticity			⊙	
			VS 197/ 58 kPa		2.0						⊕ ⊙	
			VS >202 kPa		2.5			Hand Auger HAL426 terminated at 2.5 m Target depth			⊙	
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL428**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 428**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.:

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H	⊙	**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand.	M		⊙	**YOUNGER ASH DEPOSIT**
			VS 156/ 44 kPa		1.0			0.8 m: with fine grained sand			⊕ ⊙	
			VS >202 kPa		1.5			1.4 m: with minor clay. Low plasticity			⊙	
			VS 166/ 44 kPa		2.0			2.2 m: becomes low to medium plasticity			⊕ ⊙	
			VS 182/ 109 kPa		2.5			Hand Auger HAL428 terminated at 2.5 m Target depth			⊕ ⊙	
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL430**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**NM**
location:	**Centre of lot 430**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: DR2244

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >182 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt		**TOPSOIL**
			VS >182 kPa		0.5			**SILT**: non plastic, orange brown, with minor fine grained sand.				**FILL**
			VS >182 kPa					0.6 m: becoming fine to medium grained sand				
			VS >182 kPa		1.0			**SILT**: non plastic, black, with minor fine to medium grained sand.				
			VS >182 kPa					**SILT**: non plastic, orange brown with mottled brown, with minor fine to medium grained sand. becoming grey brown with minor fine grained sand	M			**YOUNGER ASH DEPOSIT**
			VS 164/ 29 kPa		1.5							
			VS 148/ 36 kPa									
			VS 158/ 30 kPa		2.0				M to W			
			VS 166/ 30 kPa									
			VS 91/ 24 kPa		2.5			Hand Auger HAL430 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL432**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**17 Aug 2016**
principal:	
date completed:	**17 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 432**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS 187/ 46 kPa VS 156/ 38 kPa VS 122/ 26 kPa VS 134/ 29 kPa VS 156/ 44 kPa VS >202 kPa VS 187/ 44 kPa VS 156/ 58 kPa		0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0			**ORGANIC SILT**: non plastic, black.	D	VSt		**TOPSOIL**
								SILT: low plasticity, orange brown, with trace fine grained sand and with trace clay.	D to M			**YOUNGER ASH DEPOSIT**
								1.2 m: with some clay and with trace fine to coarse grained sand				
								SAND: fine to coarse grained, orange, with trace silt.	M			**ROTOEHU ASH**
								SILT: non plastic to low plasticity, pale brown with mottled orange brown, with minor clay and with trace fine to coarse grained sand.				**MATUA SUBGROUP**
								Hand Auger HAL432 terminated at 2.5 m Target depth				

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method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger

* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL434**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 434**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**SILT**: non plastic, brown with mottled orange brown, with trace fine grained sand.	D	VSt		**FILL**
			VS >202 kPa		0.5							
			VS >202 kPa					**SILT**: non plastic, orange brown, with trace fine to medium grained sand.	D to M			**YOUNGER ASH DEPOSIT**
			VS 166/ 32 kPa		1.0			0.9 m: with minor clay, low plasticity				
			VS 148/ 29 kPa									
			VS 187/ 44 kPa		1.5			1.5 m: with trace fine grained sand				
			VS 122/ 38 kPa		2.0							
			VS 96/ 24 kPa									
					2.5			2.4 m: with trace fine to coarse grained sand Hand Auger HAL434 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL436**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 436**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SAND**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled grey and brown, with trace to minor fine to coarse grained sand.				**FILL**
			VS >202 kPa		1.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand.	M			**YOUNGER ASH DEPOSIT**
			VS >202 kPa									
			VS 192/ 49 kPa		1.5			1.5 m: with trace clay. Low plasticity				
			VS 161/ 36 kPa					1.8 m: with minor clay.				
			VS 185/ 39 kPa		2.0							
			VS 146/ 31 kPa									
					2.5			Hand Auger HAL436 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL438**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 438**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H	⊙	**TOPSOIL**
					0.5			**SILT**: non plastic to low plasticity, orange brown with mottled grey and brown, with trace to minor fine to coarse grained sand.			⊙	**FILL**
			VS >202 kPa					**Sandy SILT**: non plastic, grey brown, sand is fine to coarse. With trace fine to coarse grained gravel.	M		⊙	**YOUNGER ASH DEPOSIT**
			VS >202 kPa		1.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand.			⊙	
			VS >202 kPa		1.5			1.4 m: becomes brown. With trace clay. Low plasticity			⊙	
			VS >202 kPa					1.7 m: with minor clay			⊙	
			VS 173/ 41 kPa		2.0						⊕ ⊙	
			VS 125/ 29 kPa								⊕ ⊙	
					2.5			Hand Auger HAL438 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL441**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**NM**
location:	**Centre of lot 441**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: DR2244

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA, N		Not Encountered	VS >182 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D	VSt	⊙	**TOPSOIL**
			VS >182 kPa					**SILT**: non plastic, orange brown, with some fine grained sand.			⊙	**FILL**
			VS >182 kPa		0.5			0.4 m: with trace clay			⊙	
			VS >182 kPa					0.8 m: becoming mottled dark brown and with some fine to medium grained sand	D to M		⊙	
			VS >182 kPa		1.0			1.0 m: becoming mottled dark brown and white			⊙	
			VS UTP					**SILT**: non plastic, dark brown, with some organic silt and with minor fine grained sand.	D		VS UTP	**YOUNGER ASH DEPOSIT**
			VS >182 kPa		1.5			**SILT**: non plastic, yellow brown, with some fine grained sand.			⊙	
			VS >182 kPa								⊙	
			VS >182 kPa		2.0						⊙	
			VS 116/ 23 kPa						M		⊕ ⊙	
			VS 148/ 33 kPa						M to W		⊕ ⊙	
					2.5			Hand Auger HAL441 terminated at 2.5 m Target depth			⊕ ⊙	
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL442**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 442**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa VS >202 kPa VS >202 kPa VS >202 kPa VS >202 kPa VS 156/ 34 kPa VS 133/ 26 kPa VS 112/ 22 kPa		0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0			**SILT**: non plastic to low plasticity, orange brown with mottled brown, with trace fine to coarse grained sand. 1.1 to 1.2 m: with mottled black 1.2 to 1.3 m: with trace rootlets	D	VSt		**FILL**
								SILT: non plastic to low plasticity, orange brown, with trace fine grained sand. 1.8 m: with trace fine grained sand and with trace clay	D to M			**YOUNGER ASH DEPOSIT**
								Hand Auger HAL442 terminated at 2.5 m Target depth				

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method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger

* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL445**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**NM**
location:	**Centre of lot 445**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: DR2244

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA / N		Not Encountered	VS >182 kPa		0.0			**ORGANIC SILT**: non plastic, black.	M	VSt	⊙	**TOPSOIL**
			VS >182 kPa					**SILT**: non plastic, orange brown, with minor fine grained sand.			⊙	**FILL**
			VS >182 kPa		0.5			**Sandy SILT**: fine to coarse grained, non plastic, grey with mottled white, with fine to coarse grained sand and with trace angular gravel.	D		⊙	
			VS >182 kPa					**SILT**: low to medium plasticity, orange brown, with minor clay and with trace fine grained sand.			⊙	**YOUNGER ASH DEPOSIT**
			VS >182 kPa		1.0						⊙	
			VS 173/ 36 kPa					1.2 m: becoming mottled red brown	M		⊕ ⊙	
			VS >182 kPa		1.5			1.4 m: red brown mottling becomes absent. Becoming flecked white			⊙	
			VS >182 kPa								⊙	
			VS >182 kPa		2.0						⊙	
			VS >182 kPa					2.1 m: becoming brown	D		⊙	
			VS >182 kPa					2.2 m: becoming black with mottled orange brown, non plastic, with minor fine to medium grained sand and with faint organic odour			⊙	
					2.5			Hand Auger HAL445 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL447**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 447**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**SILT**: non plastic, orange brown with mottled brown and black, with trace fine to coarse grained sand.	D	VSt		**FILL**
			VS 166/ 54 kPa		0.5			**SILT**: non plastic, black, with trace fine grained sand and with faint organic odour.	D to M			
			VS >202 kPa					**SILT**: non plastic to low plasticity, orange brown with mottled brown and black, with trace fine to medium grained sand and with trace clay.				
			VS 160/ 54 kPa		1.0							
			VS >202 kPa					1.2 m: orange brown with mottled brown and with trace to minor clay				
			VS >202 kPa		1.5							
			VS >202 kPa		2.0							
			VS >202 kPa					2.4 m: with mottled black				
					2.5			Hand Auger HAL447 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL449**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**NM**
location:	**Centre of lot 449**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: DR2244

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (kPa) remoulded ⊕ peak ⊙ 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >182 kPa		0.0			**SILT**: non plastic, orange brown with mottled brown, with minor fine grained sand.	D to M	VSt		**FILL**
			VS UTP		0.5			**SAND**: fine to medium grained, purple grey.			VS UTP	
			VS >182 kPa					**SILT**: non plastic to low plasticity, orange brown, with minor clay.		VSt		
			VS >182 kPa		1.0							
			VS >182 kPa					1.1 m: becoming mottled purple grey, white and red brown	M to W			
			VS >182 kPa		1.5			1.4 m: becoming brown with mottled orange brown	D to M			
			VS >182 kPa									
			VS >182 kPa		2.0							
			VS >182 kPa					**SILT**: non plastic, yellow brown, with some fine grained sand.	D			**YOUNGER ASH DEPOSIT**
			VS >182 kPa		2.5			Hand Auger HAL449 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger

* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL452**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 452**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (kPa) remoulded ⊕ peak ⊙ 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D	VSt		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown, with trace fine to coarse grained sand and with trace clay.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5							
			VS >202 kPa		2.0							
			VS >202 kPa									
			VS >202 kPa					**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand and with trace clay.	D to M			**YOUNGER ASH DEPOSIT**
			VS 101/ 29 kPa									
					2.5			Hand Auger HAL452 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL453**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 453**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA, N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine to coarse grained sand.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5							
			VS >202 kPa		1.8			**SILT**: non plastic, black.				**YOUNGER ASH DEPOSIT**
			VS >202 kPa		2.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand.				
			VS 194/ 46 kPa		2.5			Hand Auger HAL453 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL455**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 455**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (kPa) remoulded ⊕ peak ⊙ 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine to coarse grained sand.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5							
			VS >202 kPa		1.8			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand.				**YOUNGER ASH DEPOSIT**
			VS 190/ 51 kPa		2.0							
			VS 173/ 85 kPa		2.5			Hand Auger HAL455 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL457**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 457**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine to coarse grained sand.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5							
			VS >202 kPa		2.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine to coarse grained sand.				**YOUNGER ASH DEPOSIT**
			VS >202 kPa		2.5			Hand Auger HAL457 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL459**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**18 Aug 2016**
principal:	
date completed:	**18 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 459**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (kPa) ⊕ remoulded ⊙ peak (50 100 150 200)	structure and additional observations
HA, N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H	⊙	**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: low plasticity, orange brown with mottled brown, with trace fine to coarse grained sand.			⊙	**FILL**
			VS >202 kPa		1.0						⊙	
			VS >202 kPa		1.5						⊙	
			VS >202 kPa		1.6			**SILT**: low plasticity, brown, with trace fine grained sand.	M		⊙	**MATUA SUBGROUP**
			VS 153/ 29 kPa		2.0			**Clayey SILT**: low to medium plasticity, orange brown, with fine grained sand.			⊕ ⊙	
					2.5			Hand Auger HAL459 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL460**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 460**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt		**TOPSOIL**
			VS 177/ 44 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand. 0.6 m: with trace clay				**YOUNGER ASH DEPOSIT**
			VS 117/ 38 kPa		1.0			**SILT**: low plasticity, orange brown, with trace clay and with trace fine to coarse grained sand. Greasy when reworked.	M			**MATUA SUBGROUP**
			VS 113/ 52 kPa		1.5			**SILT**: non plastic, pale brown, with some fine to coarse grained sand.				
			VS 109/ 32 kPa		2.0			2.3 m: with trace fine to coarse grained sand. Is sensitive in hand sample				
			VS 121/ 31 kPa		2.5							
			VS >202 kPa		3.0			**Clayey SILT**: low to medium plasticity, brown, with trace fine grained sand.				
			VS >202 kPa									
			VS >202 kPa		3.5			Hand Auger HAL460 terminated at 3.5 m Target depth				
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL461**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 461**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D	VSt		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: low plasticity, brown, with minor clay.	M			**MATUA SUBGROUP**
			VS 184/ 34 kPa		1.0			0.5 m: becoming orange brown				
			VS >202 kPa									
			VS 156/ 41 kPa		1.5							
			VS 71/ 22 kPa					1.8 m: becomes sticky/greasy when reworked		St		
			VS 71/ 21 kPa		2.0			2.0 m: with trace fine grained sand				
			VS 75/ 18 kPa		2.5			Hand Auger HAL461 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL463**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 463**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D	VSt to H		**TOPSOIL**
			VS 184/ 39 kPa		0.5			**SILT**: low plasticity, orange brown, with trace fine grained sand with trace clay.	M			**YOUNGER ASH DEPOSIT**
			VS 166/ 29 kPa		1.0							
			VS 158/ 29 kPa		1.5			1.6 m: with trace fine to coarse grained sand				
			VS >202 kPa		2.0							
			VS >202 kPa		2.5			**SAND**: fine to coarse grained, orange brown, with minor silt.				**MATUA SUBGROUP**
			VS 187/ 65 kPa		3.0			Hand Auger HAL463 terminated at 2.5 m Target depth				
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL465**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 465**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA, N		Not Encountered	VS >202 kPa		0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
					0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown, with trace fine to coarse grained sand.				**FILL**
			VS >202 kPa						M			**YOUNGER ASH DEPOSIT**
			VS >202 kPa		1.0							
			VS 194/ 44 kPa		1.5			1.3 m: with trace clay. Low plasticity				
			VS 122/ 24 kPa		2.0							
			VS 151/ 39 kPa		2.5			Hand Auger HAL465 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL467**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 467**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H	⊙	**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown, with trace fine to coarse grained sand.			⊙	**FILL**
			VS >202 kPa		1.0						⊙	
			VS >202 kPa		1.5			1.5 m: becomes dark brown with mottled orange brown			⊙	
			VS >202 kPa					**SILT**: non plastic to low plasticity, orange brown, with trace fine sand.	M			**YOUNGER ASH DEPOSIT**
			VS >202 kPa		2.0			2.0 m: with trace clay			⊙	
			VS 112/ 35 kPa		2.5			Hand Auger HAL467 terminated at 2.5 m Target depth			⊕ ⊙	
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey
A TETRA TECH COMPANY

Engineering Log - Hand Auger

Borehole ID.	**HAL469**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 469**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled grey and brown, with trace fine to coarse grained sand.				**FILL**
			VS 197/ 58 kPa		1.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine sand. 1.0 m: with trace clay	M			**YOUNGER ASH DEPOSIT**
			VS >202 kPa		1.5					St		
			VS 71/ 38 kPa		2.0							
			VS 96/ 29 kPa		2.5			Hand Auger HAL469 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey
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Engineering Log - Hand Auger

Borehole ID.	**HAL471**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 471**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (kPa) remoulded ⊕ peak ⊙ 50 100 150 200	structure and additional observations
HA / N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled grey and brown, with trace fine to coarse grained sand.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5			**SILT**: non plastic to low plasticity, orange brown, with trace fine to coarse grained sand.	M			**YOUNGER ASH DEPOSIT**
			VS >202 kPa		2.0			2.0 m: with trace clay				
			VS >202 kPa		2.5			Hand Auger HAL471 terminated at 2.5 m Target depth				
			VS 187/ 52 kPa		3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey
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Engineering Log - Hand Auger

Borehole ID.	**HAL472**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**30 Aug 2016**
principal:	
date completed:	**30 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 472**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown, with trace fine to coarse grained sand.				**FILL**
			VS >202 kPa		1.0			0.7 to 0.8 m: with trace fine to coarse angular gravel				
			VS >202 kPa		1.5			1.25 to 1.35 m: dark brown with mottled grey and brown with trace organic odour				
			VS >202 kPa		2.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine to coarse grained sand.				**YOUNGER ASH DEPOSIT**
			VS >202 kPa		2.5			Hand Auger HAL472 terminated at 2.0 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger

* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL476**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**NM**
location:	**Centre of lot 476**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: DR2244

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >182 kPa		0.5			**ORGANIC SILT**: non plastic, black.	D	VSt		**TOPSOIL**
			VS >182 kPa					**SILT**: non plastic, orange brown, with minor fine grained sand.				**FILL**
			VS >182 kPa		1.0			0.6 m: becoming flecked white and purple				
			VS >182 kPa					0.9 m: becoming mottled brown with white and purple flecks absent, with trace clay	M			
			VS >182 kPa		1.5			1.3 m: with minor clay and with trace fine to medium grained angular gravel	M to W			
			VS >182 kPa									
			VS >182 kPa		2.0			**SILT**: non plastic, yellow brown, with minor fine grained sand.				**YOUNGER ASH DEPOSIT**
			VS 127/ 42 kPa									
			VS 116/ 21 kPa		2.5			Hand Auger HAL476 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL478**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 478**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.5			**ORGANIC SILT**: non plastic, black.	D to M	H		**TOPSOIL**
			VS >202 kPa					**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine grained sand.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5							
			VS >202 kPa					1.8 to 1.9 m: becomes brown with mottled black				
			VS >202 kPa		2.0			1.95 m: with trace coarse grained gravel **SILT**: non plastic, black, with trace fine grained sand. Trace organic odour.				**YOUNGER ASH DEPOSIT**
			VS >202 kPa					**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand.				
					2.5			Hand Auger HAL478 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL480**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 480**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine grained sand.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand.	M			**YOUNGER ASH DEPOSIT**
			VS >202 kPa		2.0			1.9 m: with trace to minor clay. Low to medium plasticity.				
			VS 175/ 44 kPa		2.5			Hand Auger HAL480 terminated at 2.5 m Target depth				
			VS 173/ 44 kPa		3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey
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Engineering Log - Hand Auger

Borehole ID.	**HAL482**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**22 Aug 2016**
principal:	
date completed:	**22 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 482**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H	⊙	**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine to coarse grained sand.			⊙	**FILL**
			VS >202 kPa		1.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine to coarse grained sand.			⊙	**YOUNGER ASH DEPOSIT**
			VS >202 kPa		1.5			1.5 m: with trace fine grained sand			⊙	
			VS >202 kPa		2.0						⊙	
			VS 185/ 39 kPa		2.5			Hand Auger HAL482 terminated at 2.5 m Target depth			⊕ ⊙	
			VS 185/ 39 kPa		3.0							
					3.5							
					4.0							
					4.5							
					5.0							

CDF_0_9_06_LIBRARY.GLB rev:AT Log COF BOREHOLE: NON CORED 13086AP - STAGE 3GH - ODS.GPJ <<DrawingFile>> 10/01/2017 09:49

method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL484**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 484**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA, N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H	⊙	**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine to coarse grained sand.			⊙	**FILL**
			VS >202 kPa		1.0						⊙	
			VS >202 kPa		1.3						⊙	
			VS 201/ 58 kPa		1.5			**SILT**: non plastic to low plasticity, orange brown, with trace fine to coarse grained sand.			⊕ ⊙	**YOUNGER ASH DEPOSIT**
			VS 139/ 38 kPa		2.0			1.7 m: with trace fine grained sand, and with minor clay. Low to medium plasticity			⊕ ⊙	
			VS 173/ 58 kPa		2.5			Hand Auger HAL484 terminated at 2.5 m Target depth			⊕ ⊙	
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

coffey
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Engineering Log - Hand Auger

Borehole ID.	**HAL486**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 486**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA, N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown, with trace fine grained sand.				**FILL**
			VS >202 kPa		1.0			**SILT**: low plasticity, orange brown, with trace fine to coarse grained sand.				**YOUNGER ASH DEPOSIT**
			VS 177/ 44 kPa		1.5			1.5 m: with trace clay				
			VS 172/ 32 kPa		2.0							
			VS >202 kPa		2.5			Hand Auger HAL486 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL488**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 488**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt		**TOPSOIL**
			VS 190/ 61 kPa		0.5			**SILT**: low plasticity, orange brown, with minor clay and with trace fine grained sand. 0.4 m: with trace fine to coarse grained sand. Greasy when reworked				**YOUNGER ASH DEPOSIT**
			VS 89/ 22 kPa		1.0							
			VS 92/ 51 kPa		1.5			**Sandy SILT**: non plastic, orange brown, sand is fine to coarse grained.		St		**MATUA SUBGROUP**
			VS 156/ 67 kPa					1.6 m: becomes pale brown				
			VS 114/ 29 kPa		2.0			**SILT**: low plasticity, pale brown, with trace clay and with trace fine to coarse grained sand.	M to W	VSt		
			VS >202 kPa		2.5			**Silty CLAY**: medium plasticity, brown, with trace fine grained sand.	M			
								Hand Auger HAL488 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL490**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 490**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA, N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	St to VSt		**TOPSOIL**
								SILT: non plastic to low plasticity, orange brown with mottled grey and brown, with trace fine to coarse grained sand.	M			**FILL**
			VS 173/ 29 kPa		0.5			**SILT**: low plasticity, brown orange, with minor clay and with trace fine to coarse grained sand. Greasy when reworked.				**MATUA SUBGROUP**
			VS 128/ 24 kPa		1.0			1.0 m: becomes orange brown. With trace silt				
			VS 85/ 18 kPa					1.3 m: with minor fine grained sand and with trace clay				
			VS 114/ 36 kPa		1.5							
			VS 112/ 24 kPa					**SAND**: fine to coarse grained, orange brown, with trace silt.				
			VS >202 kPa		2.0			**SILT**: low plasticity, brown, with some clay and with trace fine grained sand.				
			VS >202 kPa									
					2.5			Hand Auger HAL490 terminated at 2.5 m Target depth				
					3.0							
					3.5							
					4.0							
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL493**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 493**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS 130/ 19 kPa VS 136/ 22 kPa VS 89/ 44 kPa VS 165/ 41 kPa VS >202 kPa VS >202 kPa VS >202 kPa VS >202 kPa VS >202 kPa VS >202 kPa VS 104/ 38 kPa VS 128/ 71 kPa		0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0			**ORGANIC SILT**: non plastic, black. **SILT**: low plasticity, orange brown, with minor clay and with trace fine to coarse grained sand. **SILTY SAND**: fine to coarse grained, orange brown. **SILT**: non plastic to low plasticity, pale orange brown, with trace to minor fine to coarse grained sand. 1.4 m: with some fine grained sand. Becoming pale brown **SAND**: fine to coarse grained, grey brown, with trace silt. **Clayey SILT**: low to medium plasticity, brown, with trace fine grained sand. **SILT**: non plastic to low plasticity, brown, with trace fine grained sand and with trace clay. 2.8 m: becoming orange brown 2.9 m: sand becomes absent 3.1 m: with trace fine grained sand and with minor clay 3.4 m: with trace manganese and becoming orange 4.0 m: greasy when reworked 4.8 m: with minor to some manganese Hand Auger HAL493 terminated at 5.0 m Target depth	M	VSt to H	⊕ ⊙	**TOPSOIL** **MATUA SUBGROUP**

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL494**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 494**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: low plasticity, orange brown with mottled grey and brown, with trace fine to coarse grained sand and with trace clay.				**FILL**
			VS >202 kPa		1.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine sand.	M			**YOUNGER ASH DEPOSIT**
			VS 166/ 41 kPa					1.1 m: with trace clay				
			VS >202/ 58 kPa		1.5			1.6 m: with minor clay. Low plasticity				
			VS 160/ 36 kPa		2.0			**SILT**: low plasticity, orange brown, with minor clay and with trace fine to coarse grained sand.				**MATUA SUBGROUP**
			VS 96 kPa									
			VS >202/ 69 kPa		2.5			**Sandy SILT**: non plastic to low plasticity, orange brown, sand is fine to coarse grained.				
			VS 182 kPa					**SAND**: fine to coarse grained, orange brown, with trace to minor silt.				
			VS >202 kPa		3.0			**SILT**: non plastic to low plasticity, orange brown, with trace fine to coarse grained sand and with trace clay.				
								SILT: non plastic, brown, with trace to minor fine grained sand.				
			VS >202 kPa		3.5			**SAND**: fine to coarse grained, grey brown, with trace silt.				
								Clayey SILT: low to medium plasticity, brown, with trace fine grained sand.				
			VS >202 kPa		4.0			**SILT**: low plasticity, orange brown, with minor clay and with trace fine grained sand and with trace manganese.				
			VS 160/ 75 kPa		4.5			4.6 m: with trace to minor manganese				
			VS 106/ 52 kPa		5.0			Hand Auger HAL494 terminated at 5.0 m Target depth				

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL495**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 495**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: low plasticity, orange brown with mottled grey and brown, with trace fine to coarse grained sand and with trace clay.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5							
			VS >202 kPa		2.0							
			VS >202 kPa		2.5			**SILT**: non plastic to low plasticity, orange brown, with trace fine grained sand and trace clay.				**YOUNGER ASH DEPOSIT**
			VS >202 kPa		3.0							
			VS >202 kPa		3.5			3.7 m: with minor clay				
			VS 173/ 52 kPa		4.0			4.0 m: becoming brown. Sand becomes absent.				
			VS 194/ 46 kPa		4.5			4.5 m: with trace fine sand				
			VS >202 kPa		5.0			Hand Auger HAL495 terminated at 5.0 m Target depth				

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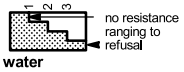
method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

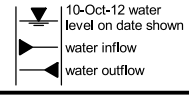
* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration



water



samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL499**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 499**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA, N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine to coarse grained sand.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5							
			VS >202 kPa		2.0							
			VS >202 kPa									
			VS 156/ 49 kPa		2.5			2.3 m: with trace clay				
			VS 173/ 52 kPa									
			VS 190/ 54 kPa		3.0							
			VS >202 kPa									
			VS >202 kPa		3.5							
			VS >202 kPa					3.7 to 4.0 m: becoming mottled black				
			VS >202 kPa		4.0			**SILT**: low plasticity, orange brown, with trace fine grained sand and with trace clay.				**YOUNGER ASH DEPOSIT**
			VS 156/ 52 kPa		4.5							
			VS 154/ 52 kPa									
					5.0			Hand Auger HAL499 terminated at 4.9 m Squeezing				

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL501**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 501**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine to coarse grained sand.				**FILL**
			VS >202 kPa		1.0							
			VS >202 kPa		1.5							
			VS >202 kPa		2.0							
			VS 156/ 62 kPa		2.5							
			VS 190/ 62 kPa		3.0			**SILT**: low plasticity, orange brown, with trace to minor clay and with trace fine grained sand.	M			**YOUNGER ASH DEPOSIT**
			VS >202 kPa		3.5			3.6 m: with trace clay. Non to low plasticity				
			VS >202 kPa		4.0							
			VS >202 kPa		4.5			4.2 m: becoming brown orange with minor clay. Low plasticity				
			VS 194/ 52 kPa		5.0			Hand Auger HAL501 terminated at 5.0 m Target depth				
			VS >202 kPa									
			VS 166/ 66 kPa									

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger

* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL502**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 502**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA, N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled brown and grey, with trace fine to coarse grained sand.				**FILL**
			VS >202 kPa									
			VS >202 kPa		1.0			**SILT**: non plastic, orange brown, with trace fine sand.				**YOUNGER ASH DEPOSIT**
			VS >202 kPa									
			VS >202 kPa		1.5			1.4 m: with trace clay. Non to low plasticity				
			VS >202 kPa									
			VS >202 kPa		2.0							
			VS >202 kPa					2.3 m: becoming mottled brown				
			VS >202 kPa		2.5			2.6 m: becoming brown				
			VS >202 kPa		3.0			2.9 m: becoming orange brown				
			VS 178/ 39 kPa					3.3 m: with minor clay. Low plasticity				
			VS 184/ 46 kPa		3.5							
			VS 148/ 35 kPa		4.0			**Clayey SILT**: low to medium plasticity, orange brown, with trace fine grained sand.	M			**MATUA SUBGROUP**
			VS 190/ 52 kPa									
			VS >202 kPa		4.5							
								Hand Auger HAL502 terminated at 4.6 m Squeezing				
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix
e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL503**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**THE LAKES**
date started:	**23 Aug 2016**
principal:	
date completed:	**23 Aug 2016**
project:	**THE LAKES STAGE 3GH**
logged by:	**ODS**
location:	**Centre of lot 503**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90°

drill model: | drilling fluid: | hole diameter : 50 mm | vane id.: SL588

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded ⊕ peak ⊙) (kPa) 50 100 150 200	structure and additional observations
HA N		Not Encountered	VS >202 kPa		0.0			**ORGANIC SILT**: non plastic, black.	D to M	VSt to H		**TOPSOIL**
			VS >202 kPa					**SILT**: non plastic to low plasticity, orange brown with mottled grey, with trace fine to coarse grained sand.	M			**FILL**
			VS >202 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown, with trace fine sand.				**YOUNGER ASH DEPOSIT**
			VS >202 kPa					0.8 m: with trace fine to coarse grained sand				
			VS 156/ 38 kPa		1.0			0.9 m: with trace clay. Low plasticity.				
			VS 156/ 38 kPa		1.5							
			VS 194/ 49 kPa					**SILT**: low plasticity, brown orange, with minor clay and with trace fine to coarse grained sand. Greasy when reworked.				**MATUA SUBGROUP**
			VS 170/ 38 kPa		2.0							
			VS >202 kPa		2.5							
			VS >202 kPa					**SILT**: non plastic to low plasticity, brown, with trace clay and with trace fine grained sand.				
			VS >202 kPa		3.0			2.9 m: with some clay. Low plasticity				
			VS >202 kPa					3.3 m: becoming orange brown				
			VS 190/ 54 kPa		3.5							
					4.0			Hand Auger HAL503 terminated at 4.0 m Squeezing				
					4.5							
					5.0							

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL236**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**The Lakes 2012 LTD**
date started:	**16 Mar 2016**
principal:	**-**
date completed:	**16 Mar 2016**
project:	**The Lakes Stage 3 GCR**
logged by:	**NM**
location:	**Centre of Lot 236**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90° | DCP id.:

drill model: Hand Auger | drilling fluid: | hole diameter : 50 mm | vane id.:

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded / peak) (kPa) 50 100 150 200	DCP (blows/ 100 mm) 2 4 6 8 10	structure and additional observations
HA N		Not Encountered	VS >240 kPa		0.0		ML	**TOPSOIL: SILT**: low plasticity, brown, with minor fine grained sand, trace fine grained angular gravel.	D	H			**TOPSOIL**
							ML	**SILT**: non plastic to low plasticity, orange brown, with some fine grained sand.	D to M				**YOUNGER ASH**
			VS 147/ 40 kPa		0.5					VSt			
			VS 111/ 25 kPa				ML	**Sandy SILT**: non plastic, orange brown, with fine to medium grained sand.					
			VS 103/ 25 kPa		1.0		SP	**SILTY SAND**: fine to medium grained, orange brown.		MD to D			
			VS 78/ 18 kPa				ML	**Sandy SILT**: low plasticity, pale pink, with lenses of fine to medium gained pale pink sand.		St			
					1.5		SP	**SAND**: fine to medium grained, orange brown. At 1.6m: becoming white.		MD			
			VS 206/ 40 kPa		2.0		ML	**SILT**: low plasticity, orange brown, with trace fine grained sand.		H			
								Hand Auger HA3D-236 terminated at 2.0 m Target depth					
					2.5								
					3.0								
					3.5								
					4.0								
					4.5								
					5.0								

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL237**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**The Lakes 2012 LTD**
date started:	**16 Mar 2016**
principal:	**-**
date completed:	**16 Mar 2016**
project:	**The Lakes Stage 3 GCR**
logged by:	**ODS**
location:	**Centre of Lot 237**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90° | DCP id.:

drill model: Hand Auger | drilling fluid: | hole diameter : 50 mm | vane id.: 2244-02

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	DCP (blows/ 100 mm) 2 4 6 8 10	structure and additional observations
HA N		Not Encountered	VS >183 kPa		0.0			**SILT**: low plasticity, brown mottled pink, white and orange, with minor fine grained sand, trace fine to medium grained angular gravel.	D	MD			**TOPSOIL**
					0.5			**SILTY SAND**: fine to coarse grained, brown with mottled pink brown, with trace fine to medium gravel.					**FILL**
			VS >183 kPa		1.0			0.7 m: becoming mottled dark brown **SILT**: non plastic, orange brown, with some fine to medium sand. 1.0 m: sand becomes trace and plasticity becomes low	D to M	VSt			
			VS >183 kPa		1.5			1.25 m: becoming mottled pink					
			VS >183 kPa		2.0			**SILT**: low plasticity, orange brown, with trace fine sand. 1.85 m: becoming mottled pale pink and dark brown Hand Auger HA3D-237 terminated at 2.0 m Target depth					
			VS >183 kPa										
					2.5								
					3.0								
					3.5								
					4.0								
					4.5								
					5.0								

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method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix, e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density
- VS very soft
- S soft
- F firm
- St stiff
- VSt very stiff
- H hard
- Fb friable
- VL very loose
- L loose
- MD medium dense
- D dense
- VD very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL238**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**The Lakes 2012 LTD**
date started:	**16 Mar 2016**
principal:	**-**
date completed:	**16 Mar 2016**
project:	**The Lakes Stage 3 GCR**
logged by:	**NM**
location:	**Centre of Lot 238**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90° | DCP id.:

drill model: Hand Auger | drilling fluid: | hole diameter : 50 mm | vane id.:

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	DCP (blows/ 100 mm) 2 4 6 8 10	structure and additional observations
HA N		Not Encountered	VS 176/ 33 kPa		0.0		ML	**SILT**: low plasticity, brown mottled pink, white and orange, with minor fine grained sand, trace fine to medium grained angular gravel.	D	VSt	⊕ ⊙		**FILL**
							ML	**SILT**: low plasticity, orange brown mottled brown, with trace fine grained sand, trace pockets of sandy silt.		H			
			VS >240 kPa		0.5		ML	**SILT**: non plastic, pale orange, with some fine to medium grained sand.					
			VS >240 kPa										
			VS >240 kPa		1.0		ML	**Sandy SILT**: non plastic, pale brown mottled white and orange, streaked black, with fine to medium grained sand..					
			VS >240 kPa		1.5								
			VS >240 kPa										
			VS >240 kPa		2.0		ML	**SILT**: low plasticity, orange brown, with trace fine grained sand, trace clay.					
								Hand Auger HA3D-238 terminated at 2.0 m Target depth					
					2.5								
					3.0								
					3.5								
					4.0								
					4.5								
					5.0								

CDF_0_9_06_LIBRARY.GLB rev:AT Log COF BOREHOLE: NON CORED + DCP GCR HA - 09-03-2016 ODS.GPJ <<DrawingFile>> 10/01/2017 14:26

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger

* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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Engineering Log - Hand Auger

Borehole ID.	**HAL239**
sheet:	1 of 1
project no.	**GENZTAUC13086AP**
client:	**The Lakes 2012 LTD**
date started:	**16 Mar 2016**
principal:	**-**
date completed:	**16 Mar 2016**
project:	**The Lakes Stage 3 GCR**
logged by:	**ODS**
location:	**Centre of Lot 239**
checked by:	**RBT**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90° | DCP id.:

drill model: Hand Auger | drilling fluid: | hole diameter : 50 mm | vane id.: 2244-02

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	DCP (blows/ 100 mm) 2 4 6 8 10	structure and additional observations
HA, N		Not Encountered	VS >183 kPa		0			**SILT**: low plasticity, brown mottled pink, white and orange, with minor fine grained sand, trace fine to medium grained angular gravel.	D	VSt	⊙		**TOPSOIL**
			VS >183 kPa		0.5			**SILT**: non plastic to low plasticity, orange brown with mottled pale pink, with trace clay and trace fine sand. 0.5 m: trace gravel becoming present- are grey, medium to coarse and angular	D to M		⊙		**FILL**
			VS >183 kPa								⊙		
			VS >183 kPa					**SILT**: low plasticity, pink with mottled dark brown, with trace clay and trace to minor manganese.			⊙		**MATUA SUBGROUP**
					1.0					MD			
								SAND: fine to coarse grained, pale brown, with some silt. 1.0 m: silt becomes trace 1.1 m: becomes brown 1.2 m: silt becomes minor					
			VS >183 kPa		1.5			**SILT**: non plastic to low plasticity, orange brown, with some sand.			⊙		
			VS >183 kPa					**SILTY SAND**: fine to coarse grained, orange brown with mottled pale brown.					
			VS >183 kPa		2.0			Hand Auger HA3D-239 terminated at 2.0 m Target depth			⊙		
					2.5								
					3.0								
					3.5								
					4.0								
					4.5								
					5.0								

CDF_0_9_06_LIBRARY.GLB rev:AT Log COF BOREHOLE: NON CORED + DCP GCR HA - 09-03-2016 ODS.GPJ <<DrawingFile>> 10/01/2017 14:26

method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix, e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
- 10-Oct-12 water level on date shown
- water inflow
- water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Appendix E – Fill Test Summary Tables

FILL TEST RESULTS FROM 2013 - 2015 EARTHWORKS PERIOD						
Summary of earthfill test data						
Test Number	Date	Test RL (m)	Result			Pass/Fail
			Air Voids (%)	Shear Vane (kPa)	Scala (blows per 100mm)	
A-5	18/10/2013	58.44	0.8	127	-	Fail - area reworked
A-6		58.83	2.2	209	-	Pass
A-7		58.91	0.4	UTP	-	Pass
A-8		58.38	2.7	236+	-	Pass
A-9		59.09	1.9	UTP	-	Pass
A-10		58.77	3.8	236+	-	Pass
A-11		58.51	4.3	176	-	Pass
A-12		58.71	3.5	86	-	Fail - Retested HAL447
A-13		58.08	3.7	UTP	-	Pass
A-29	30/10/2013	28.83	1.6	UTP	-	Pass
A-30		59.33	2.6	236+	-	Pass
A-31		58.46	1.6	149	-	Pass
A-32		59.00	0.0	180	-	Pass
A-33		58.32	4.4	171	-	Pass
A-34		58.81	0.0	220	-	Pass
A-35		58.22	0.8	138	-	Marginal Pass
A-36		58.67	0.3	UTP	-	Pass
A-37		58.01	0.0	236+	-	Pass
A-38		58.50	0.0	236+	-	Pass
A-39		57.76	0.0	195	-	Pass
A-40		58.28	5.6	UTP	-	Pass
A-41		58.18	0.0	97	-	Fail - Retested HAL457
A-42		58.24	4.9	UTP	-	Pass
A-43		58.24	0.5	205	-	Pass
A-44		58.53	0.0	197	-	Pass
A-45		58.86	6.3	236+	-	Pass
A-46		59.58	3.0	138	-	Marginal Pass
A-47		59.43	1.3	9999	-	Pass
A-48		59.23	5.8	236+	-	Pass
B-01	15/10/2014	52.59	1.5	112	-	Pass - Retest done, see B11
B-02		52.13	2.8	200	-	Pass
B-03		52.06	-0.3	187	-	Pass
B-04		51.71	-0.4	154	-	Pass
B-05		52.2	0.2	84	-	Pass - Retest done, see B28
B-06		58.72	2.6	226	-	Pass
B-07		58.51	1.5	170	-	Pass
B-08		58.77	-0.3	119	-	Fail - Retested HAL469-HAL471
B-09		59.11	0.5	112	-	Fail - Retested HAL472
B-10		59.09	1.8	167	-	Pass
B-11	5/11/2014	52.8	3.6	187	-	Pass
B-12		52.59	2.5	140	-	Pass
B-13		52.08	0.5	109	-	Pass - Retest done, see B28
B-14		53.62	4.1	204	-	Pass
B-15		53.19	9.4	179	-	Pass
B-16		53.58	2.4	158	-	Pass
B-17		53.4	-0.1	171	-	Pass
B-18		53.05	0.4	166	-	Pass
B-19		53.06	4.5	189	-	Pass
B-20		53.53	0.4	169	-	Pass
B-21		53.06	1	164	-	Pass
B-22		52.68	2.4	157	-	Pass
B-26	14/11/2014	51.85	5.5	227	-	Pass
B-27		53.12	6.2	184	-	Pass
B-28		52.07	4	148	-	Pass
B-29	27/11/2014	55.4	2.4	179	-	Pass
B-30		54.9	1.3	231	-	Pass
B-31		55.1	3.9	176	-	Pass
B-32		54.76	1.6	198	-	Pass
B-33		54.26	6.4	187	-	Pass
B-48	1/12/2014	55.55	4.5	166	-	Pass
B-49		55.44	7.6	209	-	Pass
B-50		55.22	4.8	150	-	Pass
B-51		54.95	6	174	-	Pass
B-52		54.68	6.3	193	-	Pass
B-53	5/12/2014	56.26	3.2	219	-	Pass
B-54		55.97	2	193	-	Pass
B-55		55.98	1.2	231	-	Pass
B-56		56.35	-0.2	213	-	Pass
B-57		55.95	2.8	222	-	Pass
B-58		56.06	11.3	220	-	Pass
B-59		56.47	4.5	231	-	Pass
B-60		57.02	6.6	227	-	Pass

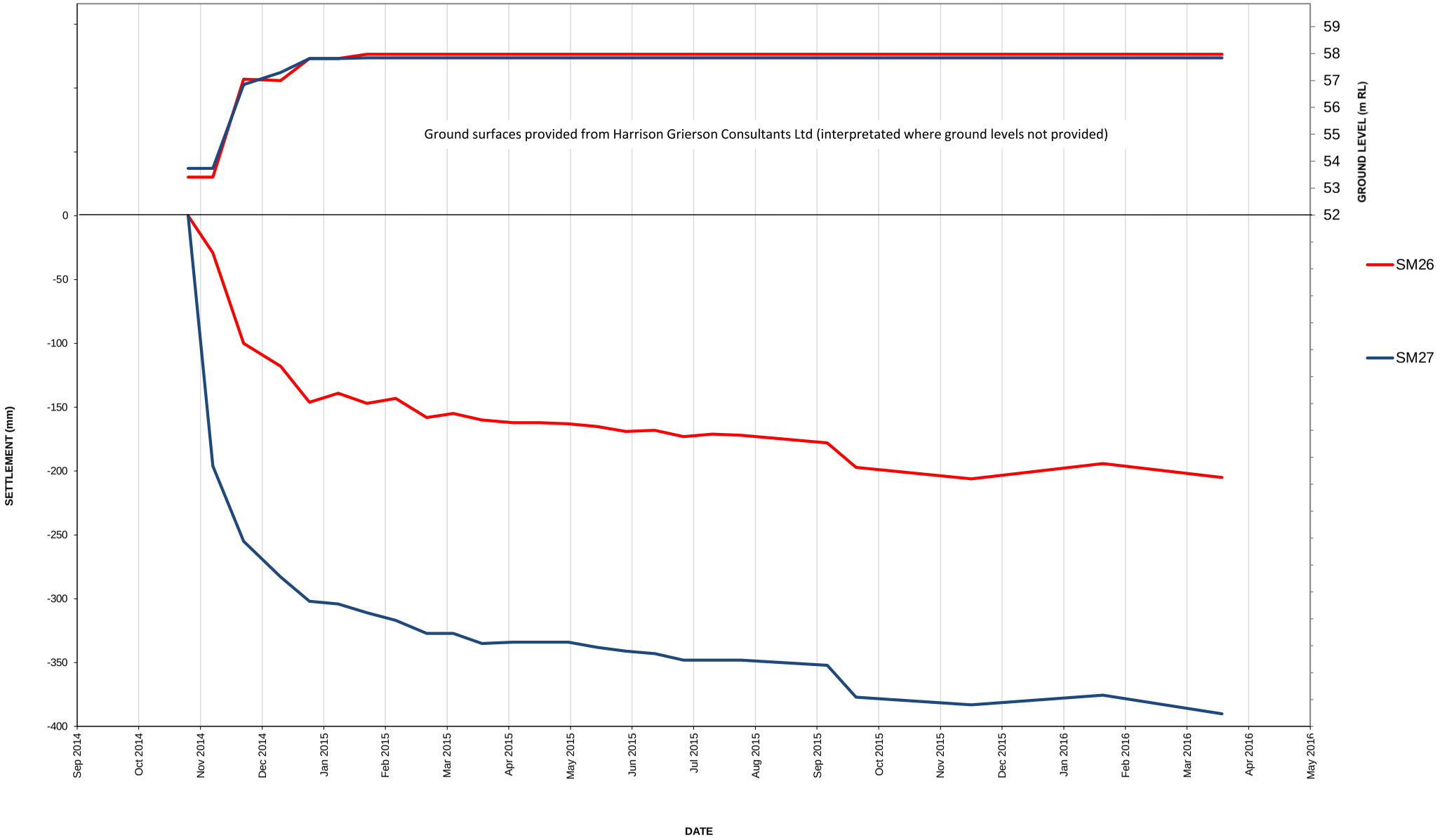
Test Number	Date	Test RL (m)	Result			Pass/Fail
			Air Voids (%)	Shear Vane (kPa)	Scala (blows per 100mm)	
B-61	9/12/2014	57.06	1.9	159	-	Pass
B-62		56.9	-1.9	222	-	Pass
B-63		56.81	1.2	163	-	Pass
B-64		56.65	3.1	204	-	Pass
B-65		56.06	4.5	221	-	Pass
B-168	16/02/2015	46.99	5	232	-	Pass
B-169		45.83	1.5	231	-	Pass
B-170		45.35	3.8	230	-	Pass
B-175	20/02/2015	49.28	-2.9	224	-	Pass
B-176		48.50	1.5	210	-	Pass
B-177	24/02/2015	48.99	1.8	220	-	Pass
B-178		48.76	7.7	225	-	Pass
B-179		49.55	0.8	203	-	Pass
B-180		50.17	1.3	232	-	Pass
B-181	26/02/2015	47.50	1.4	232	-	Pass
B-182		47.00	4.4	195	-	Pass
B-183		34.00	4.4	219	-	Pass
B-186	3/03/2015	53.69	2.5	232	-	Pass
B-187		53.67	2.1	230	-	Pass
B-190	9/03/2015	56.91	-1.6	232	-	Pass
B-191		57.67	4.3	195	-	Pass
B-192		57.37	11.9	210	-	Pass
B-193		58.66	4.7	226	-	Pass

Notes

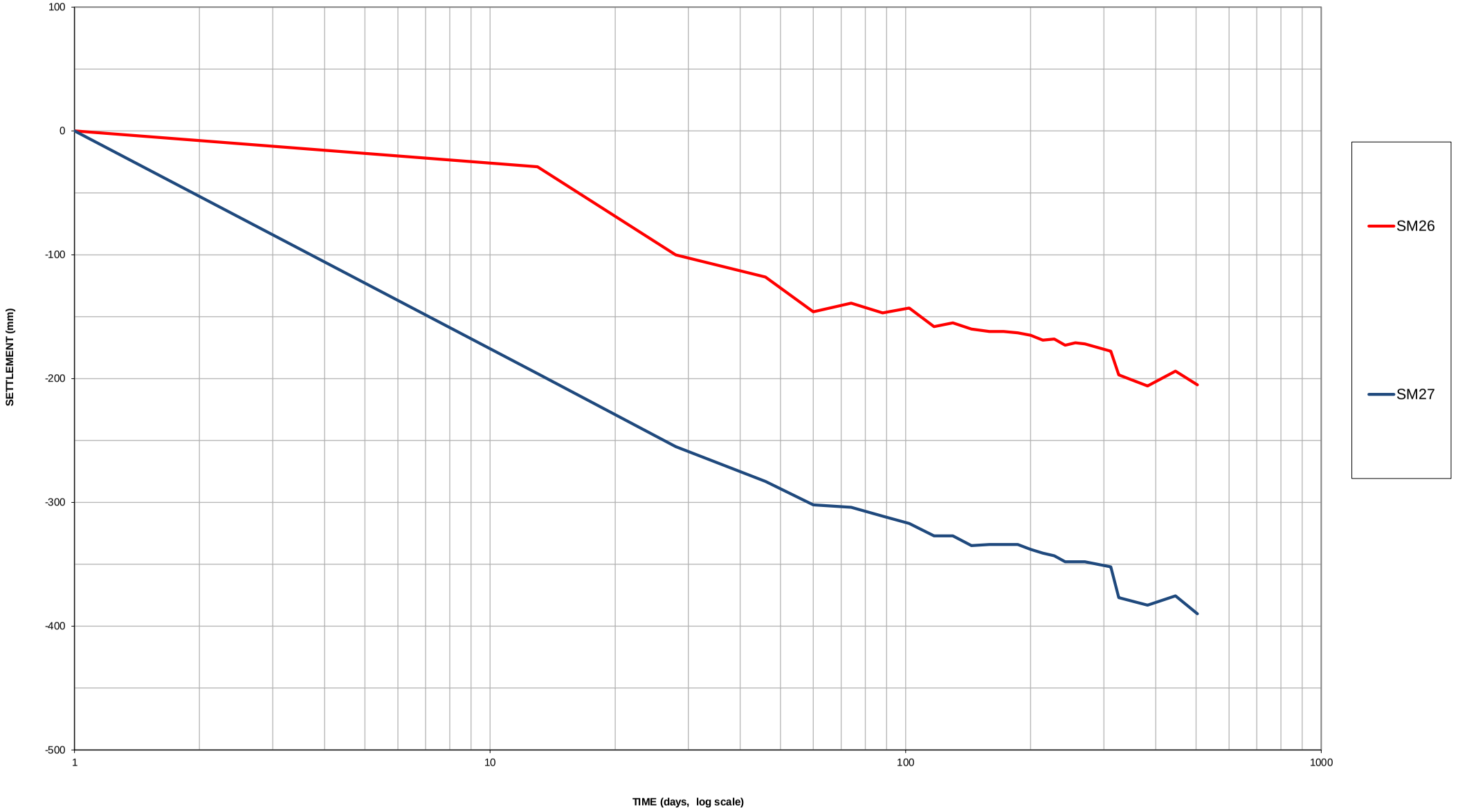
1 Shear strength for NDM tests calculated from average of 4 vane tests at each test location.
2 A target Soilds Density of 2.44 t/m³ to 2.60 t/m³ was assumed for silt/ash fill.
3 UTP = Unable to Penetrate
4 Failed test areas were observed by Coffey and retested with shearvane and/or scala penetrometer.
5 All test locations and elevations surveyed by JMC Ltd.

Appendix F – Static Settlement Results

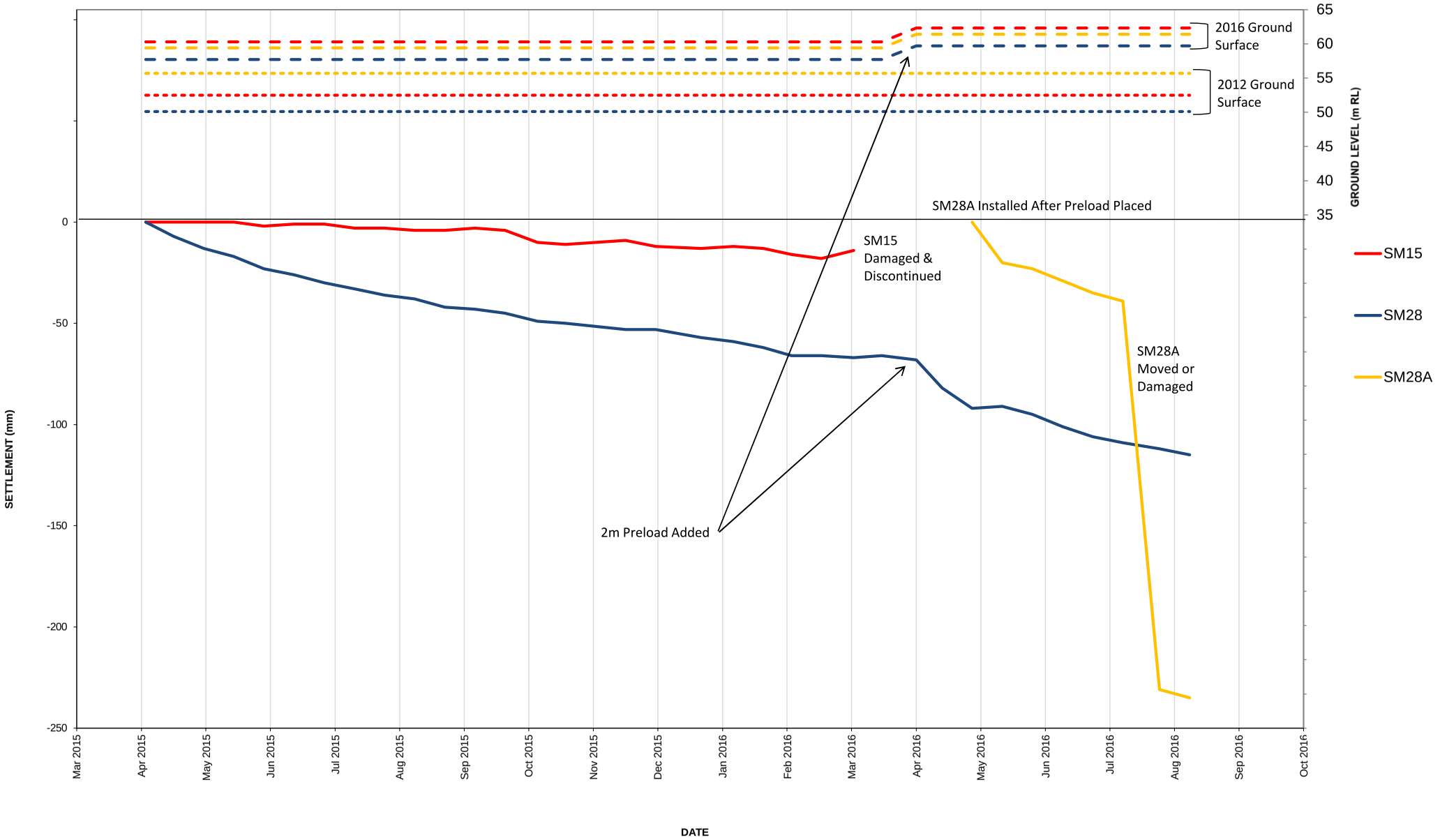
SETTLEMENT VS TIME



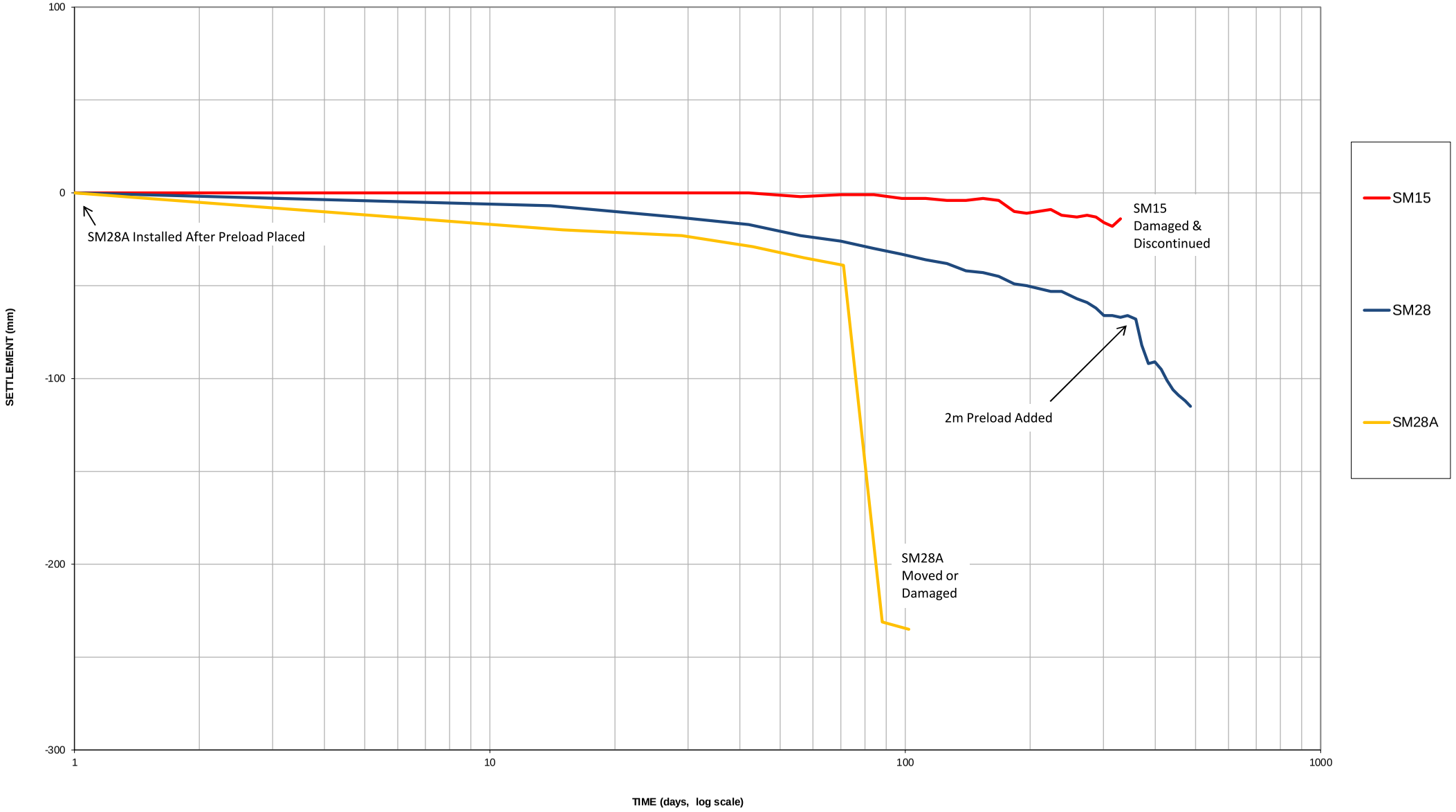
SETTLEMENT VS TIME (LOG SCALE)



SETTLEMENT VS TIME



SETTLEMENT VS TIME (LOG SCALE)



Appendix G – Stage 3G Retaining Wall Certification

96 Cameron Road, Tauranga
Tauranga Central
3110 New Zealand

t: +647 577 4288

coffey.com

2 February 2017

Our ref: GENZTAUC13086AB-AF

The Lakes (2012) Ltd
C/- Harrison Grierson Consultants Ltd
Level 1 Harrison Grierson House
141 Cameron Road
Tauranga

Attention: Tony Mills

Dear Tony

The Lakes Stage 3G – Northern Boundary Retaining Wall Observation and Certification

This letter confirms that Coffey Services (NZ) Ltd (Coffey) visited the above site on numerous occasions to observe works associated with the construction of the timber pole retaining wall which runs along the northern boundary of Stage 3G. The observations were completed in general accordance Coffey's design report[1] dated 16 June 2016 and the Tauranga City Council building consent number 55971.

The following items were checked or carried out on site:

- Verification of pre-drilled pile hole diameters depths and spacing's;
- Confirmation of soil conditions encountered within the boreholes;
- Verification of timber pole upright heights and diameters;
- Verification of timber lagging, dimensions and placement;
- Confirmation of safety fence installation.

As a result of our observations and site measurements, Coffey are satisfied that the subject retaining wall has been built in general accordance with the requirements of the design report and building consent.

A producer statement (PS4 – Construction Review) is attached to this letter.

[1] Coffey (2016) Retaining Wall Design Report for Stage 3G The Lakes, The Lakes Subdivision, Tauriko. Dated: 16 June 2016, Ref: GENZTAUC13086AB-AB

Limitations

This report has been prepared solely for the use of our client, The Lakes (2012) Limited and their professional advisors and contractors 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 owners of this property should seek professional geotechnical advice to satisfy themselves as to its ongoing suitability for their intended use.

This document should always be read in its entirety and is not to be split for further distribution.

For and on behalf of Coffey

Rob Telford
Senior Engineering Geologist

Letter reviewed by:

David Sullivan, BSc, MBA, CE (Calif.), MIPENZ, CPEng,
TCC Category 1 Geotechnical Engineer
Principal Geotechnical Engineer
CPEng No. 1025183

Attachments

Site photographs

Producer Statement – PS4 – Construction Review

Photograph 1: Photo taken on the 10/11/16 of predrilled Pile holes 47 to 126.

Photograph 2: Photo taken on the 22/11/16 of the placement of piles.

CLIENT: The Lakes (2012) Ltd	PROJECT:	13086AB	DESIGNED:	N.M	SITE PHOTOGRAPHS
	DWG #:	A	DRAWN:	N.M	
	REVISION:		STATUS:	FINAL	
PROJECT TITLE: Stage 3G -Retaining Wall Observations and Certification	SCALE:	NA			
	DATE:	23.01.17			Page 1

coffey
A TETRA TECH COMPANY

Photograph 3: Photo taken on the 22/11/16 of the final placement and alignment of retaining wall piles.

CLIENT: The Lakes (2012) Ltd	PROJECT:	13086AB	DESIGNED:	N.M	SITE PHOTOGRAPHS
	DWG #:	A	DRAWN:	N.M	
	REVISION:		STATUS:	FINAL	
PROJECT TITLE: Stage 3G -Retaining Wall Observations and Certification	SCALE:	NA			
	DATE:	23.01.17			Page 2

coffey
A TETRA TECH COMPANY

Building Code Clause(s)B1/VM4, F4

PRODUCER STATEMENT – PS4 – CONSTRUCTION REVIEW

(Guidance notes on the use of this form are printed on page 2)

ISSUED BY: COFFEY SERVICES (NZ) LIMITED.....
(Construction Review Firm)

TO: THE LAKES (2012) LIMITED .....
(Owner/Developer)

TO BE SUPPLIED TO: TAURANGA CITY COUNCIL.....
(Building Consent Authority)

IN RESPECT OF: TIMBER POLE RETAINING WALL DESIGN.....
(Description of Building Work)

AT: THE LAKES STAGE 3G.....
(Address)
..... **LOT**...1001... **DP** 486181..... **SO** .....

COFFEY SERVICES (NZ) LTD has been engaged by THE LAKES (2012) LTD.....
(Construction Review Firm)
To provide☐CM1☐CM2☐CM3☐CM4☐CM5*(Engineering Categories)* or ☐ observation as per agreement with owner/developer

or ☒other PERIODIC INSPECTIONS DURING RETAINING WALL CONSTRUCTION.....services
(Extent of Engagement)
in respect of clause(s) B1/VM4 & F4..... of the Building Code for the building work described in

documents relating to Building Consent No.55971..... and those relating to

Building Consent Amendment(s) Nos. N/A.....issued during the

course of the works. We have sighted these Building Consents and the conditions of attached to them.

Authorised instructions / variations(s) No. N/A..... (copies attached)

or by the attached Schedule ☐ have been issued during the course of the works.

On by the basis of ☒this ☐these review(s) and information supplied by the contractor during the course of the works and **on behalf of the firm** undertaking this Construction Review, **I believe on reasonable grounds** that ☐All ☒Part only of the building works have been completed in accordance with the relevant requirements of the Building Consent and Building Consent Amendments identified above, with respect to Clause(s) B1/VM4 & F4.....of the Building Code.

I also believe on reasonable grounds that the persons who have undertaken this construction review have the necessary competency to do so.

I, ...David Sullivan.....am: ☒CPEng No. ...1025183.....
(Name of Construction Review Professional)
☐Reg Arch No. .....

I am a Member of : ☒IPENZ ☐NZIA and hold the following qualifications: .....

The Construction Review Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.
The Construction Review Firm is a member of ACENZ : ☐

SIGNED BY ...David Sullivan..... **ON BEHALF OF** COFFEY SERVICES (NZ) LTD.....

Date:... 3-2-17 ..... Signature:.....

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Forms 6 or 8 of the Building (Form) Regulations 2004** for the issue of a Code Compliance Certificate.

FORM OF PRODUCER STATEMENT PS3 – CONSTRUCTION
At project completion, this form shall be completed by the building contractor and supplied to the Engineer.

ISSUED BY: HIGGINS CONTRACTORS LTD
(Building Contractor)

TO: THE LAKES 2012
(Owner/Principal)

IN RESPECT OF: RETAINING WALL LAKES 3G
(Description of Contract Works)

AT: 3110L PYES PA RD
(Address)

T/A: TCC **BUILDING CONSENT No:** 55971
(Territorial Authority / Building Consent Authority)

The above Building Contractor has contracted to the above Owner/Principal to carry out and complete certain building works in accordance with the contract, titled

RETAINING WALL LAKES 3G ("the contract")
(Title of building contract)

I STEVE PAPA a duly authorised representative of the
(Builder's Authorised Agent)

above building contractor, believe on reasonable grounds that the above building contractor has carried out and completed

☑All ☐Part only as specified in the attached particulars

of the building works in accordance with the contract.

(Signature of Authorised Agent on behalf of the Building Contractor)

13/2/2017
(Date)

92 HEWLETTS RD
MT MAUNGANUI
(Address)

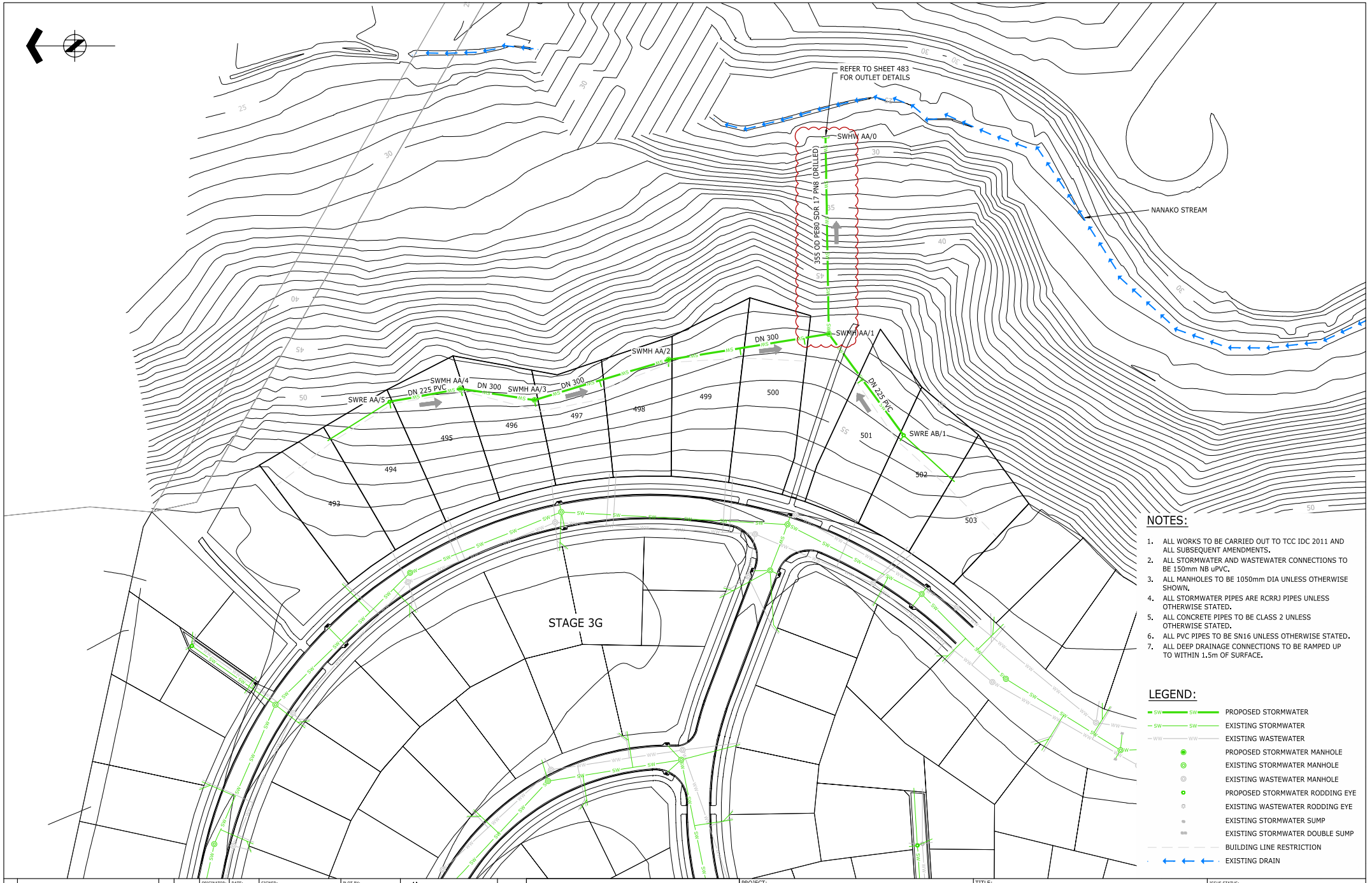
This producer statement is confirmation by the builder(s) that they have carried out the building work in accordance with the drawings, specifications (and site amendments) that are part of the contract / building consent documents.

Work covered by this statement should have been supervised and checked by suitably qualified trades-persons.

The Engineer requires this producer statement and a copy of the T/A's building consent conditions, to confirm that items of the contract that he has not personally examined, have in fact been built according to the documents, so that the Engineer may issue appropriate documents to the T/A for it to release the Code Compliance Certificate.

20393-1

Appendix H – Stage 3H Stormwater Pipeline Drawings



NOTES:

1. ALL WORKS TO BE CARRIED OUT TO TCC IDC 2011 AND ALL SUBSEQUENT AMENDMENTS.
2. ALL STORMWATER AND WASTEWATER CONNECTIONS TO BE 150mm NB uPVC.
3. ALL MANHOLES TO BE 1050mm DIA UNLESS OTHERWISE SHOWN.
4. ALL STORMWATER PIPES ARE RCRRJ PIPES UNLESS OTHERWISE STATED.
5. ALL CONCRETE PIPES TO BE CLASS 2 UNLESS OTHERWISE STATED.
6. ALL PVC PIPES TO BE SN16 UNLESS OTHERWISE STATED.
7. ALL DEEP DRAINAGE CONNECTIONS TO BE RAMPED UP TO WITHIN 1.5m OF SURFACE.

LEGEND:

- PROPOSED STORMWATER
- EXISTING STORMWATER
- EXISTING WASTEWATER
- PROPOSED STORMWATER MANHOLE
- EXISTING STORMWATER MANHOLE
- EXISTING WASTEWATER MANHOLE
- PROPOSED STORMWATER RODDING EYE
- EXISTING WASTEWATER RODDING EYE
- EXISTING STORMWATER SUMP
- EXISTING STORMWATER DOUBLE SUMP
- BUILDING LINE RESTRICTION
- EXISTING DRAIN

				ORIGINATOR: RJM	DATE: 16.06.16	SIGNED:	PLOT BY: RJM		
				DRAWN: TRS	DATE: 16.06.16	SIGNED:	PLOT DATE: 20.10.16		
				CHECKED: RJM	DATE: 20.10.16	SIGNED:	SURVEY BY:		
B	SW OUTLET AA/0 RELOCATED	RJM	20.10.16	APPROVED: GPR	DATE: 20.10.16	SIGNED:	SURVEY DATE:		
A	ISSUED FOR CONSTRUCTION	GPR	26.06.16						
REF	REVISIONS	BY	DATE						

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

TAURANGA OFFICE
LEVEL 1 HARRISON GRIERSON HOUSE
141 CAMERON ROAD TAURANGA 3110
T +64 7 578 0023
W www.harrisongrierson.com

PROJECT:

Summit

THE LAKES (2012) LIMITED, TAURANGA

TITLE:

STAGE 3H
STORMWATER LAYOUT PLAN

ISSUE STATUS: CONSTRUCTION

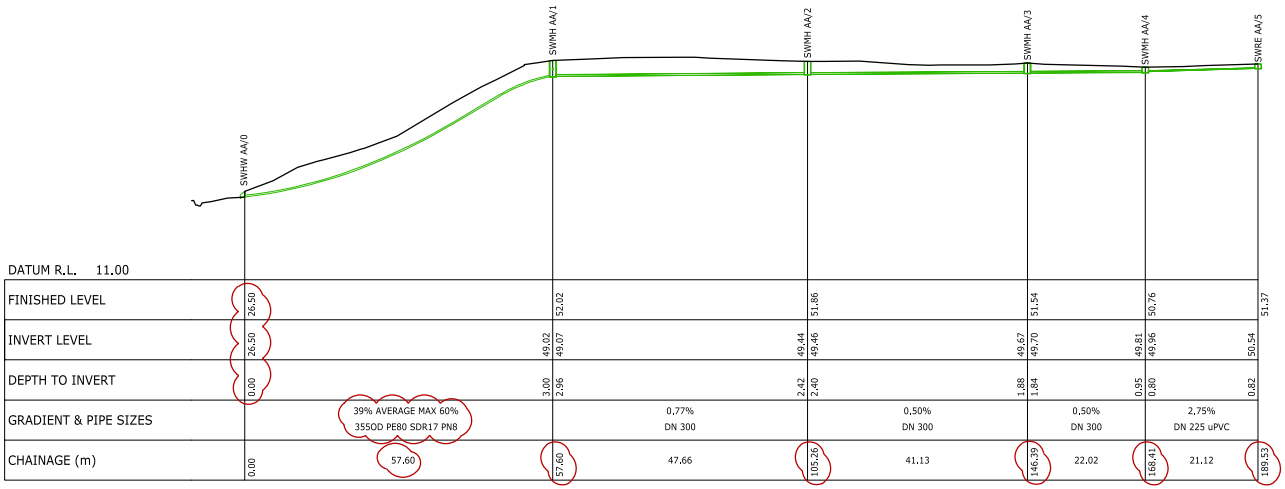
PROJECT No: 1500-138804-01

SCALES: 1:500 - A1, 1:1000 - A3

A1

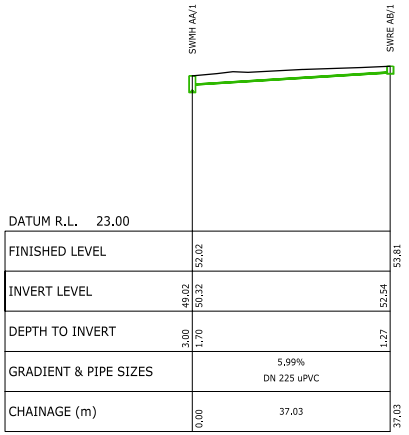
DRAWING No: 138804-403

REV B



STORMWATER LINE AA LONGITUDINAL SECTION

SCALE HOR 1:500 - A1, 1:1000 - A3
VER 1:100 - A1, 1:200 - A3



STORMWATER LINE AB LONGITUDINAL SECTION

SCALE HOR 1:500 - A1, 1:1000 - A3
VER 1:100 - A1, 1:200 - A3

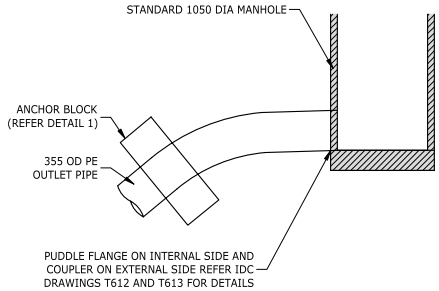
				ORIGINATOR: RJM	DATE: 16.06.16	SIGNED:	PLOT BY: RJM	ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND	ISO 9001 QUALITY ASSURED	
				DRAWN: TRS	DATE: 16.06.16	SIGNED:	PLOT DATE: 20.10.16			
				CHECKED: RJM	DATE: 20.10.16	SIGNED:	SURVEY BY:	THIS DRAWING AND DESIGN REMAINS THE PROPERTY OF, AND MAY NOT BE REPRODUCED OR ALTERED, WITHOUT THE WRITTEN PERMISSION OF HARRISON GRIERSON CONSULTANTS LIMITED, NO LIABILITY SHALL BE ACCEPTED FOR UNAUTHORISED USE OF THIS DRAWING.		
B	SW OULET AA/0 RELOCATED, PIPE LENGTH REDUCED	RJM	20.10.16	APPROVED: GPR	DATE: 20.10.16	SIGNED:	SURVEY DATE:			
A	ISSUED FOR CONSTRUCTION	GPR	26.06.16							
REF	REVISIONS	BY	DATE							

HG
TAURANGA OFFICE
LEVEL 1 HARRISON GRIERSON HOUSE
141 CAMERON ROAD TAURANGA 3110
T +64 7 578 0023
W www.harrisongrierson.com

PROJECT:
Summit
THE LAKES (2012) LIMITED, TAURANGA

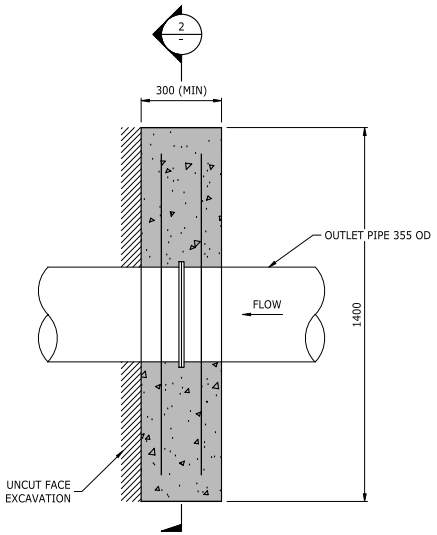
TITLE:
STAGE 3H
STORMWATER LONGITUDINAL SECTION

ISSUE STATUS: CONSTRUCTION
PROJECT No: 1500-138804-01
SCALES: AS SHOWN
A1
DRAWING No: 138804-435
REV B



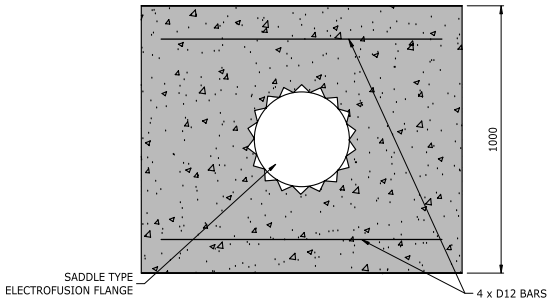
A / 403 PE PIPE CONNECTION SWMH AA/1

SCALE NTS



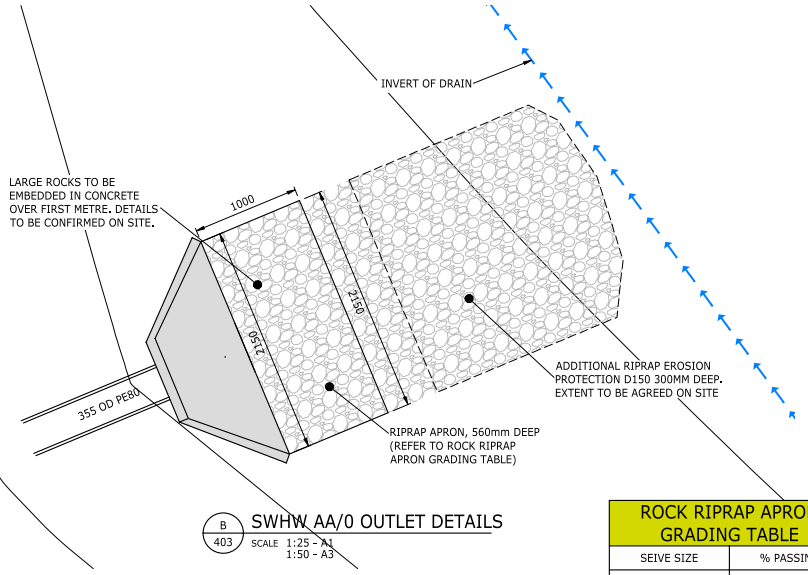
1 / - ANCHOR BLOCK DETAIL

SCALE 1:10 - A1
1:20 - A3



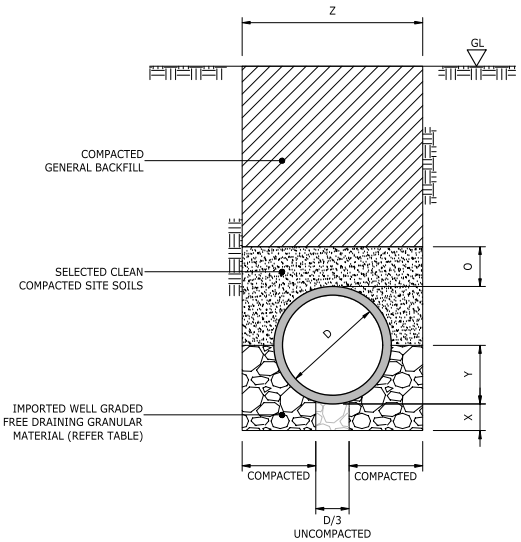
2 / - ANCHOR BLOCK CROSS SECTION

SCALE 1:10 - A1
1:20 - A3



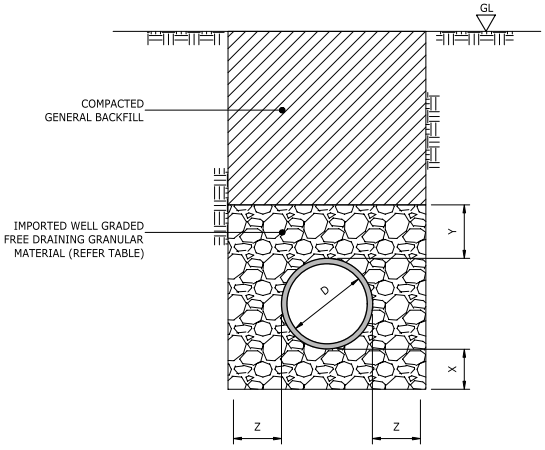
B / 403 SWHW AA/0 OUTLET DETAILS

SCALE 1:25 - A1
1:50 - A3



CONCRETE PIPE BEDDING

SCALE NTS



PLASTIC PIPE BEDDING

SCALE NTS

NOTES:

1. ALL CONCRETE PIPE BEDDING HAS BEEN DESIGNED TO H2 SUPPORT TYPE.
2. REFER TO THE SPECIFICATION FOR MINIMUM COMPACTION STANDARDS OF THE BEDDING MATERIAL.
3. CONTRACTOR TO PROVIDE GRADING CURVE OF PROPOSED BEDDING MATERIAL TO ENGINEER FOR APPROVAL.
4. ALL DIMENSIONS ARE MINIMUM, AND MAY BE INCREASED ON SITE.
5. ALL WORK WITH CONCRETE PIPES TO BE IN ACCORDANCE WITH AS/NZS 3725.
6. ALL WORK WITH PLASTIC PIPES TO BE IN ACCORDANCE WITH AS/NZS 2566.

GRADING FOR IMPORTED BEDDING	
SIEVE SIZE	% ALL PASSING
19.00	100
2.36	100 - 50
0.60	90 - 20
0.30	60 - 10
0.15	25 - 0
0.08	10 - 0

ROCK RIPRAP APRON GRADING TABLE	
SEIVE SIZE	% PASSING
345 - 391	100
276 - 322	85
230 - 322	50
92 - 138	15

BEDDING DETAILS CONCRETE PIPES				
PIPE SIZE (mm)	X	Y	Z	O
300	100	110	665	150

BEDDING DETAILS uPVC PIPES			
PIPE SIZE (mm)	X	Y	Z
100	75	100	100
150	75	100	100

REF	REVISIONS	BY	DATE
A	ISSUED FOR CONSTRUCTION	GPR	26.09.16

ORIGINATOR: RJM DATE: 16.06.16 SIGNED:
DRAWN: TRS DATE: 16.06.16 SIGNED:
CHECKED: RJM DATE: 26.09.16 SIGNED:
APPROVED: GPR DATE: 26.09.16 SIGNED:
PLOT BY: TRS
PLOT DATE: 26.09.16
SURVEY BY:
SURVEY DATE:

ASSOCIATION OF CONSULTING ENGINEERS NEW ZEALAND

ISO 9001 QUALITY ASSURED

TAURANGA OFFICE
LEVEL 1 HARRISON GRIERSON HOUSE
141 CAMERON ROAD TAURANGA 3110
T +64 7 578 0023
W www.harrisongrierson.com

PROJECT: Summit
THE LAKES (2012) LTD, TAURANGA

TITLE: STAGE 3H
DRAINAGE DETAILS

ISSUE STATUS: CONSTRUCTION
PROJECT No: 1500-138804-01
SCALES: AS SHOWN
A1
DRAWING No: 138804-483
REV A

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance notes on the use of this form are available upon request)

ISSUED BY:. ***The Engineer Limited*** .....
(Design Firm)

TO: Paul Marsh .....
(Owner/Developer)

TO BE SUPPLIED TO: Tauranga City Council .....
(Building Consent Authority)

IN RESPECT OF: Design of timber pole retaining wall .....
(Description of Building Work)

AT: 16 Okataina St, The Lakes .....
(Address)

Tauranga..... **LOT 237**..... **DP 507200** ..... **SO** .....

We have been engaged by the owner/developer referred to above to provide **Structural Design** .....
..... services in respect of the requirements of
(Extent of Engagement)

Clause(s) **B1 Structure, B2 Durability** .....of the Building Code for

All ☒ or Part only ☐ (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☒ Compliance Documents issued by the Ministry of Business, Innovation & Employment **B1/VM1, B2/AS1** .....or
(verification method / acceptable solution)

☐ Alternative solution as per the attached schedule.....

The proposed building work covered by this producer statement is described on the drawings titled **Marsh**

16 Okataina St, The Lakes .....and numbered **18031944 (27/3/2018)**.....; together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:
(i) Site verification of the following design assumptions **foundation conditions** .....
(ii) All proprietary products meeting their performance specification requirements;

I **believe on reasonable grounds** that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:
☐CM1 ☐CM2 ☒CM3 ☐CM4 ☐CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)

I, ***Bruce Cameron***..... am: ☒CPEng ***173256*** .....#
(Name of Design Professional)

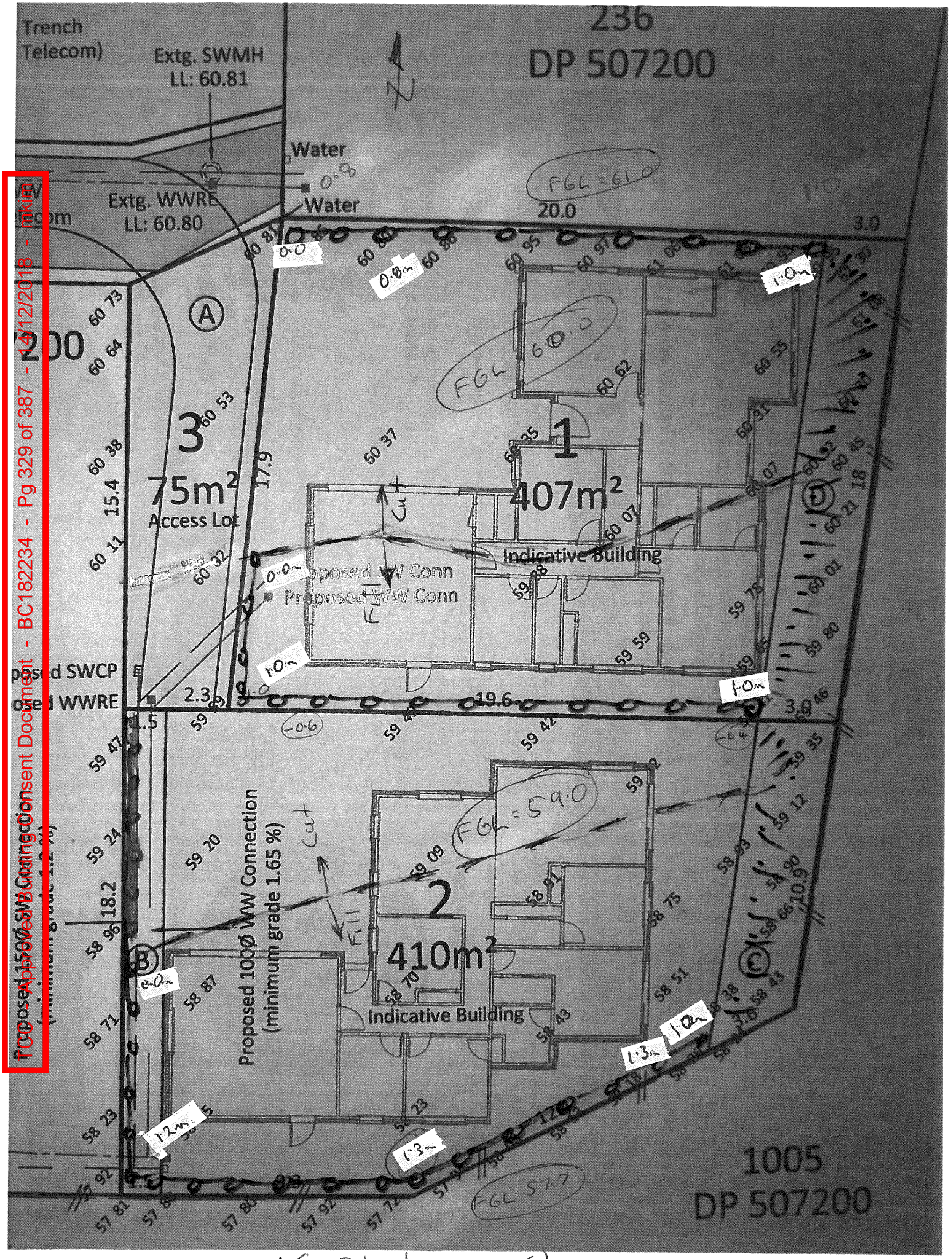
I hold the following qualifications: ***CPEng, BE, NZCE.*** The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.

SIGNED BY ***Bruce Cameron***..... ON BEHALF OF ***The Engineer Limited***.....
(Design Firm)

Date **27 March 2018** ..... (signature).....

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.



18031944

16 Okatana St.

27/3/18.

CANTILEVER TIMBER POLE RETAINING WALL DESIGN

Client: Marsh
Project: 16 Okataina Street, Lot 237 The Lakes

Project Number : 18031944
Wall Location : Subdivision Retaining

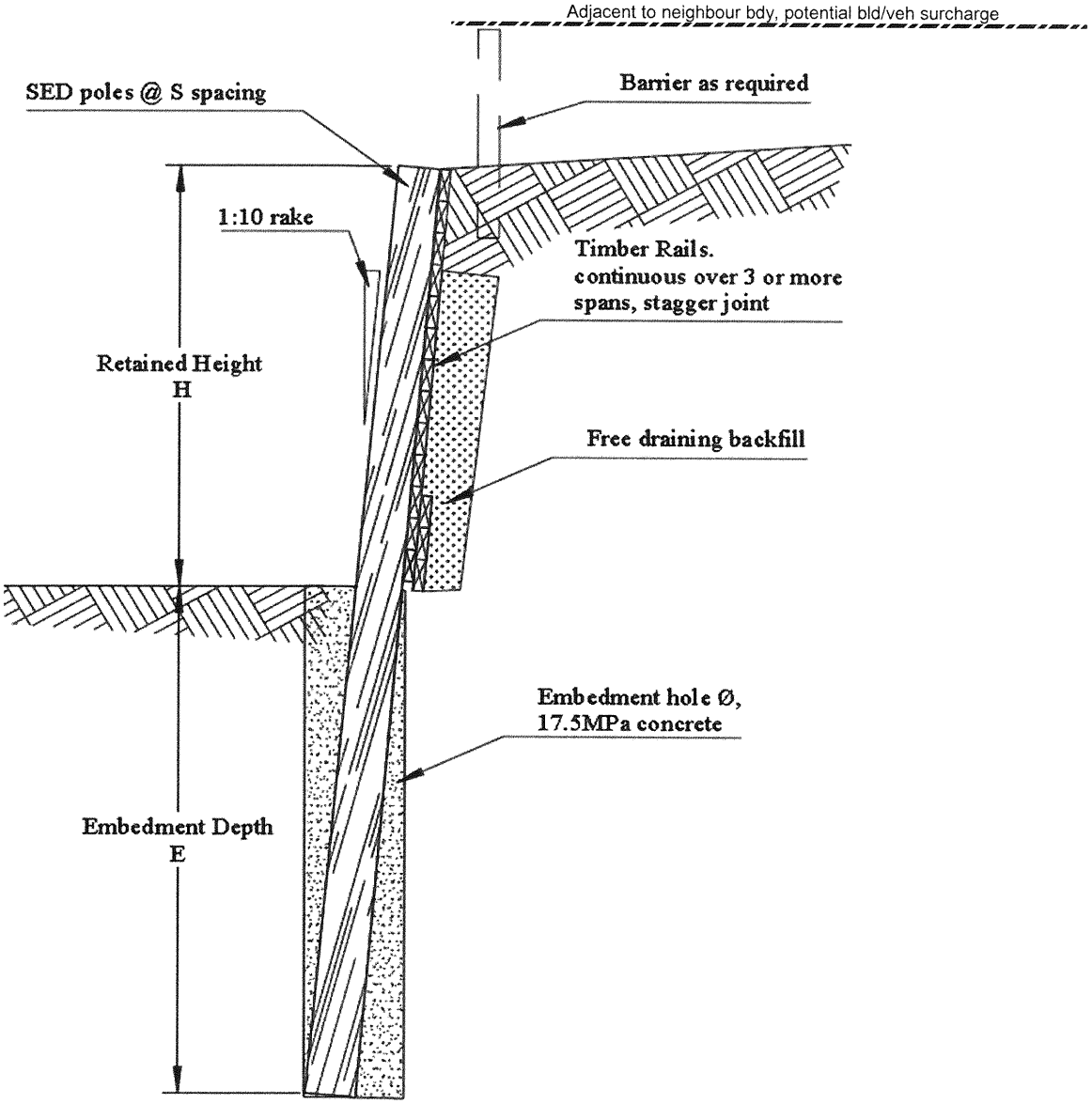
Retaining Wall Design Features Report / Construction Summary

Wall Height H m	Pole Spacing S m	SED Pole Size mm	Embedment hole size Ø mm	Embedment depth E m	Rail size and mm	Rail Layers #
0.50	1.2	175	350	0.9	150x50	1 layer
1.00	1.2	200	350	1.5	150x50	1 layer
1.50	1.2	225	400	2.1	150x50	1 layer

notes:

~ Construction to be in accordance with the Specification for Timber Retaining Walls, including cut timber treatment
~ Design assumes level firm ground at the base of the wall
~ Poles to be place with large end into embedment holes
~ Confirm site conditions match design assumptions
~ Timber Rails Grade = VSG8 or Grade 8
~ Timber Treatment; H4 Rails; H5 Poles
~ Design assumes cohesion less or sandy type soils, water level depth > E

0 ° backfill slope
5 kPa potential surcharage



CANTILEVER TIMBER POLE RETAINING WALL DESIGN

Client: Marsh
Project: 16 Okataina Street, Lot 237 The Lakes

Project Number : 18031944
Wall Location : Subdivision Retaining

Retaining Wall

Soil Type : Cohesion less
Validation : surrounding excavation experience, BH water table > +2m depth

H = Retained height (m)	*(Peak height)*	1.5	m
S = Pole spacing (m)		1.2	m
β = Wall slope (°)		0	°
ω = Backfill slope (°)		0	°
q = Surcharge (kPa)		5	kPa
ϒ = Soil Density (kN/m3)		16	kN/m3
Ø = Internal friction angle (°)		30	°
δ = Wall friction (allow $^{2}/_{3}$ * Ø) (°)		20	°

Adjacent to neighbour bdy, potential bld/veh surcharge

Ka = Active earth coefficient		**0.30**	
Ko = At rest earth coefficient		0.50	
Kp = Passive earth coefficient		~~**6.11**~~	**3.00**

ignore wall slope, ground backslope & wall fricton for foundation embendment design

Timber Pole Design

Timber Load Factors

G = 1.5 Q = 1.5 *Critical load case low (< 3m) routine retaining*

Timber pole properties

ø = Strength reduction factor	0.8	
k1 = Load duration factor	0.6	
K20 = Machine shaving / peeling	0.9	
K21 = Steaming factor	0.85	
fb = Bending strength (MPa)	38	MPa *(Density; med 38MPa, high 52MPa)*
t = Tapper rate (mm/m)	8	mm/m

Pole sizes (SED)

H (m) =	H + g_c =	Trial Dia (mm) =	øM =	@ H + g_c øM >= M*	M*
0.50	0.97	175	8.4	ok	2.3 kN/m
1.00	1.77	200	13.5	ok	8.1 kN/m
1.50	2.57	225	20.3	ok	17.4 kN/m

Ok if within 5%

Timber Rail Design

150 x 50 H4 rails over multiple spans

Timber rail properties

ø = Strength reduction factor	0.8	
k1 = Load duration factor	0.6	
k4 = Load sharing factor	1	*(assume 1.0 for conservative analysis)*
fb = Bending strength (MPa)	14	MPa *VSG8 or Grade 8*

NZS3603 s.2.1.3, dry

Rail Size width (mm)	50	mm *Single rail*
depth (mm)	150	mm
øM (kN/m) per rail =	2.8	kN/m

continious over multiple spans M*=ω*L^2/10

Trial depth (m) =	ω (kPa)	M* (kN/m) =	M* <= øM	øM (kN/m) =	
1.50	12.9	1.5	ok	2.8	*Ok depth per single rail layer*

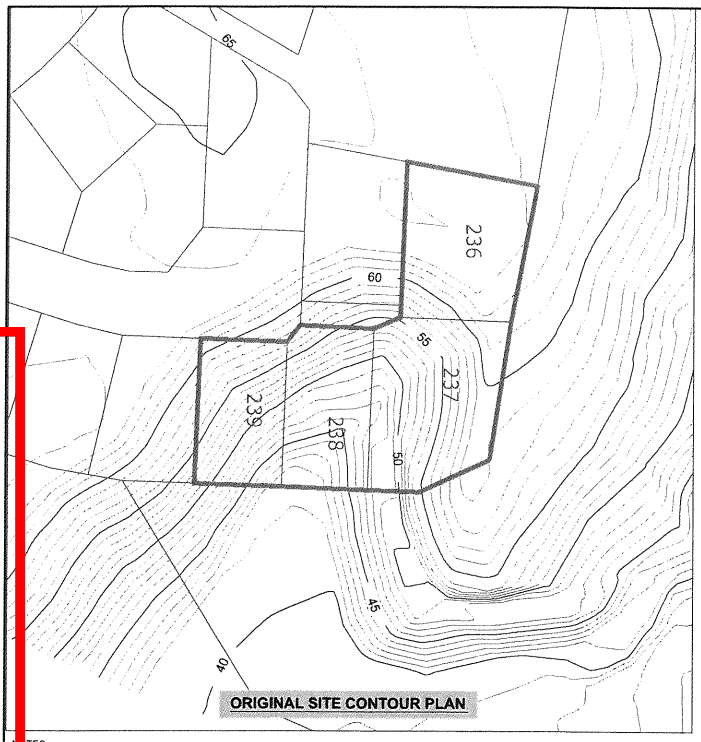
Pole Embedment Design

Drained (cohesion less / long term), Broms; short free head critical

Foundation Load Factor	1.5	AS/NZS 1170.0 2002 s.4.2.3(f)(ii)
s = Spacing factor (0.25 * $^{s}/_{D}$)		
D = Foundation hole dia (mm)		
ϕ Strength reduction factor	0.6	

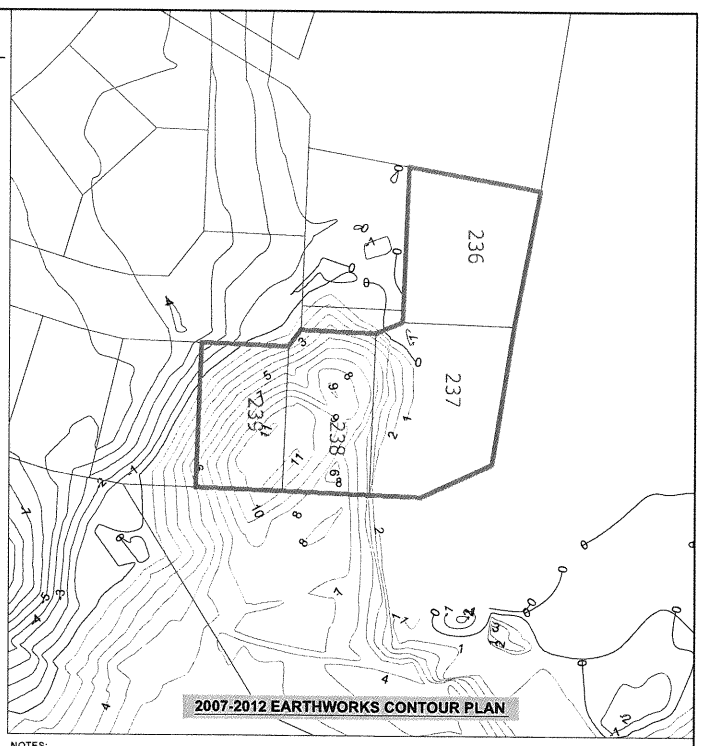
NZBC VM4 / SESOC Vol 10 No 2 Dec 1997 — 4.3.4 a) i) / 7.1(a) 16 — 4.3.4 a) i) / 7.1(a) 17

H (m) =	D (mm) =	Trial E (m) =	s =	f (m) =	Hu (kN) = Short	ϕ*s*Hu (kN) =	ϕ*s*Hu >= P*	P* (kN) =	g_c (m) =
0.50	350	0.9	0.86	0.21	5.5	2.8	ok	2.4	0.47
1.00	350	1.5	0.86	0.40	14.9	7.7	ok	7.0	0.77
1.50	400	2.1	0.75	0.57	33.3	15.0	ok	13.6	1.07



ORIGINAL SITE CONTOUR PLAN

NOTES:
1. Contour data of original pre-earthworks landform from Harrison Grierson Consultants Ltd, May 2007.
2. Contours shown at 1.0m intervals to Moturiki Datum.
3. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.



2007-2012 EARTHWORKS CONTOUR PLAN

NOTES:
1. Cut/Fill contours show difference between 2007 and March 2012 surveys. Provided by Harrison Grierson Consultants Ltd. Contours are at 1m intervals.
2. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.

LEGEND

EXTENT OF STAGES IN THIS GCR

CUT CONTOURS

FILL CONTOURS

rev	description	drawn	approved	date

Horizontal Scale (metres): 0 15.0 30.0 45.0

Vertical Scale (metres): 0 15.0 30.0 45.0

drawn	DBC
approved	RBT
date	17-2-2017
scale	1:750
original size	A3

coffey — A TETRA TECH COMPANY

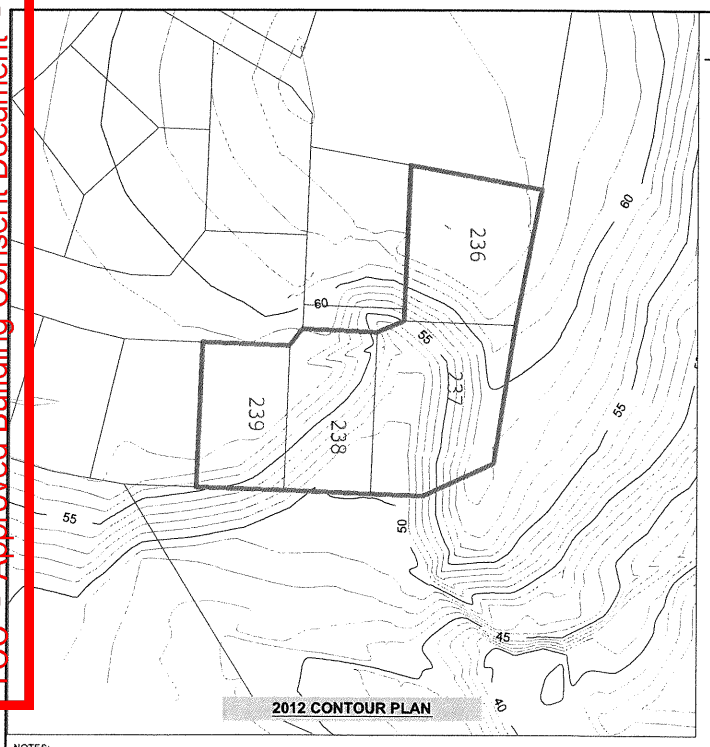
client: The Lakes (2012) Ltd

project: The Lakes - Lots 236 to 239 of Stage 3D Geotechnical Completion Report

title: Original Contour & 2007-2012 Earthworks Plan

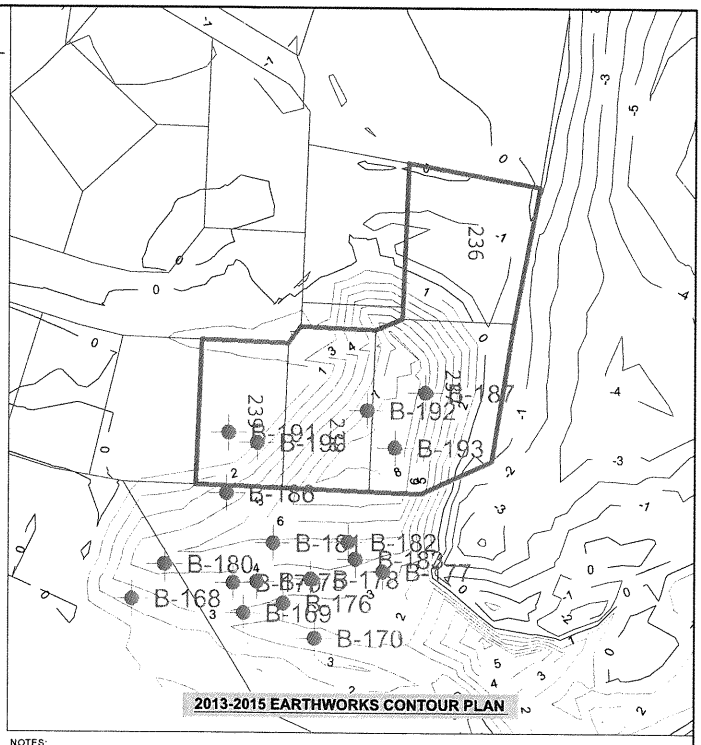
project no: 13086AP-AK | figure no: 4 | rev: -

16/08/2016F:\1 GENZ\1 GEOTECHNICS PROJECTS\13086AP THE LAKES STAGE 3 GCRS\6. DRAWINGS\CGL DRAWINGS\WORKING\STAGES 3GH & LOTS 236-239 (STAGE D) GCR\13086AP STAGE 3GH & LOTS 236-239 GCR 12-01-2017.DWG



2012 CONTOUR PLAN

NOTES:
1. Contour data of 2012 landform from Harrison Grierson Consultants Ltd.
2. Contours shown at 1.0m intervals to Moturiki Datum.
3. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.



2013-2015 EARTHWORKS CONTOUR PLAN

NOTES:
1. Cut/Fill contours show difference between 2012 and March 2016 surveys. Provided by Harrison Grierson Consultants Ltd. Contours are at 1m intervals.
2. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.

LEGEND

EXTENT OF STAGES IN THIS GCR

CUT CONTOURS

FILL CONTOURS

B-01 2014-2015 NDM TEST LOCATION (PASSED)

B-01 2014-2015 NDM TEST LOCATION (FAILED)

rev	description	drawn	approved	date

Horizontal Scale (metres): 0 15.0 30.0 45.0

Vertical Scale (metres): 0 15.0 30.0 45.0

drawn	DBC
approved	RBT
date	17-2-2017
scale	1:750
original size	A3

coffey — A TETRA TECH COMPANY

client: The Lakes (2012) Ltd

project: The Lakes - Lots 236 to 239 of Stage 3D Geotechnical Completion Report

title: 2012 Contour & 2013-2015 Earthworks Plan

project no: 13086AP-AK | figure no: 5 | rev: -

16/08/2016F:\1 GENZ\1 GEOTECHNICS PROJECTS\13086AP THE LAKES STAGE 3 GCRS\6. DRAWINGS\CGL DRAWINGS\WORKING\STAGES 3GH & LOTS 236-239 (STAGE D) GCR\13086AP STAGE 3GH & LOTS 236-239 GCR 12-01-2017.DWG

NOTES:
1. Cut/Fill contours show difference between 2012 and March 2016 surveys. Provided by Harrison Grierson Consultants Ltd. Contours are at 1m intervals.
2. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.
3. Settlement Monitoring Point locations provided by Harrison Grierson Consultants Ltd.

NOTES:
1. Contour data of March 2016 landform from Harrison Grierson Consultants Ltd.
2. Contours shown at 1.0m intervals to Moturiki Datum.
3. Lot layout and numbering from Harrison Grierson Consultants Ltd, November 2016.
4. Hand auger boreholes are numbered according to the relevant lot number.

LEGEND
- EXTENT OF STAGES IN THIS GCR
- SETTLEMENT MONITORING POINTS
- CUT CONTOURS
- FILL CONTOURS
- EXTENT OF 2m TOPSOIL PRELOAD
- BUILDING RESTRICTION LINE (BRL)
- HAND AUGER BOREHOLE LOCATIONS

rev	description	drawn	approved	date

Horizontal Scale (metres): 0, 15.0, 30.0, 45.0
Vertical Scale (metres): 0, 15.0, 30.0, 45.0

drawn	DBC
approved	RBT
date	17-2-2017
scale	1:750
original size	A3

coffey A TETRA TECH COMPANY

client: The Lakes (2012) Ltd
project: The Lakes - Lots 236 to 239 of Stage 3D Geotechnical Completion Report
title: Settlement Monitoring & 2016 Contour Plan
project no: 13086AP-AK figure no: 6 rev: -

16/01/2016 11 GENZ\1 GEOTECHNICS PROJECTS\13086AP THE LAKES STAGE 3 GCRS\6 DRAWINGS\GL DRAWINGS\WORKING\STAGES 3CH & LOTS 236 239 (STAGE D) GCR\13086AP STAGE 3GH & LOTS 236 239 GCR 12 01 2017 DWG

CDF_0_9_06_LIBRARY.GLB rev:AT Log COF BOREHOLE: NON CORED + DCP GCR HA - 09-03-2016 ODS.GPJ <<DrawingFile>> 10/01/2017 14:26

coffey A TETRA TECH COMPANY

Engineering Log - Hand Auger

client:	*The Lakes 2012 LTD*	Borehole ID.	*HAL237*
principal:	-	sheet:	1 of 1
project:	*The Lakes Stage 3 GCR*	project no.	*GENZTAUC13086AP*
location:	*Centre of Lot 237*	date started:	*16 Mar 2016*
		date completed:	*16 Mar 2016*
		logged by:	*ODS*
		checked by:	*RBT*

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90° | DCP id.:
drill model: Hand Auger | drilling fluid: | hole diameter : 50 mm | vane id.: 2244-02

method & support	water	samples & field tests	depth (m)	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	structure and additional observations
HA, N	Not Encountered		0.0	SILT: low plasticity, brown mottled pink, white and orange, with minor fine grained sand, trace fine to medium grained angular gravel.	D	MD	TOPSOIL
				SILTY SAND: fine to coarse grained, brown with mottled pink brown, with trace fine to medium gravel.			FILL
			0.7	0.7 m: becoming mottled dark brown			
		VS >183 kPa		SILT: non plastic, orange brown, with some fine to medium sand.	D to M	VSt	
		VS >183 kPa	1.0	1.0 m: sand becomes trace and plasticity becomes low			
		VS >183 kPa	1.25	1.25 m: becoming mottled pink			
		VS >183 kPa		SILT: low plasticity, orange brown, with trace fine sand.			
		VS >183 kPa	1.85	1.85 m: becoming mottled pale pink and dark brown			
			2.0	Hand Auger HA3D-237 terminated at 2.0 m Target depth			

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger
* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

SPECIFICATION FOR TIMBER RETAINING WALLS:

EARTHWORKS

Excavation is to be done as close to the time constructing the retaining wall as possible. Any subsidence and damage that may result is the responsibility of the contractor.

If batters need to be exposed, temporary propping may need to be considered. Plastic covers over exposed ground will minimise surface washout during rain.

Extra care should be taken with excavations greater than 1.8m in height or closer than 1.2m to a boundary. If necessary, the excavations should be staged to reduce the length of unsupported ground.

The excavations for posts shall be made by mechanical auger. The engineer shall inspect the holes prior to concrete encasement.

TIMBER

Poles shall comply with NZS 3605 *Timber piles and poles for use in building*. The poles shall be tanalised to at least 16 kg/m3 ie H5 or better.

Poles are described by their small end diameter (SED) with an average taper of 8mm per metre length. Poles shall be identified with their hazard class stamp on the butt end. Normally poles are placed SED upwards when concrete encased and SED downwards when driven.

Poles shall be handled carefully. Any damaged poles may be rejected.

Any rebates or bored holes shall be treated with painted tantalised, ensele, pentachlorophenol or tanalith are approved. Any such areas shall not be placed in ground contact.

Timber rails shall be rough sawn Grade 8 or VSG8, tanalised to l2 kg/m3 ie H4 or better. They shall span over at least three poles, and joints shall be staggered.

Rails shall be nailed to the rear of the poles with 100mm by 4mm galvanised flat head nails.

The wall may be constructed vertically, or with a backwards rake of up to 1 in 10.

For walls in excess of 1.8m in height, visible outward deflections may occur after or during backfilling. A minimum back slope of 50mm over the out of ground height is recommended for walls between 1.8m and 2.4m in height, and 100mm for walls between 2.4m and 3.3m.

CONCRETE

Concrete for pole encasement shall be ordinary grade concrete with a minimum 28 day strength of l7.5MPa.

The Engineer Limited
PO Box 16264
Tauranga3147

Phone: 027 419 2568

Site mixed concrete shall consist of a 6:1 ratio of builders mix to cement. The minimum amount of water shall be added to allow placement.

Concrete encasement shall be well vibrated or rodded to ensure the poles are fully encased.

The poles are to be braced prior to placing the concrete, and for at least 48 hours after concrete placement.

BACKFILLING

If shown on drawings a 100mm Novaflow drain shall be placed at the base of the rear of the wall, its invert at least 100mm below ground level at the front of the wall. Otherwise gaps or weep holes will be required to let water seep through the wall.

The pipe shall have a minimum fall of 1 in 100, and shall outlet where possible into a sealed stormwater system or suitable outlet point. The pipe shall be encased all round with no fines drainage metal, which is to be fully wrapped in BIDIM A29 or equivalent filter cloth where indicated.

The retaining wall is to be backfilled and moderately compacted.

Selected granular material free of clay is to be used (eg roading aggregate, sand, drainage metal). Care must be taken to not over compact and deflect the wall. If the ground immediately above the wall is not to be paved, the top 200mm shall consist of 100mm topsoil on 100mm of clay.

For walls retaining fill material, drainage blankets are permissible against the wall. Drainage material or sand is still required in the base 1 metre of wall. Backfill above this may be free draining silt or sand, but not clay. This material shall be lightly compacted only. Machine compaction of backfill shall be kept outside the 45 degree line from the base of the wall.

OTHER

The building code requires a safety fence when the vertical fall height exceeds 1 metre. It is the owner's responsibility to ensure such a fence is constructed, or alternatively to ensure that pedestrian access is prevented to above the wall (in cases where that is the practical option).

Retaining wall construction including drainage backfill shall be entirely with the subject property.

CHS ENGINEERS LTD
19 Willow St, PO Box 1029,
Tauranga, 3110

11 December 2018

Ref: 062/18

Simon Fitzpatrick
Simon.fitzpatrick@tauranga.govt.nz

RE: 16 & 18 OKATAINA STREET, TAURANGA

As requested, we have undertaken a review of the retaining walls constructed on 16 and 18 Okataina Street. These walls were constructed as part of the subdivision of 16 Okataina Street into 2 separate lots – lot 1 is 18 Okataina Street, on the north side of the site, and lot 2 is 16 Okataina Street, on the south side of the site.

During the course of the subdivision, 3 retaining walls were constructed across the lots;

- Bottom wall on the south side of 16 Okataina Street. This wall retains up to 1.5m.
- Middle wall on the south side of lot 1, between lots 1 and 2. This wall retains up to 1.1m
- Upper wall, on the north side of lot 1. This wall retains up to 1.3m and supports the neighbours property (11 Okataina Street).

Building consent applications have been submitted for dwellings on both of the above properties and the council had asked for details of these walls. The wall design that has been submitted to the council appears to be a design by The Engineer Ltd, dated 27/03/2018. This is a design for timber pole walls up to 1.5m high supporting a 5kPa surcharge. Also submitted is a PS4 from The Engineer Ltd, dated 5 June 2018, along with some site notes, indicating that the pole wall foundations were inspected on the 9/5/2018.

The Tauranga City Council are not accepting Producer Statements from Bruce Cameron (The Engineer Ltd) and we have been asked to review the designs.
Our check on the design of the wall, indicates that the wall is adequate to support the retained height of soil, as well as a 5.0kPa surcharge.

16 OKATAINA STREET (LOT 2)

1. The retaining wall (bottom) is along the south boundary and retains up to 1.5m.
2. The retaining wall heights (and consequently the fill depths) exceeds the limits set in the geotechnical report (Coffey geotechnical report for The Lakes Stages 3G and 3H and Lots 239-239 (Stage 3D), section 8.2.3). As the height is over 1.0m, a TCC Category 1 or 2 geo-professional was required to approve this.
3. Some of the pole diameters do not meet the design – for walls over 1.0m high, the SED should be 225mm whereas a significant number of the poles are 200-210 SED. However, our design check indicates that the “as-built” size is adequate.
4. Fill has been placed over the Building Restriction Line along the east side of the property, which contravenes the Coffey geotechnical report for The Lakes Stages 3G and 3H and Lots 239-239 (Stage 3D). Section 8.3.2 does not allow any filling over the BRL.

5. The building consent application for lot 2 (16 Okataina Street), shows that 2 corners of the proposed dwelling is approx. 0.9m off the bottom retaining wall. In our opinion, this is sufficient separation to assume that the dwelling does not surcharge the retaining wall and there are no other obvious significant potential surcharges on this wall. Therefore this wall can be deemed to be exempt building works under section 20 of schedule 1 on the NZ Building Act.
6. We have not verified the hole diameters or depths. Because this wall is not surcharged, the footings have been inspected by an engineer and the wall did not require a building consent, we believe, on reasonable grounds, that this wall is adequate.
7. There is currently up to 700mm of pumice sand fill in front of this bottom retaining wall, between the wall and the boundary fence. This will need to be removed as it appears that the fence may be retaining this material.

18 OKATAINA STREET (LOT 1)

There are 2 walls on this lot ; the middle wall, between lots 1 and 2 that retains up to 1.1m and the upper wall which retains up to 1.3m.

Middle Wall

1. Some of the middle wall heights exceed the 1.0m noted in section 8.2.3 of the geotech report. However, the height difference is minimal and. At least some if not all, of the ground has been cut, so the fill is less than 1.0m, negating the reason for the height restriction.
2. The pole diameters meet the requirements of the design submitted.
3. The building consent application for lot 1 (18 Okataina Street), shows that the proposed dwelling is approx. 0.8m off the middle retaining wall. As long as the proposed dwelling does not surcharge this wall, the wall can be deemed to be exempt building works under section 20 of schedule 1 on the NZ Building Act. With a minimum of 0.8m separation, it is our opinion that the dwelling does not surcharge the retaining wall.
4. This wall does extend over the Building Restriction Line, but the ground has been cut, and not filled, and therefore the requirement of 8.3.2 has been negated.
5. We have not verified the hole diameters or depths. Because this wall is not surcharged, the footings have been inspected by an engineer and the wall did not require a building consent, we believe, on reasonable grounds, that this wall is adequate.

Upper Wall

1. This wall is up to 1.3m high and retains the neighbours property (11 Okataina Street). The accessway onto this lot directs future traffic to the ground behind this wall and it is probable that the ground behind the wall will form part of the driveway to the future dwelling. Because this wall supports a neighbours property and a potential driveway surcharge, the wall should have had a building consent.
2. The pole diameters do not meet the design – for walls over 1.0m high, the SED should be 225mm whereas the poles are 200 SED.
3. This wall does extend over the Building Restriction Line, but the ground has been cut, not filled and therefore the requirement of 8.3.2 has been negated.

4. We have not verified the hole diameters or depths. However, the designBecause this wall is not surcharged, the footings have been inspected by an engineer and the wall did not require a building consent, we believe, on reasonable grounds, that this wall is adequate.

SUMMARY

- There are some issues of non-compliance with the original geotechnical report for the bottom wall on 16 Okataina Street (wall height and fill over the BRL).
- From a building consent perspective, the bottom wall and the middle wall did not require building consents as they fall within the scope of Schedule 1 of the NZ Building Act, as long as they are not surcharged by the dwellings.
- Not withstanding the requirement for a building consent, the walls need to comply NZBC and it appears, on reasonable grounds, that the bottom and middle walls do comply, although we have not been able to verify the pole footing diameters or the pole embedments.
- The proposed dwellings should not surcharge these walls. This can be achieved by either distance from the wall or deeper foundations.
- The upper wall (on 18 Okataina Street) should have had a building consent because it supports a neighbours property and the wall will probably be subject to a surcharge (from vehicles). The design of the wall is adequate for a 5.0kPa surcharge but we have not been able to verify the pole footing diameters or the pole embedments.

Yours faithfully,

G.B. Cox

Chartered Professional Engineer
BE(Civil), CPEng, CMEngNZ
Director – CHS Engineers Ltd.

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Tauranga
3110 New Zealand

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coffey.com

9 February 2019

Our ref: 773-TRGGE226846

Venture Developments Limited
Unit 1, 16 Ashley Place
Papamoa Beach, Papamoa 3118

Attention: Jarod Thorpe

Report of Geotechnical Plan Review
Proposed Residence at 16 Okataina, The Lakes, Tauriko, Tauranga

1. Introduction

It is proposed to construct a single-storey residence at the property located at 16 Okataina Street in The Lakes subdivision, Tauriko and legally described as Lot 2 DP 514907. As requested, Coffey Services (NZ) Limited (Coffey) has conducted a geotechnical review of residential design plans and supporting documentation for the proposed development.

This work has been completed in accordance with the short-form agreement[1] signed on 4 February 2019. This report is intended to be submitted in support of a Building Consent application with Tauranga City Council (TCC) and to address issues raised by TCC in relation to earthworks undertaken prior to building consent application.

2. Background Information

In conducting this geotechnical plan review, information from the following sources was reviewed:

- Development drawings by Huis Design Limited (Huis), dated 28/9/2018, Reference WD-A, Job 18062;
- Geotechnical Completion Report, The Lakes – Stages 3G, 3H & Lots 236-239 (Stage D), by Coffey Services (NZ) Limited, dated 17 February 2017, Reference GENZTAUC13086AP-AK;
- *Proposed Subdivision of Lot 237 DP 507200, 16 Okataina Street*, by S&L Consultants Limited (S&L), Revision 2, dated 06/17, Drawing No. 21809-RC1;
- *Asbuilt Plan, 16 Okataina Street, The Lakes*, by S&L Consultants Limited, Revision 1, dated 06/18, Drawing No. 21809-AB01;
- Asbuilt wall heights by S&L Consultants Limited, unnamed, undated.

[1] *"Short Form Agreement for Consultant Engagement",* ref: P226846, signed 4 February 2019.

- *Producer Statement – PS4 – Construction Review, Timber pole retaining wall construction and investigation and certification, 16 Okataina Street*, by The Engineer Limited, dated 5 June 2018;
- *Producer Statement – PS4 – Construction Review, Building foundation ground preparation construction investigation and certification, 16 Okataina Street*, by The Engineer Limited, dated 5 June 2018;
- Email correspondence from TCC, by Simon Fitzpatrick, dated 10 January 2019;
-

2.1. Proposed Development

The client has applied for building consent with Tauranga City Council based on the development plans by Huis. The plans depict a single-storey residence supported at-grade by a Firth rib-raft foundation. Stormwater runoff from roof and hardstand is shown to be directed to an existing stormwater reticulation connection at the southwest corner of the property. The plans show the proposed residence to be located at least 1m from an existing retaining wall (See Section 2.3) along the southern property boundary.

2.2. Subdivision Earthworks

The subject property has undergone extensive earthworks as part of the development of Stage 3D of The Lakes subdivision. The property was formed when previous Lot 237 was further subdivided into two parcels. The property is located on the southern half of previous Lot 237. See attached subdivision plan by S&L.

Earth works on Lot 237 comprised up to 14m of engineered filling in what was referred to as the Southern Gully. See photo 1 below. Earthworks were largely complete by 2015 when the Geotechnical Completion Report was issued for Stage 3D; however, on-going monitoring indicated that the Southern Gully fill was continuing to undergo settlement and Lot 237 was excluded from the GCR. At this time a 2m high surcharge was placed across several lots, including Lot 237, to hasten the settlement process. See photo 2 below.

By 2017, monitoring indicated that settlement of the Southern Gully fill was within tolerable limits, and a GCR was issued covering Lot 237 (dated 17/2/2017). In the GCR, it was recommended that additional filling during lot development be restricted to a maximum depth of 1m to reduce possible future settlement. A building restriction line (BRL) was placed parallel to the eastern property boundary to prevent building or fill surcharges from destabilising the slope below which had been engineered with a 2.5H:1V batter. No BRL was placed along the southern boundary as this slope had been engineered with a 3H:1V batter.

Photo 1: Aerial photo 18 February 2015

Photo 2: Aerial photo 6 March 2016

2.3. Unconsented Earthworks

Sometime after completion of subdivision earthworks (after February 2017 based on aerial photos), additional earthworks were carried out on the subject property on behalf of a previous owner. The additional earthworks comprised construction of a timber retaining wall and creation of a level building platform with cut and fill. See photos 3 and 4 below. A building consent was not obtained; however, these earthworks were documented by The Engineer Limited in two Producer Statements. See attached.

Photo 3: Aerial photo 5 February 2017

Photo 4: Aerial photo 9 April 2018

According the Producer Statements, the site was stripped, and fill placed such that the site could be considered "good ground" in terms of NZS3604 3.1.3. A comparison of the spot elevations shown on the subdivision plan by S&L to the development plans by Huis, indicates that approximately 0.5m of material was cut from the northern portion of the site and up to about 1m of fill was placed behind the retaining wall at the southern portion of the site. The retaining wall and fill extend beyond the BRL at the eastern property boundary, with fill and wall heights decreasing from a maximum of approximately 0.6m at the BRL down to 0m within a few metres of the property boundary.

2.4. Building Consent Application

Based on unconsented works taking place on the property, TCC has issued a hold on the building consent as allowed for under Section 37 of the Resource Management Act 1991 (as amended) pending a request for further information. Specifically, in the provided email correspondence dated 10 January, TCC has requested the following in relation to the proposed development:

1. *Have the fill over the BRL assessed by a Cat 1 Geo-Professional. Carry out any remedial works that this may require.*
2. *Have the areas of fill exceeding 1.0m, assessed by a Cat 1 Geo-Professional.*
3. *Have the retaining wall assessed by a Cat 1 Geo-Professional.*
4. *Ensure the dwelling is no closer to the top of the wall than the walls height at that location.*
5. *Remove the up to 0.7m of pumice sand fill from against the noise wall.*

3. Site Observations

Coffey visited the site on 23 January to meet the client and observe site conditions. During the site visit, the constructed building platform, slopes to the south and east, and retaining walls along the southern and northern property boundaries were observed. See Photos 5 and 6 below. Along the eastern property boundary, the landform appears to be relatively unaltered. Although there is evidence of ground disturbance, it does not appear that the ground surface has been elevated with fill within 1 to 2 metres of the eastern property boundary. See Photos 7 and 8.

Photo 5: Site facing south

Photo 6: Site facing west

Photo 7: Eastern slope facing south

Photo8: BRL and eastern slope facing south

During the site visit, fill material was observed between the southern retaining wall and the privacy fence. This material had evidently collected as a result of erosion of fill from the building platform. The client had excavated a small pit which indicated the depth of this material was on the order of 0.5m. See photos 9 and 10 below. The fill material does not appear to have left the property. See photos 11 and 12. The client advised that this material would be removed from between the retaining wall and fence.

Photo 9:

Photo 10:

Photo 11: Southern slope facing southwest

Photo 12: Site facing west-southwest

4. Geotechnical Review

For this geotechnical review, Coffey was only provided with PS4 Construction Review documentation. No design documents, calculations or Design Producer Statements (PS1) have been sighted by Coffey for work carried out after completion of subdivision earthworks.

4.1. Fill Depth

A review of the available PS4 producer statements for the wall and fill, survey information from S&L, and Coffey's own observations indicate that the unconsented wall height and post-subdivision fill depths appear not to exceed 1m. Based on the GCR for the subdivision which allow for up to 1m of fill and the preload that had been place on the site prior to issuance of the GCR, Coffey considers that the depth of fill placed meets the GCR depth requirement. The quality of this fill is unknown and undocumented and Coffey does not provide comment on the quality of the fill or compactive effort. The fill depth and quality should be confirmed during the building construction phase.

4.2. BRL Encroachment

Based on review of available information and Coffey's own site observations, it appears that minor fill has been placed across the BRL, increasing from 0m to 0.6m at the BRL and only in the south eastern corner of the property. A review of previous stability analyses indicates that this amount of fill would not significantly increase the risk of instability along the eastern slope.

4.3. Existing Retaining wall

4.3.1. Foundation Loads

It is unknown if the retaining wall allowed for a surcharge load in its design. Although maintaining a setback distance from the top of the wall (measured from the retained side of the top plank) equal to the height of the wall should be sufficient so that the wall is mostly out of the 45-degree zone of influence of the building foundation loads, wall stability is still an integral part of the support of the building. Although the building may not increase the load on the wall or otherwise decrease the stability of the wall, excessive movement of the wall or wall failure by other means could have a destabilizing effect on the building foundations.

Were the wall to be absent, the granular subgrade soils would typically be battered at a 3H:1V slope to maintain stability with a setback distance imposed from the top of the slope for foundations. In other words, for the stability of a foundation to be independent of the stability of the retaining wall below, the setback would need to be greater than the height of the wall.

4.3.2. Wall Drainage

The wall does not appear to be designed to withstand hydrostatic pressure as evidenced by a design note stating that the water level depth is assumed to be greater than the embedment depth. Therefore, the design likely relies on good drainage behind the wall to alleviate hydrostatic pressure.

Although filter fabric was observed during Coffey's site visit attached to the back of the top plank of the wall, the plans attached to the PS4 do not show filter fabric. Therefore, it is assumed that the granular backfill material is not encased within filter fabric. It is Coffey's opinion that granular backfill without filter fabric may lose its free-draining capacity over time as fine particles migrate into the material and clog pore spaces. This may lead to a progressive wall failure due to build-up of hydrostatic pressure during times of rainfall and perched water table conditions.

Additionally, it appears to be assumed that any water that enters the granular backfill would be allowed to escape through the face of the wall between planks. This may not be a reliable assumption if spaces close due to swelling when planks become wet.

Therefore, it is recommended that remedial measures be undertaken to ensure adequate drainage behind the wall. See Section 5.1 for remedial recommendations.

5. Recommendations

5.1. Existing Retaining Wall

A failure of the southern wall may result in a loss of support to foundation subgrade soils. Although the building foundations are located a sufficient distance to minimise loading on the wall, a wall failure could still adversely impact the building foundations. Therefore, Coffey recommends that edge foundations within 2m of the retaining wall and parallel to the retaining wall be deepened to a minimum 400mm below finished grade.

Coffey also recommends improving the robustness of the wall drainage to decrease the risk of wall failure due to hydrostatic pressure. Several suitable drainage options are presented below:

- Install a 110mm perforated draincoil ('Novaflo' or similar) within bottom 1/3 of base of the wall surrounded by free draining material wrapped in Strength Class B geotextile below 300mm (min.) topsoil cap. Draincoil is to be directed to an appropriate stormwater outlet. Drainage material is to be 300mm thick as measured from back of wall; or,
- Install drainage mat ('Cirtex Secudrain' or similar) behind the wall beginning beneath 300mm topsoil cap, extending to within bottom 1/3 of base of the wall and wrapped around 110mm draincoil ('Novaflo' or similar). Draincoil is to be directed to an appropriate stormwater outlet; or,

Install drainage mat ('Cirtex Secudrain' or similar) behind the wall beginning beneath 300mm topsoil cap, extending to the base of the wall, and tucked under the lowest retaining wall rail to allow seepage out of the face of the wall.

5.2. Existing Filling

Although the fill depths, as reported, appear to be acceptable in terms of site stability and in accordance with the recommendations in the GCR, it is recommended that confirmatory testing be carried out during construction. In particular, it is recommended that a minimum of two boreholes are carried out to depths of 2m to confirm that the site had been adequately stripped prior to fill placement. Additionally, testing of the fill should be conducted such that each fill lift is tested and show adequate material quality, strength and relative compaction test results.

6. Conclusion

An assessment of the impact of the quantity of filling over the BRL has been carried out. Based on Coffey's site observations, assessment and the provided documentation, it appears that this filling is unlikely to significantly decrease the stability of the eastern slope. Based on Coffey's observations of the site in its current state and the previous surcharging of the site, it is unlikely that the approximately 1m of fill placed in the southern portion of the property would significantly decrease the stability of the site or cause excessive settlement.

Based on a qualitative assessment of the features of the retaining wall that are easily visible and the provided documentation, it is Coffey's opinion that remedial works are required. It is recommended that building foundations near the retaining wall be deepened and that additional drainage be installed behind the wall as described in Section 5.1 during construction. It is also recommended that confirmatory testing of fill depth and quality be carried out during construction. It is Coffey's understanding that the fill between the retaining wall and noise wall along the southern boundary will be removed.

The conclusions and recommendations presented in this report are based on previous assessments carried out by Coffey for Stage 3D of The Lakes subdivision and Coffey's recent observations, assessments and review of the information provided. Based upon this review and upon satisfactory completion of the remedial works and confirmatory testing recommended in this report, it is Coffey's opinion that the unconsented earthworks carried out to date do not increase the risk of natural hazards of a geotechnical nature in terms of Section 106 of the Resource Management Act 1991 (as amended) or Section 71 of the Building Act 2004.

7. Limitations

While this letter presents a summary of the geotechnical conditions for this area it does not provide a complete discussion of geotechnical issues affecting the Lakes Stage 3D area or previous earthworks undertaken on the site. It is therefore recommended that designers working on the new lots are also familiar with the contents of the original Stage 3D GCR.

This letter has been prepared solely for the use of our client, 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 owners of this property should seek professional geotechnical advice to satisfy themselves as to its on-going suitability for their intended use.

Please do not hesitate to contact the undersigned if you require any further information.

Regards,

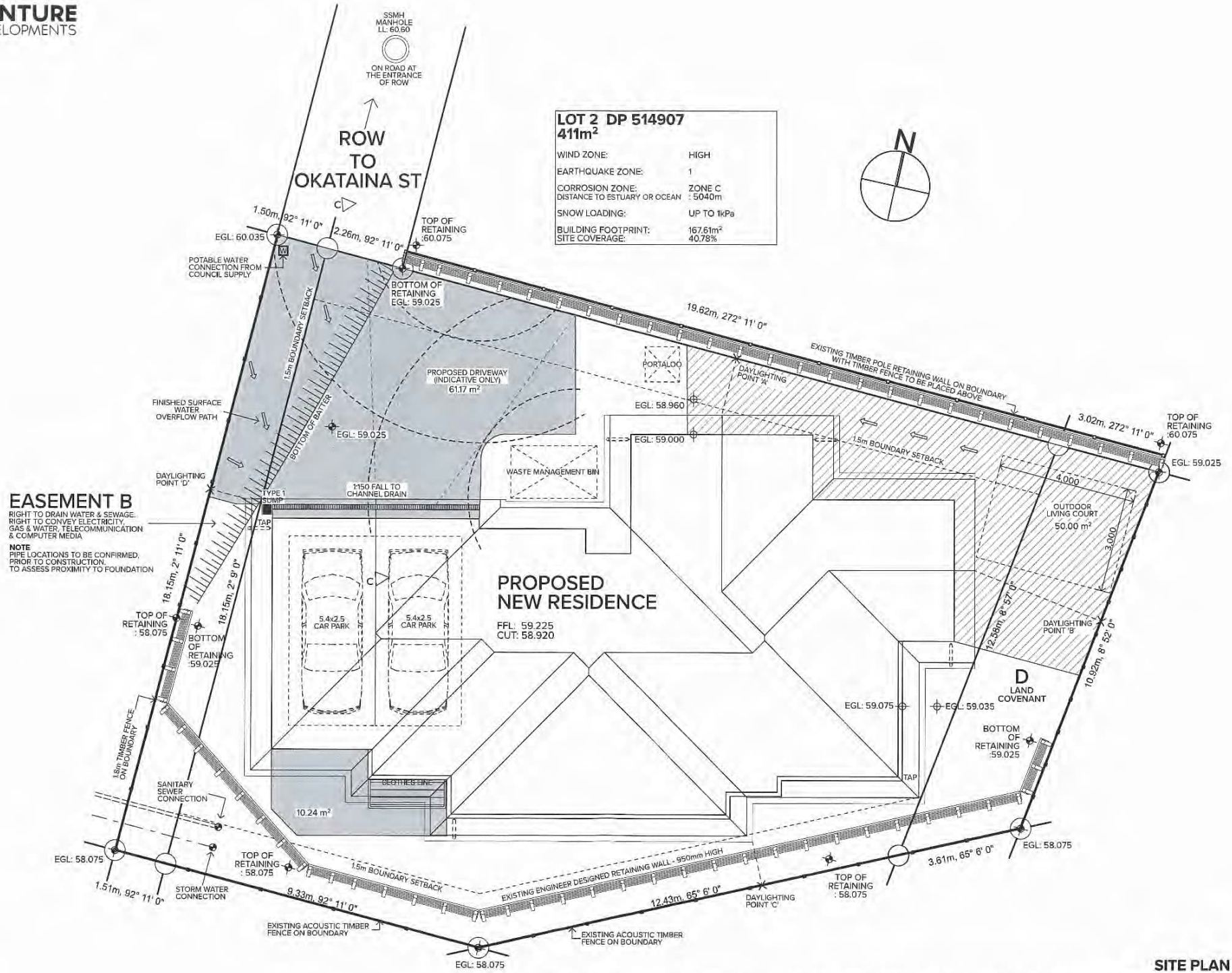
Lowry Shuler
Senior Geotechnical Engineer
CPEng No. 1029886
TCC Category 2 Geotechnical Engineer

David Sullivan
Principal Geotechnical Engineer
CPEng No. 1025183
TCC Category 1 Geotechnical Engineer

Attachments:

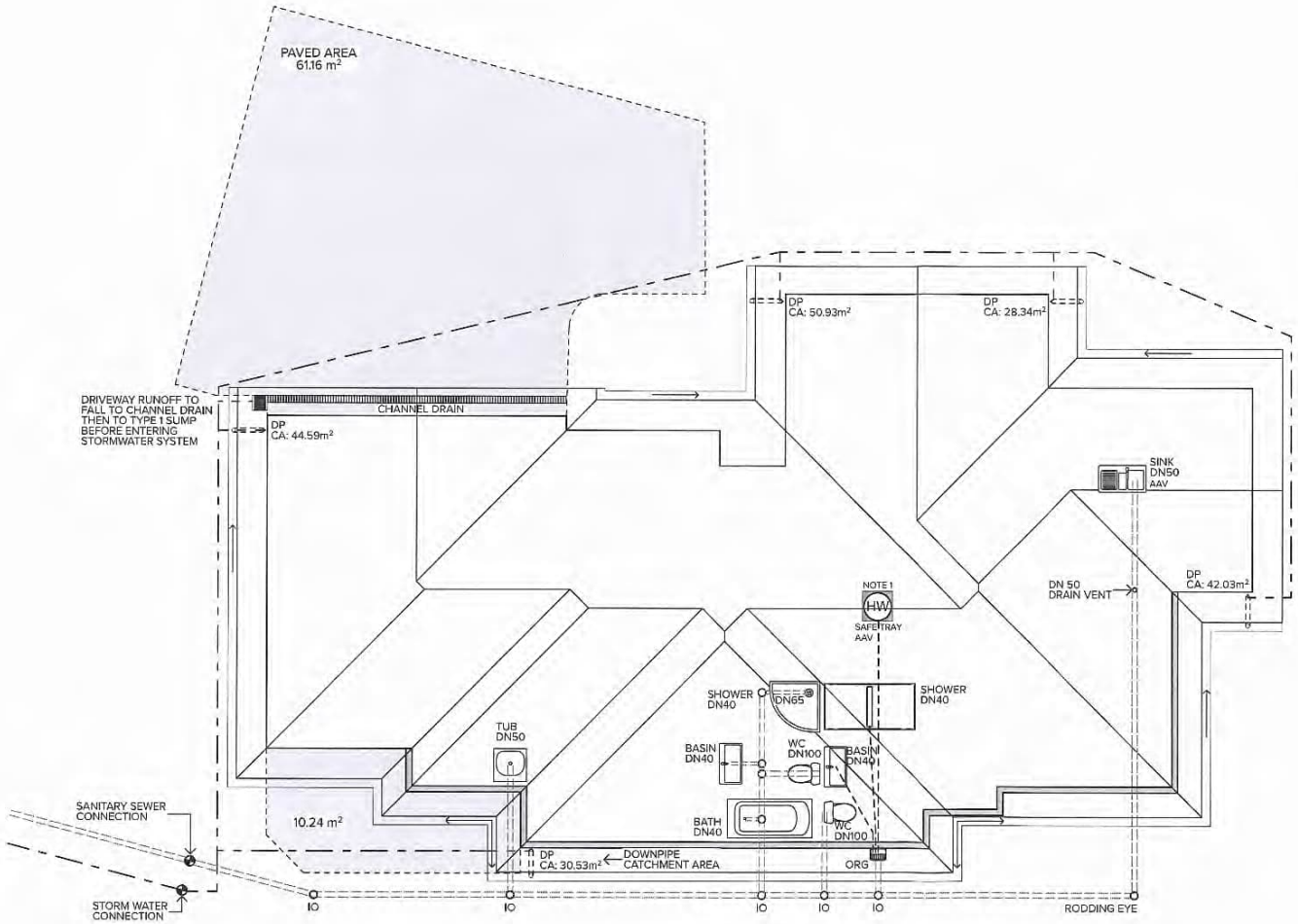
Development drawings by Huis Design Limited
Geotechnical Completion Report, The Lakes – Stages 3G, 3H & Lots 236-239 (Stage D)
Proposed Subdivision of Lot 237 DP 507200, 16 Okataina Street, by S&L
Asbuilt Plan, 16 Okataina Street, The Lakes, by S&L
Asbuilt wall heights by S&L
Producer Statement – PS4 – Construction Review, Timber pole retaining wall
Producer Statement – PS4 – Construction Review, Building foundation ground preparation
Email correspondence from TCC

VENTURE DEVELOPMENTS



SITE PLAN 1:100

VENTURE DEVELOPMENTS



ROOF 1
A: 196.59 m²

PIPE SIZES AND GRADIENTS **AS/NZS3500**

FIXTURES DISCHARGING TO DISCHARGE GULLIES

	PIPE SIZE	GRADE
BASIN	DN 40	1:40
SHOWER	DN 40	1:40
KITCHEN SINK	DN 50	1:40

FIXTURES DISCHARGING TO DISCHARGE UN-VENTED BRANCH DRAIN

	PIPE SIZE	GRADE
BATH	DN 40*	1:40
BASIN	DN 40*	1:40
SHOWER	DN 40*	1:40
KITCHEN SINK	DN 50	1:40
LAUNDRY TUB + WM	DN 50*	1:40
WATER CLOSET	DN 100	1:60

VENT SIZES	**PIPE SIZE**	**GRADE**
DRAIN VENT	DN 50	N/A

SANITARY DRAINAGE	**PIPE SIZE**	**GRADE**
MAIN DRAIN	DN 100	1:60
BRANCH DRAIN	DN 100	1:60
BRANCH DRAIN	DN 65	1:40

STORMWATER DRAINAGE	**PIPE SIZE**	**GRADE**
STORMWATER LINES	100 Ø	1:120
DOWNPIPES	80 Ø	N/A

* = DISCHARGE PIPE DISCHARGES TO UN-VENTED DN65 BRANCH DRAIN AT FLOOR LEVEL

SANITARY SEWER PLUMBING AND DRAINAGE TO AS/NZS 3500.2.
STORMWATER DRAINAGE TO NZBC E1/AS1.
PIPE SIZES, GRADES, AND LAYOUT, TO BE CONFIRMED BY A REGISTERED PLUMBER/DRAIN LAYER.

GUTTER CAPACITY
Calculation to NZ metal roof and wall cladding code of practice, Roof drainage 8 V:2.2 Page 258

Roof pitch: 10°-25° (Factor 1.1)
Rainfall intensity: 126mm/hr (Factor 1.26)
Roof area: 46.75m²

Factorised Catchment Area
46.75m² x 1.1 = 51.425m²

Calculation: 51.425 x 1.26 x 1.1 = **71.275m²**

External Gutter Area = 100mm² x 71.275m² = 7128mm²
Cross-sectional Gutter area required = **7128mm²**
Use S&T Customline Gutter with Cross-sectional area of 7163mm²

NOTE 1

COLD WATER TO DISCHARGE TO MAIN LINE VIA 40mm PVC PIPE. PRESSURE RELIEF VALVE DRAIN TO DISCHARGE TO UNPAVED GROUND VIA 20mm COPPER PIPE

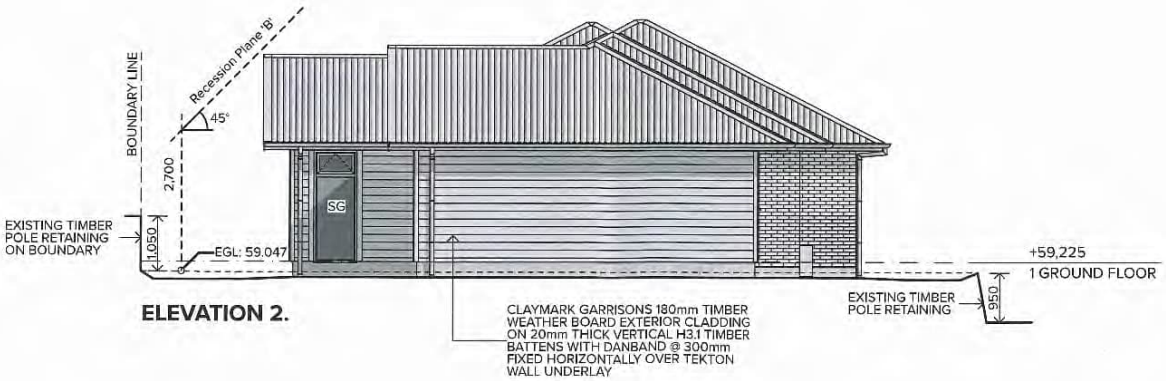
huisdesign

DRAINAGE PLAN 1:100

VENTURE
DEVELOPMENTS

ELEVATION 1.

BUILDING ENVELOPE RISK MATRIX APPLIES TO ALL ELEVATIONS		
Risk Factor	**Risk Severity**	**Risk Score**
Wind zone (per NZS 3604)	High risk	1
Number of storeys	Low risk	0
Roof/wall intersection design	Medium risk	1
Eaves width	Low	0
Envelope complexity	Low	0
Deck design	Low risk	0
Total Risk Score:		**2**



ELEVATION 2.

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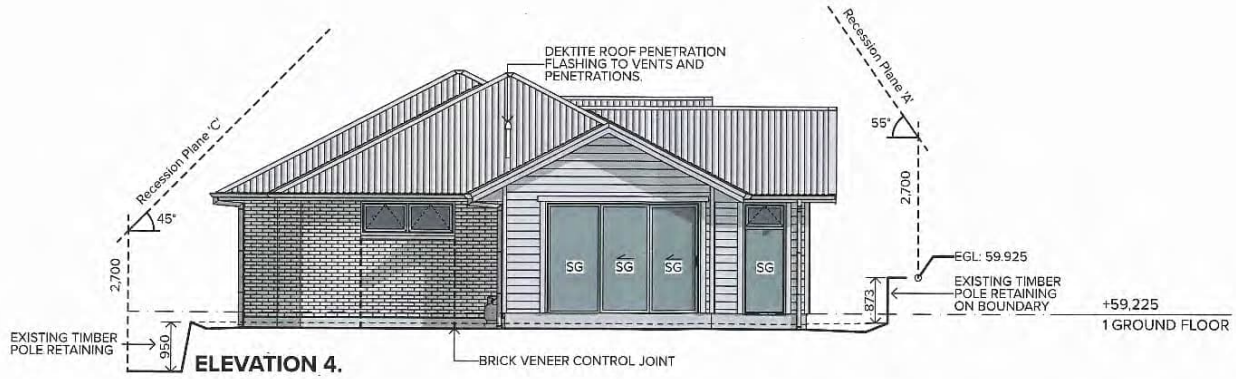
ELEVATIONS 1:100

VENTURE
DEVELOPMENTS

ELEVATION 3.



ELEVATION 4.

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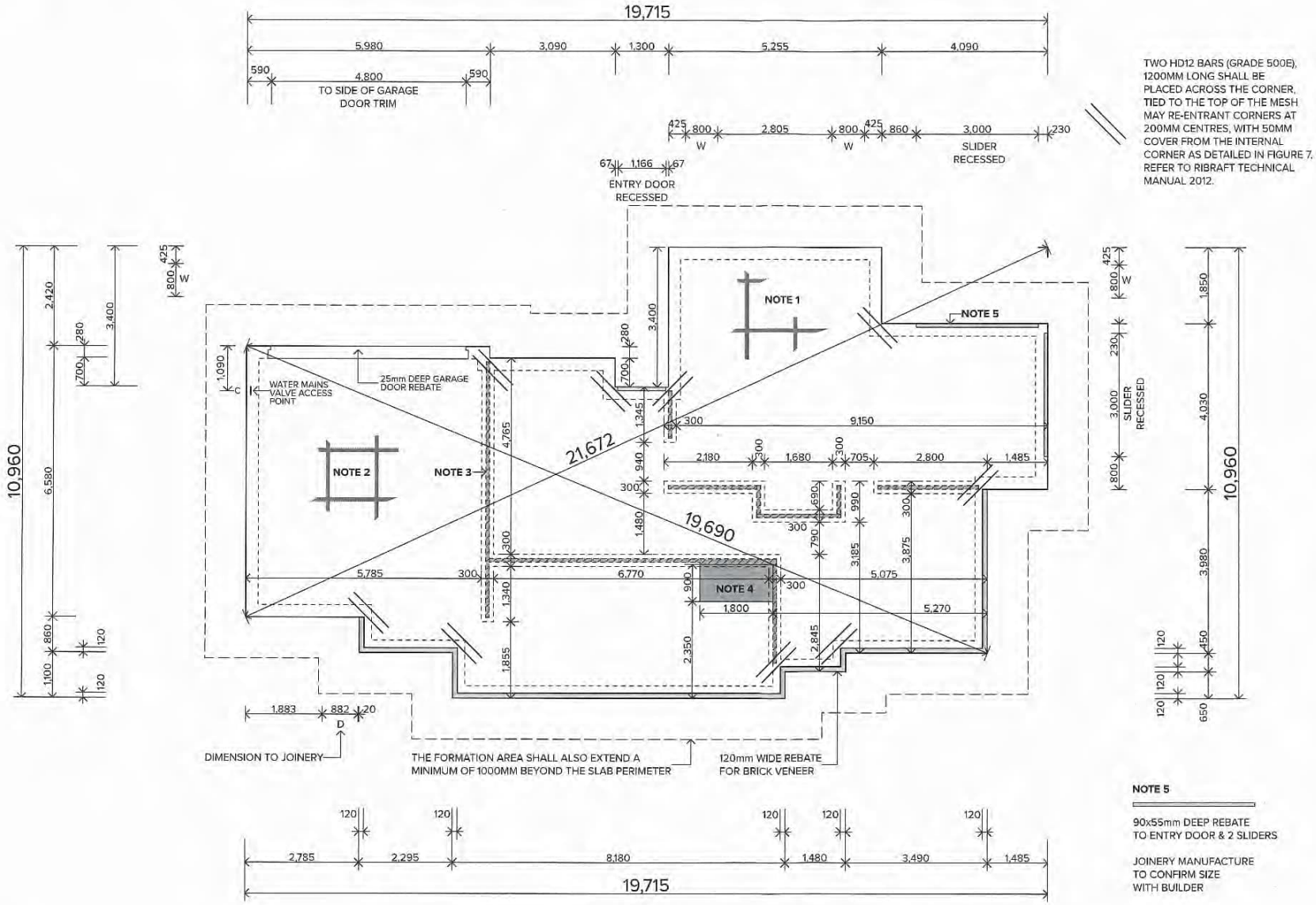
ELEVATIONS 1:100

VENTURE DEVELOPMENTS



TWO HD12 BARS (GRADE 500E), 1200MM LONG SHALL BE PLACED ACROSS THE CORNER, TIED TO THE TOP OF THE MESH MAY RE-ENTRANT CORNERS AT 200MM CENTRES, WITH 50MM COVER FROM THE INTERNAL CORNER AS DETAILED IN FIGURE 7. REFER TO RIBRAFT TECHNICAL MANUAL 2012.

NOTE 5

90x55mm DEEP REBATE TO ENTRY DOOR & 2 SLIDERS

JOINERY MANUFACTURE TO CONFIRM SIZE WITH BUILDER

FOUNDATION NOTES

PLAN TO BE READ IN CONJUNCTION WITH FIRTH RIBRAFT TECHNICAL MANUAL

FOUNDATION DESIGNED BASED ON 'BUILDING FOUNDATION GROUND PREPARATION CONSTRUCTION INVESTIGATION & CERTIFICATION' - PS4 THE ENGINEER LIMITED DATED: 5 JUNE 2018

ALSO REFER TO THE GEOTECHNICAL COMPLETION REPORT THE LAKES - STAGE 3G, 3H & LOT 236-239 (STAGE D) DATED: 17 FEBUARY 2017 REF: GENZTAUC13086AP-AK LOT 2 WAS ORIGINALLY APART OF LOT 237 BEFORE IT WAS SUBDIVIDED

IF BUILDER FINDS THIS INCORRECT WHILE EXCAVATING HE IS TO MAKE CONTACT WITH THE DESIGN LBP IMMEDIATELY.

ENTIRE FLOOR SLAB SHALL BE 20mPa CONCRETE WITH, REINFORCED WITH REINFORCING SEISMIC MESH SE62 500E 2.0 X 4.5 CVR 7.5SQM SUPPORTED ON 40MM MESH CHAIRS SITTING ON THE POLYSTYRENE PODS. REFER TO FIRTH RIBRAFT TECHNICAL MANUAL

LOCATION OF SERVICES IN RIBRAFT FOUNDATION TO BE LOCATED AS PER FIGURE 12 & 13 OF THE FIRTH RIBRAFT TECHNICAL JAN 2012

PERIMETER
A: 160.95 m²

NOTE 1
85MM THICK 20mPa FIRTH RIBRAFT MIX CONCRETE SLAB REINFORCED WITH REINFORCING SEISMIC MESH SE62 500E 2.0 X 4.5 CVR 7.5SQM OR EQUIVALENT ON 2/40MM CHAIRS PER POD

NOTE 2
1100mm SQ. POLYSTYRENE PODS 220mm THICK, REFER TO RIBRAFT MANUAL FOR LAYOUT

NOTE 3
LOAD BEARING WALLS, REFER TO FLOOR PLAN FOR POSITION, INTERNAL LOAD BEARING RIBRAFT RIB UNDER

NOTE 4
50mm RECESSED SLAB FOR TILED SHOWER

huisdesign

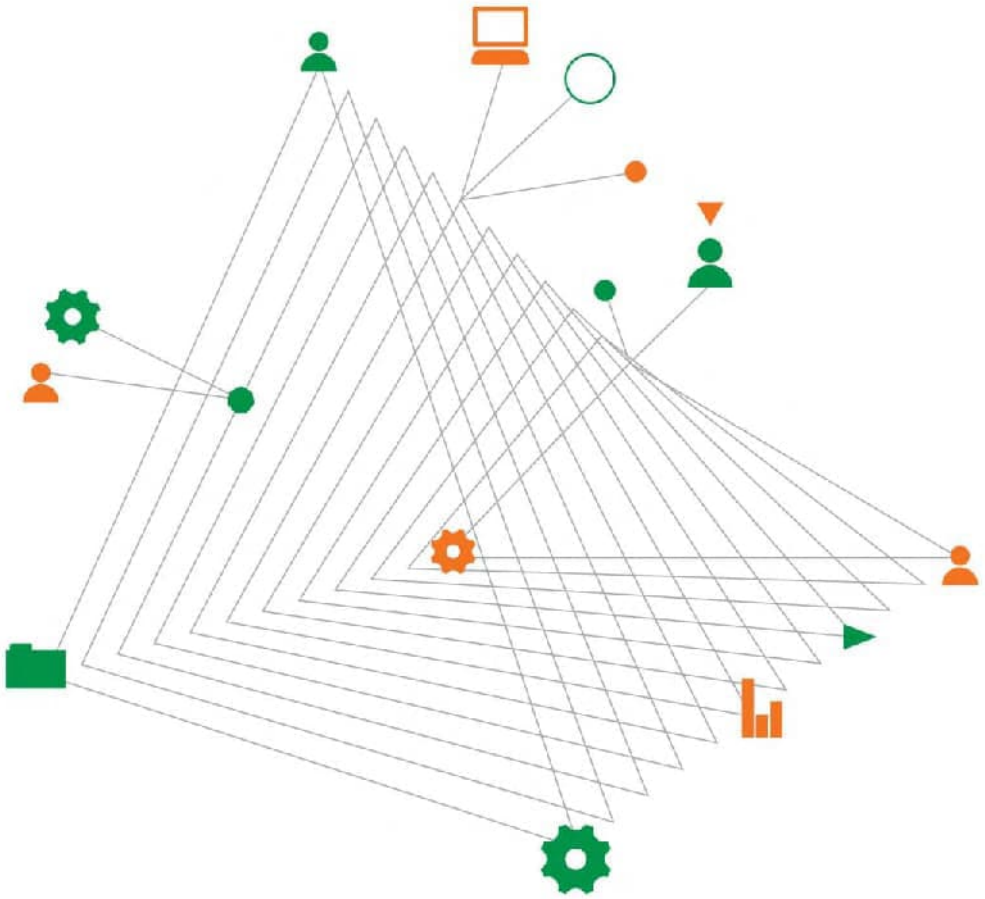
FOUNDATION PLAN 1:100

The Lakes (2012) Ltd

The Lakes - Stages 3G, 3H & Lots 236-239 (Stage D)

Geotechnical Completion Report

17 February 2017



Experience comes to life when it is powered by expertise

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The Lakes - Stages 3G, 3H & Lots 236-239 (Stage D)

Prepared for
The Lakes (2012) Ltd
C/- Harrison Grierson Consultants Ltd
PO Box 13 025
Tauranga 3141
Tauranga

Prepared by
Coffey Services (NZ) Ltd
96 Cameron Road, Tauranga
Tauranga Central 3110 New Zealand
t: +64 7 577 42866081

17 February 2017

Document authorisation

Our ref: GENZTAUC13086AP-AK

For and on behalf of Coffey

David Cullen
Engineering Geologist

Quality information

Revision history

Revision	Description	Date	Author	Reviewer	Signatory
Draft	Draft for review	23 Jan 2017	D Cullen	D Sullivan	D Cullen
Final	Final for issue	17 Feb 2017	D Cullen	D Sullivan	D Cullen

Distribution

Report Status	No. of copies	Format	Distributed to	Date
Final	1	PDF	The Lakes (2012) Ltd	17 Feb 2017
Final	1	PDF	Harrison Grierson Consultants Ltd	17 Feb 2017
Final	2	Hardcopy	Tauranga City Council	17 Feb 2017

Table of contents

Appendices

1. INTRODUCTION AND SCOPE

This Geotechnical Completion Report (GCR) has been prepared by Coffey Services (NZ) Ltd (Coffey) for the Lakes (2012) Limited following completion of earthworks for Stage 3G, Stage 3H (collectively known as 3GH) and Lots 236 to 239 within Stage D of the Lakes Subdivision and in general accordance with the conditions of Council resource consent number RC21332.

This GCR contains the results of site investigations together with as-built plans derived from Harrison Grierson Consultants Ltd (HGCL) topographical data. It describes bulk earthworks completed during the 2007-2008, 2013-2014 and 2014-2015 earthworks seasons.

The extent of earthworks observed by Coffey is shown on the appended plans (Figures 1 to 6, Appendix A). A Statement of Professional Opinion (Form G2) and Summary of Technical Data (Form G3) for the works described herein are also appended.

2. DESCRIPTION OF SUBDIVISION

Stages 3GH and Lots 236 to 239 within Stage D of the Lakes subdivision are located near the intersection of Pyes Pa Road and Takitimu Drive (State Highway SH26) in Pyes Pa, Tauranga. The site location and original ground contours are shown on Figures 1 (Stage 3GH) and 4 (Lots 236 to 239) in Appendix A. Stage 3G, Stage 3H and Lots 236 to 239 consists a total of 80, 11 and 4 lots respectively.

Before earthworks began, the majority of Stage 3G consisted of a flat or gently rolling north-south oriented plateau at approximately RL 55-65m (Moturiki Datum, 1953). During the 2013-2014 earthworks season, filling was placed over the northern portion of Stage 3G. The following 2014-2015 earthworks season, excavation of the elevated plateau was undertaken in the southeast of Stage 3G and additional filling was placed in the north and eastern extent. Combined cut/fill contours of the works completed are shown on Figure 2.

Stage H comprised a sloping terrace on the edge of the plateau before earthworks proceeded, dipping from approximately RL 59m in the western extents to approximately RL 49m in the east. During the 2014 to 2015 earthworks season, filling commenced over much of Stage 3H, with the exception of minor cut in the north-western and south-western extents.

Lots 236 to 239 within Stage 3D originally comprised of steeply sloping ground over much of the lots, dipping in a southeast and western direction where a deeply incised gully extended into the lots. Earthworks commenced in this area with the placement of fill over Lots 237 to 239 during the 2007 to 2008 earthworks season, followed by unsupervised filling thereafter, likely between 2010 and 2012 and discussed later in this report. Cut/fill contours are shown on Figure 4. The 2012 ground surface is shown on Figure 5. Further earthworks were completed during the 2014-2015 work season, with cut/fill contours for the 2014-2015 earthworks also shown on Figure 5.

Construction of a cantilever timber pole retaining wall was completed in 2017 adjacent to the northern perimeter of Stage 3G. Additionally in 2016, a stormwater pipe was thrust beneath the slope to the east of Stage 3H to an outlet structure above the stream in the valley below. The location of the stormwater pipe and indicative location of the retaining wall is shown on Figure 3.

Civil infrastructure for these stages and lots of the subdivision was installed in 2015 and 2016. The finished ground surface is shown on Figures 3 and 6.

3. RELATED REPORTS

The following documents were prepared prior to or during the design and development of Stages 3G, 3H & Lots 236-239 (Stage D):

1. *'Pyes Pa West Urbanisation Development, Tauranga – Geotechnical Assessment Report'*, report prepared by S&L Consultants Ltd (Ref: 16944, dated October 2003).
2. *'Geotechnical Investigation Report for the Lakes Subdivision – Stage 3 (Phase 1) at Pyes Pa, Tauranga',* report prepared by Coffey (Ref: GENZTAUC13086AF-AA, dated 29 April 2013).
3. *'Geotechnical Investigation Report for the Lakes Subdivision – Stage 3 Zone 2 at Pyes Pa, Tauranga',* report prepared by Coffey (Ref: GENZTAUC13086AK-AC, dated 7 April 2014).
4. *'The Lakes Subdivision Stage 3 Zone 1 Earthworks Completion Report'*, report prepared by Coffey (Ref: GENZTAUC13086AF-AE, dated 15 August 2014).
5. *'The Lakes Stage 3 - Zone 3, Geotechnical Investigation Report (Addendum 1)',* report prepared by Coffey (Ref: GENZTAUC13086AQ-AB, dated 10 July 2015).
6. *'Building Restriction Lines above Western Slope and Collector Road, The Lakes Subdivision Stage 3 – Zone 2'*, memo prepared by Coffey (Ref: GENZTAUC13086AQ-AC, dated 25 August 2015).
7. *'Retaining Wall Design Report for Stage 3G The Lakes, The Lakes Subdivision, Tauriko'*, report prepared by Coffey (Ref: GENZTAUC13086AB-AB, dated 16 June 2016).

Key conclusions of the main documents are summarised below.

3.1. Geotechnical Assessments

The original geotechnical assessment for the Lakes subdivision was completed by S&L Consultants Ltd and contained an overview of geotechnical conditions for the entire Lakes project. The report concluded that the site was generally adequate for subdivision and residential development, subject to appropriate design and construction.

Subsequent geotechnical investigation reports by Coffey in April 2013 and April 2014 summarised additional investigations that were completed to specifically assess the Stage 3 area. These investigations generally confirmed the S&L conclusion that the site was adequate for subdivision.

3.2. Earthworks Completion Report

The August 2014 Earthworks Completion Report (ECR) concluded that the bulk earthworks undertaken in 2007-2008 and 2013-2014 were generally completed in accordance with the relevant standards and guidelines including NZS 4431 (Code of Practice for Earth Fill for Residential Development) and the Tauranga City Council Infrastructure Development Code (TCC IDC). The report did however identify several areas that needed to be re-visited in this GCR. These were:

1. Some of the fill materials placed towards the end of the 2013-2014 season did not pass the required Nuclear Density Meter (NDM) tests. The failed tests were attributed to the highly variable source materials being used (silts, sands and clays) which resulted in fills that could not be easily assessed with a NDM. It was therefore decided that the affected fill would be re-tested using hand-auger boreholes with undrained shear strength measurements and/or Dynamic Cone Penetrometer (DCP) testing as appropriate for the individual soils.
2. The ECR also commented on the presence of undocumented filling that was encountered during excavations in 2013 within lots 238 & 239 and elsewhere within the Lakes development. This filling is understood to have been placed between 2010 and 2012, when

works on site were not closely managed by either Grasshopper Farms Ltd or The Lakes (2012) Ltd.

3. Finally, the ECR recommended that the stability of the eastern slope should be reassessed in the GCR and an appropriate Building Restriction Line (BRL) be defined for lots along the crest of this slope.

These issues are addressed in the following sections of this report.

The ECR also referred to the presence of subsurface erosion features ('tomos') found in other stages of the Lakes Subdivision, indicating soils below the plateau may be subject to erosion and scouring. While 'tomos' have not been observed within these subject Stages and Lots, it is possible erosional features may be encountered during construction on these lots.

4. INVESTIGATIONS COMPLETED

Geotechnical investigations have been undertaken on this and adjacent sites during each stage of the Lakes subdivision's design and construction. The investigations used for this report are listed below. Logs of each investigation are included in Appendix C.

- Three test pits excavated in 2012 within or near Stage 3G to maximum depths of up to 5m to assess shallow ground conditions before the 2013-2014 work season (Coffey, TP07–TP09 on Figure 1);
- One Cone Penetrometer Test (CPT) to a depth of approximately 13 meters below the existing ground level using a truck mounted rig supplied by Geotech Drilling Limited (Coffey, CPT314 on Figure 1);
- One machine borehole drilled to a depth of approximately 20.0m. Standard Penetration Tests (SPT) were carried out at 1.5m intervals (Coffey, MH301 on Figure 1);
- Two flight-auger machine boreholes drilled to a maximum depth of 20.0m within Stage 3H. SPT tests were conducted at specific depths within these boreholes to provide strength estimates and relatively undisturbed samples of key lithologies encountered (Coffey, CFA04 & CFA05 on Figure 1).

On completion of the bulk earthworks in 2016, Coffey drilled a total of 50 hand-auger boreholes to target depths of 2m or 2.5m (and in some cases, up to 5m depth) on approximately every second lot to confirm finished subgrade conditions. The location of each borehole is shown on Figures 3 & 6. Although labels are not shown on the plan, the boreholes are numbered according to the relevant lot number. For example, the hand auger borehole on Lot 413 in Stage 3G is referred to as HAL413. Logs of these boreholes are included in Appendix D.

5. OVERVIEW OF GEOLOGICAL CONDITIONS

The subject areas of Stage 3G and Lots 236 to 239 within Stage 3D are located on an elevated, gently sloping plateau. Below the topsoil layer, the pre-development soil profile across this plateau comprised of volcanic ashes including the Hamilton Ash and Rotoehu Ash. This ash sequence is common throughout the Tauranga area. At this location the volcanic ashes overlie ancient alluvial deposits of the Matua Sub-Group and weakly cemented pumice sands of the Te Ranga Ignimbrite.

Stage 3H is located on a gently to moderately sloping terrace formed from ancient alluvial deposits of the Matua Subgroup.

Excavations during the 2013-2015 period reduced the thickness of the volcanic ashes across the southeast of the Stage 3G plateau by up to 7m. The subsoils below many of the finished lots therefore

comprise volcanic ash silts but in some areas excavations have penetrated through the ash layers and the finished lots are underlain by variable Matua Sub-Group soils. These include silts, sands and clays which can be highly sensitive to reworking. Areas underlain by fill are discussed in Section 6.2.

6. EARTHWORKS OPERATIONS

6.1. Plant

Earthworks during the 2007-2008 season were completed by Bob Hicks Earthmovers Ltd. The contractor for the 2013-2014 and 2014-2015 seasons was JMC Civil Construction Ltd.

The main items of plant used during each of the bulk earthworks phase comprised Terex motor-scrapers and bulldozer or tractor towed 'scoops', hydraulic excavators, bulldozers, articulated all-terrain dump trucks (ADT's) and sheep's-foot rollers.

6.2. Construction Programme

6.2.1. 2007 – 2012

Under ownership of Grasshopper Farms Ltd, earthworks during this period included excavations of up to 1m depth over Lot 237 (Stage D) as shown on Figure 4. Filling took place over Lots 237 to 239 (Stage D), however as cut & fill contours for this period are not available, fill contours were calculated by HGCL (Harrison Grierson Consultants Ltd) by subtracting the original ground surface (surveyed in 2007) from a survey completed by HGCL in 2012. This resulted in indicated fill depths of up to 11m across the lots.

Excavations in the filling in Lots 237 to 239 encountered soils that consisted of highly sensitive silts and clays with a relatively high moisture content and low undrained shear strength. Based on a series of unlogged test pits within the fill, it was considered that the non-engineered filling could remain in place provided that later fill in these areas was placed appropriately and that static settlements were monitored and reviewed prior to issue of the GCR. This later filling is discussed in more detail below.

No cut or fill took place over Stages 3GH during 2007 to 2012.

6.2.2. 2013 – 2014 & 2014 – 2015 Earthworks Seasons

In 2012 ownership of the Lakes subdivision passed from Grasshopper Farms Ltd to The Lakes (2012) Ltd. During this period the remaining earthworks were completed to form the current ground surface. Earthworks during the 2013-14 and 2014-15 summers included excavations of up to 7m depth on the main plateau of Stage 3G and 1m cuts in the north and south of Stage 3H, as shown on Figure 2.

Excavated material was used for filling up to approximately 2m deep in the northern portion of Stage 3G during both summer periods, and up to 4m deep along the eastern boundary of Stage 3G and over much of Stage 3H during the 2014-15 season.

Further cut and fill was undertaken over Lots 236 to 239 of Stage D. Lot 236 and 237 underwent cut of up to 1m and all of the lots had fill placed to varying depths, with filling of up to 8m deep in places as shown on Figure 5.

7. QUALITY CONTROL

7.1. Site Preparation Observations

During 2013-2014 and 2014-2015, Coffey undertook regular observations of fill areas to ensure topsoil, vegetation or unsuitable materials had been removed before filling.

7.2. Fill Control

As mentioned previously, filling placed over Lots 237 to 239 of Stage 3D during 2007-2012 was not tested or certified by Coffey and no other records or test results have been located.

For Stages 3GH and Lots 236 to 239 of Stage 3D in the 2013-2014 and 2014-2015 seasons, Nuclear Density Meter (NDM), laboratory moisture content and undrained shear strength tests were carried out by Geotechnics & Fulton Hogan on behalf of JMC Limited. The locations of the tests completed are shown on Figure 2 and 5.

In cases where of the above tests recorded low undrained shear strengths, retests were undertaken to assess the ground conditions and fill strength, either as additional NDM tests or subsequent hand-auger boreholes in close proximity to the original test.

7.2.1. Compaction Control Criteria

The compaction control criteria for this project were specified using the 'minimum allowable shear strength and maximum allowable air voids' method as defined below:

- Air voids percentage (defined in NZS 4402:1986 and as measured by NDM) targeting an average value less than 10% over any 10 consecutive tests and maximum single value no greater than 12%.
- Undrained shear strength measured by hand held shear vane calibrated using the NZGS 2001 method. A single undrained shear strength 'test' was defined as the average of four individual shear vane readings at each NDM location. The target test values were an average value greater than 150kPa and minimum single value no less than 140kPa.

The hand-auger boreholes drilled to re-test filling used field shear vane measurements with the same target result as above.

7.2.2. Test Results

Summary tables showing the results of the laboratory fill tests for bulk earthworks at Stages 3G, 3H & Lots 236-239 (Stage D) are included in Appendix E and the locations of the tests are shown on Figures 2 and 5. The majority of tests met or exceeded the compaction control criteria given above. Failed tests are shown in red on the relevant figures.

Three tests during the 2013-2014 season did not meet the required values, with test numbers A-05, A-12, and A-41 being deemed to have failed due to low undrained shear strength readings. The fill surrounding these tests were either reworked or retested with hand-auger boreholes at a later date (passing thereafter), indicating the failed result was either due to an incorrect test value or an isolated pocket of filling.

During the 2014-2005 season, three tests being B-01, B-05 and B-13 initially failed due to low undrained shear strength readings but were retested and subsequently passed. As these tests were superseded by later testing, the tests are not showing as failed results on the site plan.

Two further tests, B-08 and B-09, failed due to low undrained shear strength readings and were retested with hand-auger boreholes at a later date, again with passing results indicating the failed tests were either due to an incorrect test value or an isolated pocket of filling.

8. ENGINEERING EVALUATION AND RECOMMENDATIONS

8.1. Fill Quality

Based on the appended earth fill quality control test data and reliance on the diligence of the bulk earthworks contractor at times when engineering staff were not present on site, results indicate that the compaction control criteria were generally met during the bulk earthworks periods in 2013-2014 and 2014-2015.

8.2. Static Settlement

The majority of the area, specifically Stage 3G, was either located in zones of cut or received evenly distributed filling over volcanic ashes with soils not expected to be subject to significant settlement. Static settlements were therefore not monitored in Stage 3G.

However, Stage 3H and Lots 236-239 (Stage D) received up to 4m and 8m of fill material respectively during the 2013-14 season. Settlement monitoring points were therefore installed in these areas. The monitoring pins consisted of steel rods attached to plates installed at the base of the filling. The data from these pins are presented graphically in Appendix F and settlement marker locations shown on Figures 2 and 6 for Stage 3H and Lots 236-239 (Stage D) respectively.

8.2.1. Stage 3H

Static settlements below the 2014 filling were monitored at two locations shown as SM26 and SM27 on Figure 2. Measured settlements were 205mm and 390mm for SM26 and SM27.

The data show the majority of consolidation settlement below the filling occurred within 2 to 3 months of earthworks being completed. Thereafter, settlement entered a long term ‘creep’ phase. Extrapolating the data out for a period of 50 years indicated that lots in this area may be affected by up to 100mm of future creep settlement over the assumed life of the proposed dwellings. However, differential settlements within the affected lots would be expected to be within the allowable range recommended by MBIE (i.e. 25mm/6m length), provided additional fill does not exceed 0.6m.

8.2.2. Lots 236-239 (Stage D)

Static settlements were monitored over Lots 236-239 during and after the 2013-2014 and 2014-2015 work seasons.

Three settlement markers were installed, SM15, SM28, and SM28A as shown on Figure 6, however only SM28 remained functional during the whole monitoring period as the other two markers were either damaged or moved during fill placement.

In regards to SM28, monitoring from April 2015 to August 2016 indicated the filling had induced static settlements of 68mm and that settlement was ongoing. Extrapolating the data out for 50 years indicated long-term settlement may exceed 60mm, with a high likelihood of excessive differential settlement beneath the building platforms.

The area was therefore pre-loaded with 2m of topsoil in April 2016 as shown in Figure 6. Continuing monitoring indicated this pre-load induced an additional settlement of up to 47mm. Following the completion of monitoring in August 2016, the pre-load was removed.

Following preloading we consider that the potential for future static settlements beneath these lots has been reduced, and long term differential settlements would be expected to be within accepted limits, provided additional fill does not exceed 1.0m.

8.2.3. Fill Development Restrictions

To reduce possible future settlements, any additional filling the lots listed below should not exceed the following depths without the approval of the TCC Category 1 or 2 Geo-Professional:

- 1.0m for lots 236-239
- 0.6m for lots 495-502

8.3. Slope Stability

While the majority of proposed lots within Stage 3G are located on gently sloping ground, the lots within this stage adjacent to the eastern perimeter and all lots within Stage 3H are located above a steeper slope. Lots 236-239 are also positioned above steeper slopes to the east and south of the lot boundaries.

8.3.1. Lots 413, 458, 460 and 493-503

The adjacent slope below the plateau exhibited a few areas of instability. Colluvial soils were encountered in hand auger boreholes and test pits in this area and topographic evidence also suggested that this slope has been affected by larger scale ancient instability.

Stability analyses of this slope noted that values were generally less than required by the IDC for residential development and indicated that further instability may occur on this slope in the future during extreme rainfall events or under seismic loads.

As the slope is insufficiently stable for residential development, the lots are subject to a building restriction line (BRL) as shown on Figure 3. The BRL has been defined by either projecting a 1V:2.5H line from the toe of the steepest adjacent slope, or by measuring 15m back from the slope crest, whichever is smaller. The proposed setback distance is considered adequate for the residential development in this area.

8.3.2. Lots 236-239 (Stage 3D)

Slopes adjacent to Lots 236-237 have been engineered with a gradient of 1V:2.5H for which this gradient is considered to be an adequately stable slope angle for Tauranga soils. However, this does not allow for surcharge from residential buildings or fill and therefore a BRL has been placed on these lots, setback 3-5m from the slope crest as shown on Figure 6.

The slope south of lots 237-239 have been engineered with a gradient of 1V:3H and therefore are adequate for residential development without a BRL.

8.3.3. Slope Development Restrictions

For lots 236-237, 413, 458, 460 and 493-503, it should be understood that the inclusion of a BRL on a lot does not specifically preclude development beyond the restriction line. However, any development between the BRL and slope will require specific geotechnical input and may need additional slope protection works such as retaining walls, deepened foundations, etc. The following restrictions are recommended for these lots:

- Any part of a dwelling or structure which extends beyond the BRL must be reviewed and approved by a TCC Category 1 Geo-Professional prior to the building consent application. A geotechnical report must be provided including the specific design of any mitigation works proposed.

- Any filling between the BRL and slope must be reviewed and approved by a TCC Category 1 Geo-Professional with a report to be provided to Council before work begins.

- Stormwater from any paved or impermeable surfaces including roofs and driveways on these lots must be collected and piped to the site's stormwater system. Stormwater must not be disposed via ground soakage on these lots and any concentration of runoff over the slope must be avoided.

8.4. Stage 3G Retaining Wall

The construction of the timber pole retaining wall along the northern boundary of Stage 3G was observed by Coffey. This included regular site visits to confirm borehole and post dimensions and ground conditions along the wall alignment as specified in the retaining wall design report.

Based on our observations we consider the wall has been built in accordance with the design. A separate certification letter has been provided for the wall, a copy of which is included in Appendix G.

8.4.1. Retaining Wall BRL

As the wall has not been designed for additional surcharge loads, a BRL has been defined with a setback distance equal to the height of the wall. The BRL has been assigned to lots 441, 442, 444 to 455, 457 and 458 within Stage 3G as shown on Figure 3.

8.4.2. Retaining Wall Development Restrictions

Specifically for lots 441, 442, 444 to 455, 457 and 458, in regards to the BRL adjacent to the Stage 3G retaining wall, the following restrictions are recommended:

- Any part of a dwelling or structure which extends beyond the BRL must be reviewed and approved by a TCC Category 1 or 2 Geo-Professional prior to the building consent application. A geotechnical report must be provided including the specific design of any mitigation works proposed. Specific design may include, deepened foundations past the 45° zone of influence from the toe of the retaining wall.

- No filling is to take place between the BRL and crest of wall without review and approval by a TCC Category 1 or 2 Geo-Professional. Due to the height of the existing retaining wall, any additional filling or retaining structures above the wall and within the BRL may require a Resource Consent.

- Stormwater from any paved or impermeable surfaces including roofs and driveways on these lots must be collected and piped to the site's stormwater system and not allowed to flow over the the retaining wall.

8.5. Stage 3H Stormwater Pipe Line

As mentioned in Section 2, a stormwater pipeline was horizontally drilled or 'thrust' beneath the slope to the east of Stage 3H as part of the civil infrastructure installation in 2016. The pipeline was designed by Harrison Grierson Consultants Ltd. Coffey provided advice regarding the pipeline alignment and recommended the pipe was installed at least 3.0m below existing ground level to reduce the risk of damage in the event of slope failure

A copy of Harrison Grierson's design drawings for the pipeline is included in Appendix G. Based on our observations during drilling and as-built survey information from Harrison Grierson, we consider the pipeline has been installed along an appropriate alignment. The survey data indicate the pipe is at least 3.0m deep below the existing ground surface as recommended.

8.6. Foundation Design & Bearing Capacity

The lots within Stage 3G and Lots 236-239 (Stage D) are underlain by either engineered fill or natural soils that meet or exceed the conditions for 'good ground' as defined by NZS 3604. Dwellings on these sites may therefore be supported on standard shallow foundations designed for a geotechnical ultimate bearing capacity of 300kPa.

Lots 493 to 503 within Stage 3H also meet or exceed the conditions for 'good ground' as defined by NZS 3604. However, as the lots are moderately steeply sloping, development on these lots may require deep excavation to form a level building platform. We recommend that whenever the proposed depth of excavation exceeds 1.5m, additional investigation should be undertaken by a TCC Category 1 or 2 Geo-Professional at the design/building consent stage to confirm soil conditions below the proposed foundations. A consent notice to this effect should be added to the affected lots (see Form G3, Appendix B).

It should be understood that due to the volcanic nature of the natural soils on this site, it is possible that local soil conditions may vary from those discussed above. Some soils observed onsite are also potentially prone to sub-surface erosion (e.g. 'tomos). It is therefore important that any potentially soft or unsuitable soils encountered in the foundation excavations are brought to the attention of a geotechnical professional.

8.7. Stormwater Management

To further reduce the potential for surface and sub-surface erosion, all stormwater from impervious areas within the development will need to be carefully collected and piped to a safe disposal point or to the reticulated network. Particular care should be taken to avoid areas of ponded stormwater or concentrated flows around and under buildings or structures.

9. CONCLUSION

Based on the observations and investigations presented in this report and with reliance on the diligence of the earthworks contractors, it is concluded that the earthworks and subdivision of Stages 3GH and Lots 236-239 of Stage 3D have been completed in general accordance with previous recommendations and current Tauranga City Council Infrastructure Development Code.

This report presents site-specific recommendations including Building Restriction Lines (BRLs) on some lots located above steeper slopes or adjacent to retaining walls. Provided these recommendations are followed and prudent development practices are adopted, it is considered that the finished lots are at low risk of erosion, falling debris, subsidence, inundation or liquefaction and these sites are therefore adequate for residential development without the need for Section 72 restrictions under the New Zealand Building Act.

Development outside the BRL (i.e. between the restriction line and the slope/retaining wall) is subject to further geotechnical input per Sections 8.3.3 and 8.4.2 of this report. The placement of additional filling is also restricted on some lots as per Section 8.2.3. The need for a Section 72 restriction on affected lots may therefore need to be re-assessed at the building consent stage.

10. LIMITATIONS

This report has been prepared solely for the use of the client, The Lakes (2012) 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 owners of this property 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 the post construction factual evidence has been obtained solely from boreholes and test pits, 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.

For and on behalf of Coffey

Report Prepared By:

D B CULLEN
Engineering Geologist

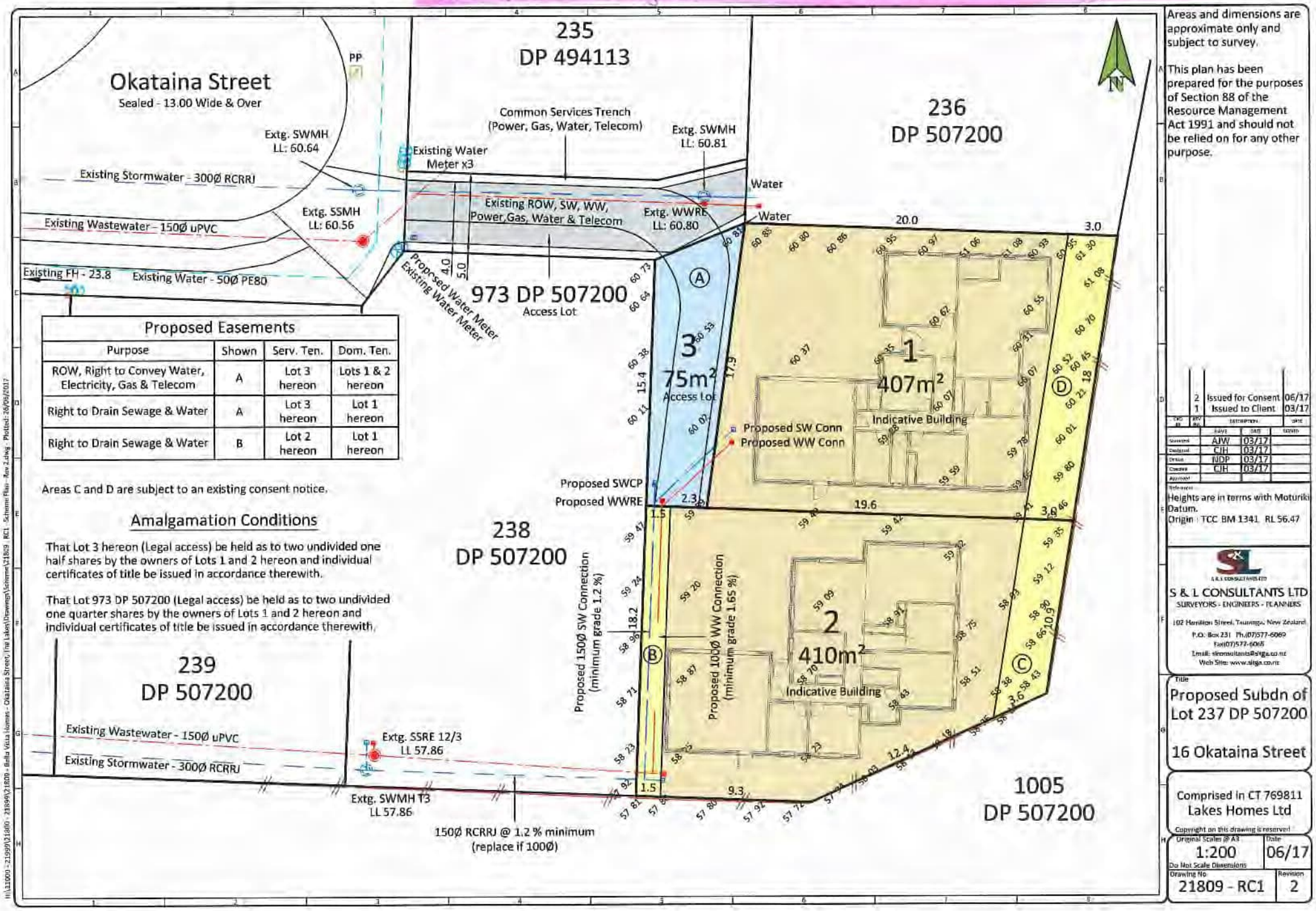
Report Reviewed By:

D SULLIVAN
Principal Geotechnical Engineer
BSc, MBA, CE (Calif.), MIPENZ, CPEng, TCC Category 1 Geotechnical Engineer
CPEng No. 1025183

Geotechnical Suitability Statement Signed By:

R TELFORD
TCC Category 2 Geotechnical Engineer

RC Plan lodged 27 June 2017 Approved 25 July 2017



Proposed Easements

Purpose	Shown	Serv. Ten.	Dom. Ten.
ROW, Right to Convey Water, Electricity, Gas & Telecom	A	Lot 3 hereon	Lots 1 & 2 hereon
Right to Drain Sewage & Water	A	Lot 3 hereon	Lot 1 hereon
Right to Drain Sewage & Water	B	Lot 2 hereon	Lot 1 hereon

Areas C and D are subject to an existing consent notice.

Amalgamation Conditions

That Lot 3 hereon (Legal access) be held as to two undivided one half shares by the owners of Lots 1 and 2 hereon and individual certificates of title be issued in accordance therewith.

That Lot 973 DP 507200 (Legal access) be held as to two undivided one quarter shares by the owners of Lots 1 and 2 hereon and individual certificates of title be issued in accordance therewith.

Areas and dimensions are approximate only and subject to survey.

This plan has been prepared for the purposes of Section 88 of the Resource Management Act 1991 and should not be relied on for any other purpose.

REV No.	DESCRIPTION	DATE
2	Issued for Consent	06/17
1	Issued to Client	03/17

	NAME	DATE	SIGNED
Surveyed	AJW	03/17	
Designed	CJH	03/17	
Drawn	NDP	03/17	
Checked	CJH		
Approved			

Heights are in terms with Moturiki Datum.
Origin : TCC BM 1341 RL 56.47

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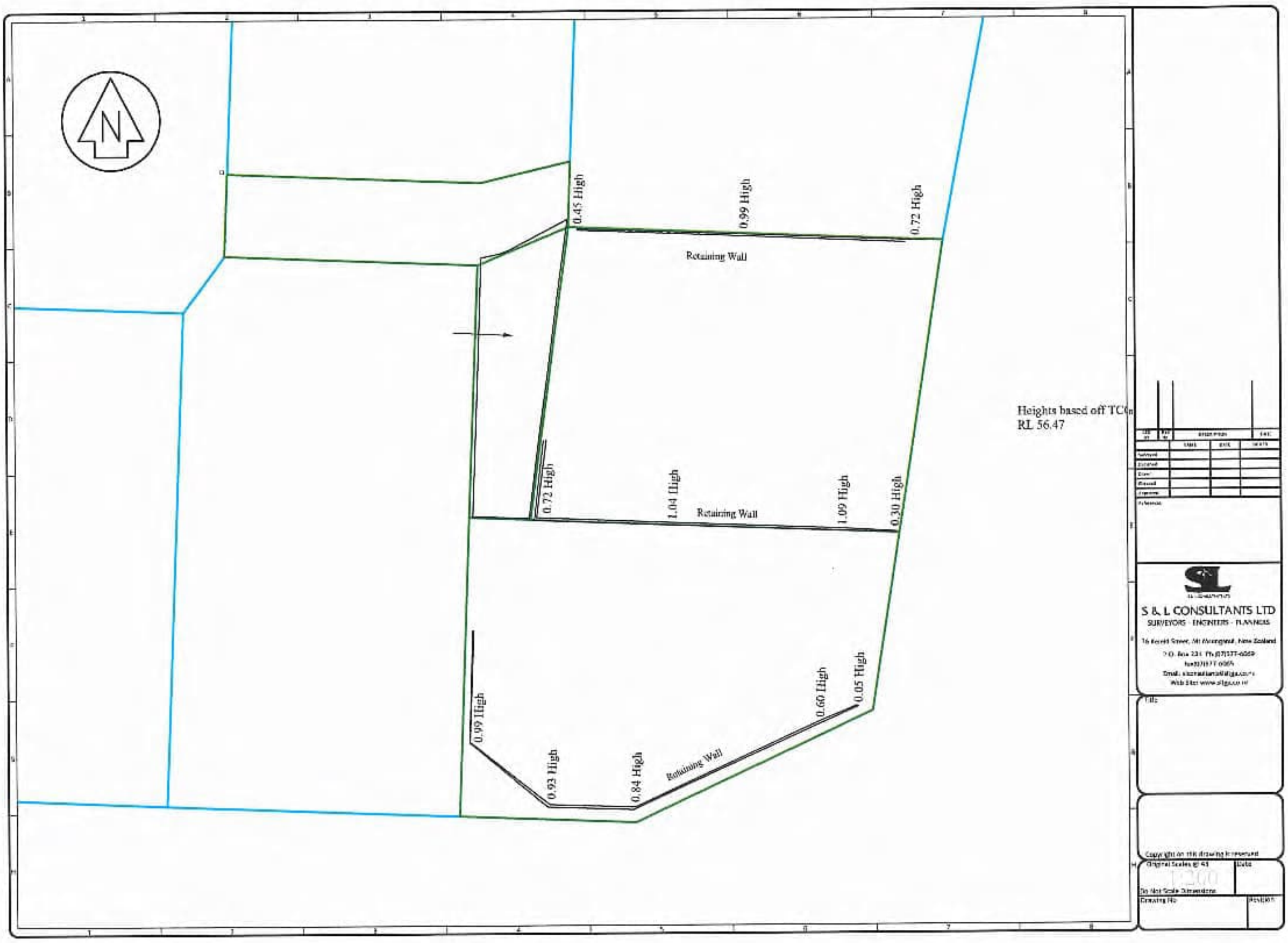
Web Site: www.slga.co.nz

Title
Proposed Subdn of Lot 237 DP 507200

16 Okataina Street

Comprised in CT 769811
Lakes Homes Ltd

Original Scales @ A3	Date
1:200	06/17
Do Not Scale Dimensions	
Drawing No. 21809 - RC1	Revision 2


0.45 High
0.99 High
0.72 High
Retaining Wall
0.72 High
1.04 High
Retaining Wall
1.09 High
0.30 High
0.99 High
0.93 High
0.84 High
Retaining Wall
0.60 High
0.05 High
Heights based off TC
RL 56.47
S & L CONSULTANTS LTD
SURVEYORS - ENGINEERS - PLANNERS
Title
Copyright on this drawing is reserved
Original Scales @ A3
Date
1:200
Do Not Scale Dimensions
Drawing No
Revision

As Built.

16 Nov (Requested by SF.)

Northing	Easting	Code
799428.93	368840.10	SWC 1
799429.02	368840.42	SSC 1
799426.93	368835.69	CP 1
799445.31	368819.90	WBX 1
799425.07	368835.76	SSRE 1
799407.37	368835.85	SWRE 2
799407.30	368837.04	SWC 2
799408.08	368836.03	SSRE 2
799407.94	368837.32	SSC 2
799424.42	368835.60	SWJ1
799424.33	368835.73	SSJ1
799407.41	368834.95	SWJ2
799408.14	368835.12	SSJ2

Note:

Coordinates in terms of Bay of Plenty 2000 Circuit

Elevations are in terms of TCC BM 1341
RL: 56.47
Moturiki Datum

Wastewater connections and laterals are uPVC SN16

25 OD Dry Riser water connection
MDPE PN 12.5

Stormwater connections and laterals are uPVC SN16

Water Meter WBX 1 is 20mm Sensus C620M.
Serial # 17M1560444.
Manifold Type - Acuflo
Meter Size - 20mm
Manufacturer - Sensus
Model - 620

1 Issued for 224 06/18

S & L CONSULTANTS LTD
SURVEYORS · ENGINEERS · PLANNERS

Lakes Homes Ltd

16 Okataina Street, The Lakes

Asbuilt Plan

1:200 06-18

21809 - AB01 1

PRODUCER STATEMENT – PS4 – CONSTRUCTION REVIEW

(Guidance notes on the use of this form are available upon request)

ISSUED BY: ***The Engineer Limited*** .....
(Construction Review Firm)

TO: Paul Marsh .....
(Owner/Developer)

TO BE SUPPLIED TO: Tauranga City Council .....
(Building Consent Authority)

IN RESPECT OF: Building foundation ground preparation construction investigation and certification
(Description of Building Work)

AT: 16 Okataina St, Lot 2

The Lakes (Address) **LOT 237**..... **DP 507200**... **SO** .....

The Engineer Limited has been engaged by **Paul Marsh**

To provide☐CM1☒CM2☐CM3☐CM4☐CM5*(Engineering Categories)* or ☐observation as per agreement with owner/developer

or ☒ other **Construction Monitoring** services
(Extent of Engagement)
in respect of clause(s) **B1 Structure** of the Building Code for the building work described in

documents relating to Building Consent No. -..... and those relating to Building Consent Amendment(s) Nos. .....issued during the course of the works. We may have sighted these Building Consents and the conditions of attached to them.

Authorised instructions / variations(s) No. ..... (copies attached) or by the attached Schedule ☐ have been issued during the course of the works.

On by the basis of ☐this ☒these review(s) and information supplied by the contractor during the course of the works and **on behalf of the firm** undertaking this Construction Review, **I believe on reasonable grounds** tha☐ All☒Part only of the building works have been completed in accordance with the relevant requirements of the Building Consent and Building Consent Amendments identified above, with respect to Clause(s) **B1** .....of the Building Code. I also believe on reasonable grounds that the persons who have undertaken this construction review have the necessary competency to do so.

I, ***Bruce Cameron*** .....am: ☒ CPEng No. ***173256***.....
(Name of Construction Review Professional)

I hold the following qualifications: ***CPEng, BE, NZCE*** .....

The Construction Review Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.

SIGNED BY ***Bruce Cameron*** ..... **ON BEHALF OF** ***The Engineer Limited*** .....

Date:... ***5 June 2018***..... Signature:.....

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Forms 6 or 8 of the Building (Form) Regulations 2004** for the issue of a Code Compliance Certificate.

SITE INSPECTION RECORD

Job No: 18031944

Date: 1/6/18

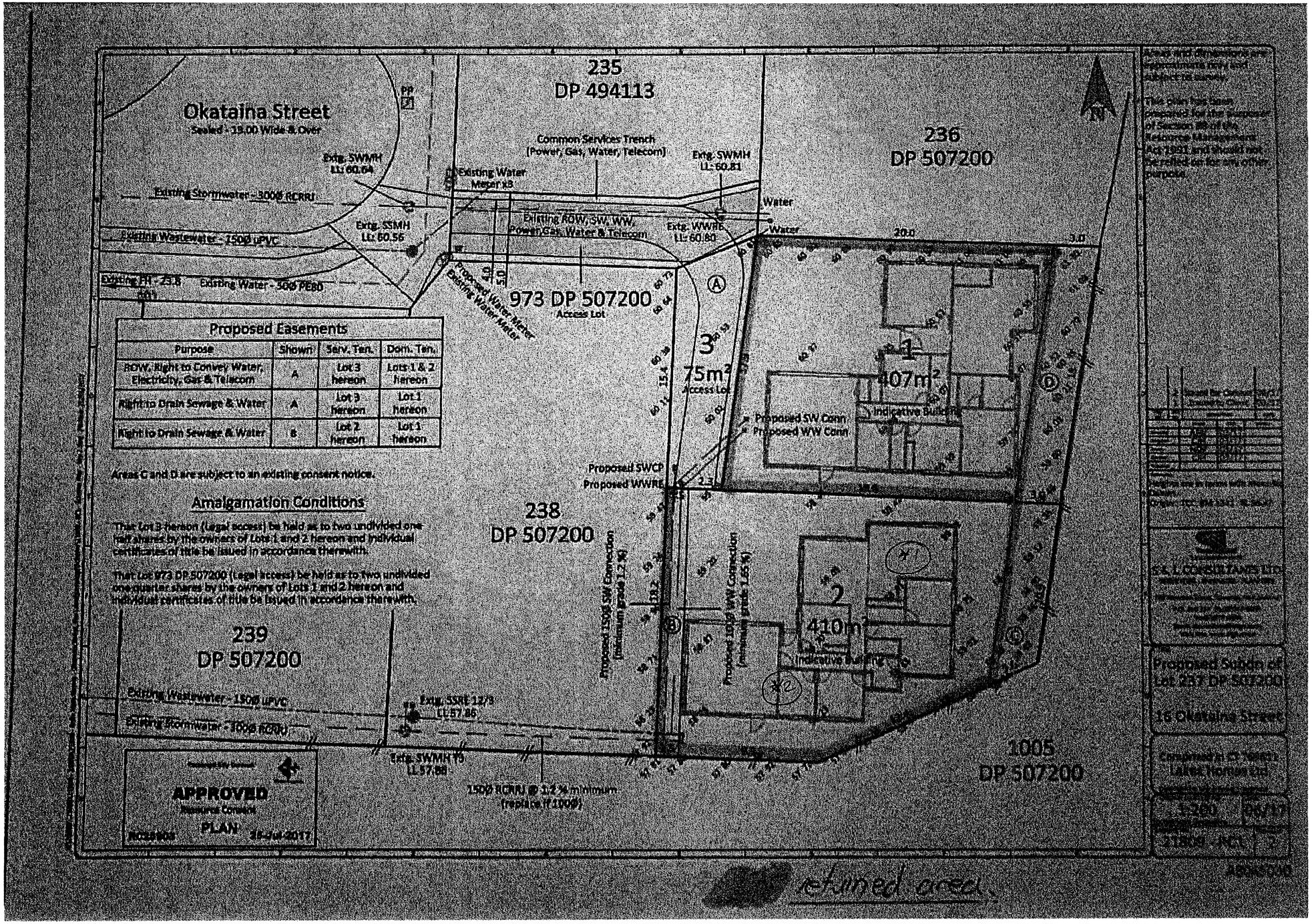
Job Name: Marsh - 16 Ohatina St lot 2

Weather/Ground Conditions:

ITEM	Comments – Observations	Action Required
	Building requirements; SED / *Good Ground*	
	❖ *Good Ground* check. NZS3604 3.1.3. Reasonable inquiry;	
	• Site observation of; Site stripped ☑	
	a) Buried services ☒ b) Land slips/surface creep ☒ c) Uncertified fill ☒ d) Buried topsoil/unsuitable soils ☒	
	• Confirmation of; e) Specific testing ☑ f) Immediate locality ok ☑ g) GCR ☑	
	• Ground bearing > 100kPa (allowable) or SED. ☑	
	Good Ground found. ☑	
	❖ SED requirements ? ; (*1) 1070 820/10 530 410/6 290 180 (*2) 1070 800/6 590 350 230 130/3	Ok to proceed with construction ☑

The Engineer Limited
PO Box 16 264
Tauranga 3147

Phone: 027 419 2568



returned area.

PRODUCER STATEMENT – PS4 – CONSTRUCTION REVIEW

(Guidance notes on the use of this form are available upon request)

ISSUED BY: ***The Engineer Limited*** .....
(Construction Review Firm)

TO: Paul Marsh .....
(Owner/Developer)

TO BE SUPPLIED TO: Tauranga City Council .....
(Building Consent Authority)

IN RESPECT OF: Timber pole retaining wall construction investigation and certification
(Description of Building Work)

AT: 16 Okataina St, Lot 2

The Lakes (Address) **LOT 237**..... **DP 507200**... **SO** .....

The Engineer Limited has been engaged by **Paul Marsh**

To provide☐CM1☒CM2☐CM3☐CM4☐CM5*(Engineering Categories)* or ☐observation as per agreement with owner/developer

or ☒ other **Construction Monitoring** services
(Extent of Engagement)
in respect of clause(s) **B1 Structure, B2 Durability** of the Building Code for the building work described in documents relating to Building Consent No. -..... and those relating to Building Consent Amendment(s) Nos. .....issued during the course of the works. We may have sighted these Building Consents and the conditions of attached to them.

Authorised instructions / variations(s) No. ..... (copies attached)

or by the attached Schedule ☐ have been issued during the course of the works.

On by the basis of ☐this ☒these review(s) and information supplied by the contractor during the course of the works and **on behalf of the firm** undertaking this Construction Review, **I believe on reasonable grounds** tha☐ All☒Part only of the building works have been completed in accordance with the relevant requirements of the Building Consent and Building Consent Amendments identified above, with respect to Clause(s) **B1, B2** .....of the Building Code. I also believe on reasonable grounds that the persons who have undertaken this construction review have the necessary competency to do so.

I, ***Bruce Cameron*** .....am: ☒ CPEng No. ***173256***.....
(Name of Construction Review Professional)

I hold the following qualifications: ***CPEng, BE, NZCE*** .....

The Construction Review Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.

SIGNED BY ***Bruce Cameron*** ..... **ON BEHALF OF** ***The Engineer Limited*** .....

Date:... ***5 June 2018***..... Signature:.....

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Forms 6 or 8 of the Building (Form) Regulations 2004** for the issue of a Code Compliance Certificate.

SITE INSPECTION RECORD

Job No: 18031944

Date: _____

Time: _____

Job Name: Marsh - lot 2, 16 Okataina St.

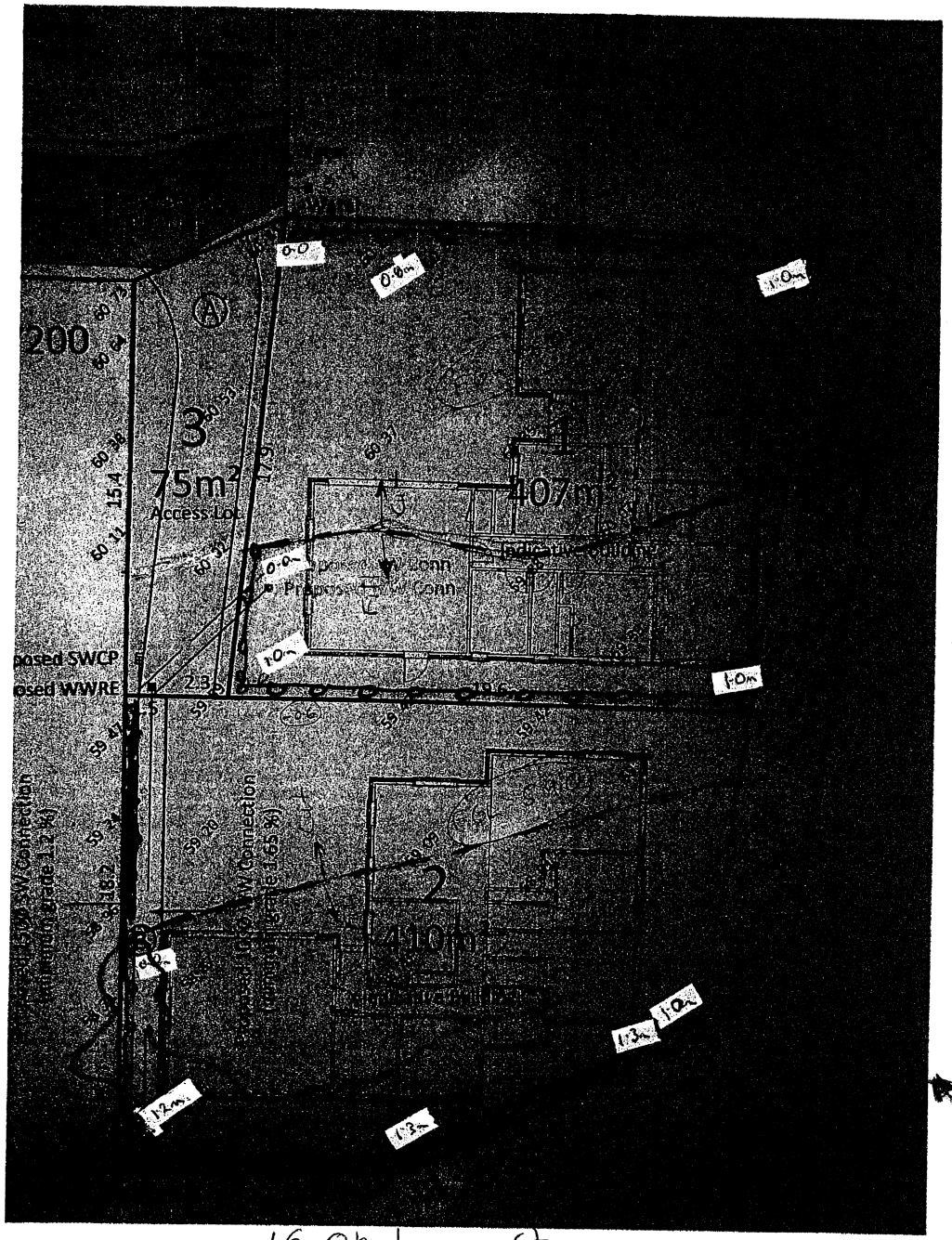
Weather/Ground Conditions: _____

ITEM	Comments – Observations	Action Required
	Timber Poles Retaining Walls. - Leon - BOP Retaining - Builders. - TEL design 27/3/18 - foundations - 9/5/18. ✓ - Drainage/Rails - ✓ - Backfill ✓ - As per design	OK to Proceed.

The Engineer Limited
PO Box 16 264
Tauranga 3147

Phone: 027 419 2568

18031944



CANTILEVER TIMBER POLE RETAINING WALL DESIGN

Client: Marsh
Project: 16 Okataina Street, Lot 237 The Lakes

Project Number : 18031944
Wall Location : Subdivision Retaining

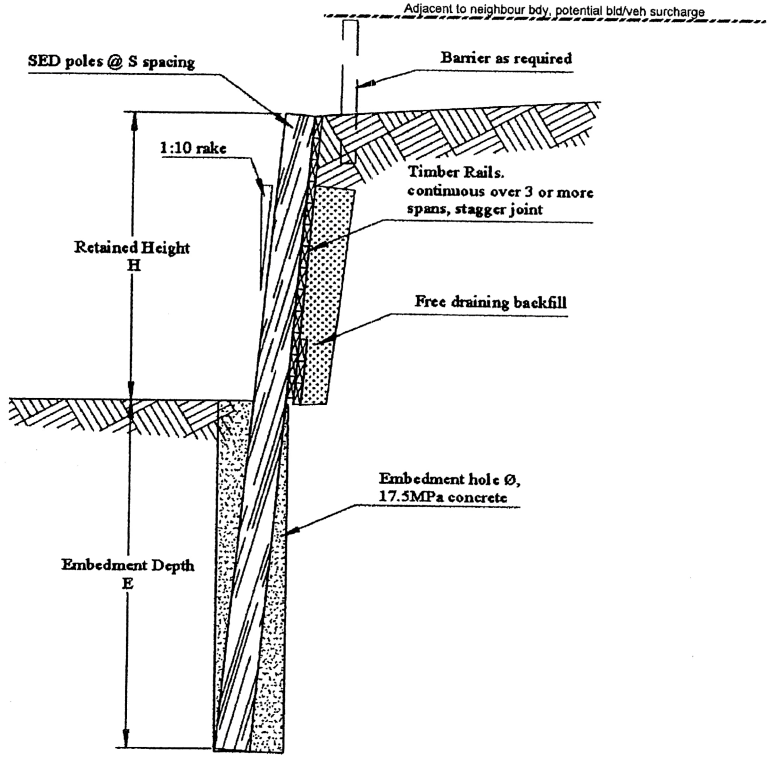
Retaining Wall Design Features Report / Construction Summary

Wall Height H m	Pole Spacing S m	SED Pole Size mm	Embedment hole size Ø mm	Embedment depth E m	Rail size and mm	Rail Layers #
0.50	1.2	175	350	0.9	150x50	1 layer
1.00	1.2	200	350	1.5	150x50	1 layer
1.50	1.2	225	400	2.1	150x50	1 layer

notes:

- ~ Construction to be in accordance with the Specification for Timber Retaining Walls, including cut timber treatment
- ~ Design assumes level firm ground at the base of the wall
- ~ Poles to be place with large end into embedment holes
- ~ Confirm site conditions match design assumptions
- ~ Timber Rails Grade = VSG8 or Grade 8
- ~ Timber Treatment; H4 Rails; H5 Poles
- ~ Design assumes cohesion less or sandy type soils, water level depth > E

0 * backfill slope
5 kPa potential surcharage



← Retaining

18031944 16 Okataina St. 27/3/18.

Shuler, Lowry

From: Willy Bedford <willy.bedford@venturedevelopments.co.nz>
Sent: Wednesday, January 23, 2019 10:42 AM
To: Shuler, Lowry
Subject: Fwd: BC182234

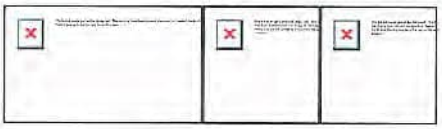
Hi Lowry,

See below email thread with the Okataina RFI's

Let me know if you need anything else.

Kind regards,

Willy Bedford • Marketing Consultant
D. 64 7 542 0101 • M. +64 21 191 9800 • W. www.venturedevelopments.co.nz
E. willy@venturedevelopments.co.nz



Begin forwarded message:

> **From:** Nicole Holmes <nicole.holmes@venturedevelopments.co.nz>
> **Date:** 10 January 2019 at 12:32:22 PM NZDT
> **To:** Ben Graham <ben.graham@venturedevelopments.co.nz>, Willy Bedford <willy.bedford@venturedevelopments.co.nz>, Allen Burr <allen.burr@venturedevelopments.co.nz>
> **Cc:** Michelle Paddison <michelle@regionalchambers.co.nz>
> **Subject: FW: BC182234**
>
> FYI
>
> Kind Regards
>
> Nicole Holmes • Operations Assistant
> D. 07 542 0114 • W. www.venturedevelopments.co.nz
> E. nicole@venturedevelopments.co.nz
>
> VENTURE DEVELOPMENTS
>
> **From:** Simon Fitzpatrick <Simon.Fitzpatrick@tauranga.govt.nz>
> **Sent:** Thursday, 10 January 2019 12:31 PM
> **To:** Nicole Holmes <nicole.holmes@venturedevelopments.co.nz>
> **Subject:** RE: BC182234
>
> Hi Nicole

I have discussed the issue of the earthworks and unconsented walls on these lots with Council's legal team. They agree with me. These works were not part of the resource consent. Therefore, it will be up to Venture to work though the issues below with the developer. These will still need to be completed for CCC to be issued.

- **BC182223, 18 Okataina St**

  Development Engineer requested for COA on upper wall.

- **BC182234, 16 Okataina St**

  S37, RMA hold – Advise notes added.

1. Have the fill over the BRL assessed by a Cat 1 Geo-Professional. Carry out any remedial works that this may require.
2. Have the areas of fill exceeding 1.0m, assessed by a Cat 1 Geo-Professional.
3. Have the retaining wall assessed by a Cat 1 Geo-Professional.
4. Ensure the dwelling is no closer to the top of the wall than the walls height at that location.
5. Remove the up to 0.7m of pumice sand fill from against the noise wall.

Cheers

Simon Fitzpatrick | Team Leader, Land Development Engineering
Tauranga City Council | 07 577 7000 | 021 277 7302 | simon.fitzpatrick@tauranga.govt.nz | www.tauranga.govt.nz

From: Nicole Holmes <nicole.holmes@venturedevelopments.co.nz>
Sent: Monday, 7 January 2019 9:46 a.m.
To: Simon Fitzpatrick <Simon.Fitzpatrick@tauranga.govt.nz>
Subject: BC182234

Hi Simon,
Happy New Year
Back onto this issue....did your legal team get anywhere with it?

Thanks

Kind Regards

Nicole Holmes • Operations Assistant
D. 07 542 0114 • W. www.venturedevelopments.co.nz
E. nicole@venturedevelopments.co.nz

VENTURE DEVELOPMENTS

96 Cameron Road
Tauranga
3110 New Zealand

t: +64 7 571 6081
f: +64 7 571 6085
coffey.com

22 February 2019

Our ref: 773-TRGGE226846AB

Venture Developments Limited
Unit 1, 16 Ashley Place
Papamoa Beach, Papamoa 3118

Attention: Jarod Thorpe

Dear Jarod Thorpe ,

Addendum to Geotechnical Plan Review Report
Proposed Residence at 16 Okataina, The Lakes, Tauriko, Tauranga

1. Introduction

It is proposed to construct a single-storey residence at the property located at 16 Okataina Street in The Lakes subdivision, Tauriko and legally described as Lot 2 DP 514907. Coffey Services (NZ) Limited (Coffey) has previously conducted a geotechnical review of residential design plans and supporting documentation for the proposed development, dated 9 February 2019.

As stated in the Geotechnical Plan Review, TCC has requested the following in relation to the proposed development:

1. Have the fill over the BRL assessed by a Cat 1 Geo-Professional. Carry out any remedial works that this may require.
2. Have the areas of fill exceeding 1.0m, assessed by a Cat 1 Geo-Professional.
3. Have the retaining wall assessed by a Cat 1 Geo-Professional.
4. Ensure the dwelling is no closer to the top of the wall than the walls height at that location.
5. Remove the up to 0.7m of pumice sand fill from against the noise wall.

Based on the geotechnical plan review, in order to address the concerns raised by TCC and to provide adequate support for the proposed development, the following measures were recommended:

- Install an appropriate drainage system behind the existing retaining wall;
- Deepen foundations adjacent to the existing retaining wall by 400mm to account for uncertainty of fill quality and retaining wall adequacy; and,
- Conduct confirmatory testing of fill compaction and quality.

In accordance with the terms and conditions of the short-form agreement[1] signed on 4 February 2019, Coffey has completed the observations and testing recommended in the Geotechnical Plan Review.

This addendum report includes the results of testing, site observations and further recommendations, and is intended to accompany the 9 February Geotechnical Plan Review report to be submitted in support of the Building Consent application with Tauranga City Council (TCC).

2. Construction Testing and Observation

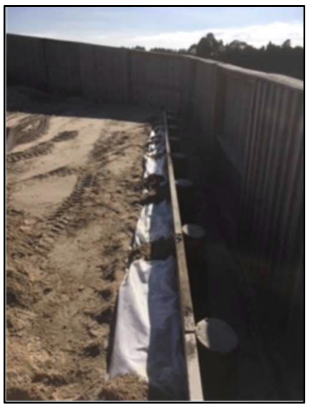
As recommended in the Geotechnical Plan Review, Coffey carried out confirmatory testing of the constructed building platform subgrade soils on 13 February 2019. The results of this testing indicated that fill within a couple metres of the retaining wall and beneath the south eastern corner of the proposed building footprint had not been adequately compacted. On 15 February, further testing was conducted to delineate the area of loose fill. In these areas, Scala penetrometer results of 1 to 4 blows per 100mm penetration were recorded to depths of 900m with lowest results at the surface and base of filling. Scala results were most commonly 3 or less.

On 18 February 2019, loose fill material was removed from the area between the retaining wall and approximately 1m inside of the southern house foundation line and the area within the south eastern corner of the building. The recommended drainage was placed behind the wall comprising perforated drainage pipe in drainage metal and wrapped in filter fabric. Existing fill was replaced in relatively thin lifts and compacted with a vibratory roller. Additional import granular fill was required to reach finished grade due to the additional compaction achieved within the fill.

Photo 1: Drainage pipe

Photo 2: Drainage metal

Photo 3: Filter fabric



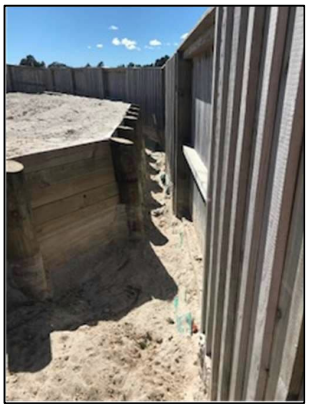
On 19 February 2019, Coffey visited the site to observe and test the remediated areas of fill. At this time, the granular material which had been deposited between the retaining wall and the boundary fence had been removed. Within the remediated fill, Scala penetrometer results of 5 to 10 blows per 100mm penetration were recorded. Scala results were slightly lower than 5 blows per 100mm within 200mm to 300mm of the surface; however, lower penetration resistance this close to the surface would be more a function of the dynamic nature of the test itself and the granular fill being unconfined. Therefore, the fill is considered to be adequately compacted and suitable for foundation support.

[1] *"Short Form Agreement for Consultant Engagement",* ref: P226846, signed 4 February 2019.

Photo 4: Fill excavation

Photo 5: Fill re-compaction

Photo 6: Over wash removed



3. Revised Foundation Recommendations

It is common to recommend that building foundations maintain a distance equal to the height of the wall so that foundation loads do not influence the wall. As noted in the Geotechnical Plan Review, although a building may not influence an otherwise stable wall at this distance, a retaining wall that fails could influence a building foundation at a greater distance. Due to the uncertainty of the site works and wall construction, it was recommended that drainage be placed behind the wall as discussed previously and that foundations within 2m of the wall be deepened by 400mm. The deepening of foundations was largely to account for uncertainty in the overall quality of site preparation.

With the over excavation of loose fill that was conducted and adequate re-compaction of the fill from the retaining wall to within the building footprint, it is Coffey's opinion that an adequate building platform is present and that the risk of a retaining wall failure causing a loss of support to the foundation subgrade soils at the proposed building location has been adequately mitigated. Therefore, based on foundations being located a minimum distance from the back of the wall equal to the retained height, it is no longer considered necessary to deepen foundations and standard rib-raft type foundation in accordance with NZS3604:2011 may be used.

4. Conclusion

Remedial measures recommended in the Geotechnical Plan Review dated 9 February have been carried out and testing of site subsoils including remediated structural fill indicates that a stable building platform is now present offering adequate support for conventional shallow foundations specifically designed for a nominal (ultimate) geotechnical bearing capacity of 300kPa or detailed in accordance with NZS3604:2011.

The following sections summarise the resolution of the individual issues raised by TCC:

4.1. Have the fill over the BRL assessed by a Cat 1 Geo-Professional. Carry out any remedial works that this may require.

An assessment of the impact of the quantity of filling over the BRL has been carried. Based on Coffey's site observations, assessment and the provided documentation, it appears that this filling is unlikely to significantly decrease the stability of the eastern slope.

4.2. Have the areas of fill exceeding 1.0m, assessed by a Cat 1 Geo-Professional.

Based on Coffey's observations of the site in its current state and the previous surcharging of the site, it is unlikely that the approximately 1m of fill placed in the southern portion of the property would significantly decrease the stability of the site or cause excessive settlement.

4.3. Have the retaining wall assessed by a Cat 1 Geo-Professional.

Based on a qualitative assessment of the features of the retaining wall that were easily visible and the provided documentation, it was recommended in the Geotechnical Plan Review that additional drainage be installed behind the wall. This drainage has now been installed. Based on the installation of drainage, the remediation of filling between the wall and the proposed building foundations, and the proposed distance of the residence from the wall, it is unlikely that the retaining wall represents a significant risk to the stability of the site at the proposed building location.

4.4. Ensure the dwelling is no closer to the top of the wall than the walls height at that location.

It appears that the development plans have located the building an adequate distance from the retaining wall to satisfy this requirement. It is recommended that distance from the retaining wall be verified during construction once foundation formwork has been placed but prior to concrete placement.

4.5. Remove the up to 0.7m of pumice sand fill from against the noise wall.

Based on observations on 19 February, it appears that this fill has been removed.

5. Limitations

While this letter presents a summary of the geotechnical conditions for this area it does not provide a complete discussion of geotechnical issues affecting the Lakes Stage 3D area or previous earthworks undertaken on the site. It is therefore recommended that designers working on the new lots are also familiar with the contents of the original Stage 3D GCR.

This letter has been prepared solely for the use of our client, 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 owners of this property should seek professional geotechnical advice to satisfy themselves as to its on-going suitability for their intended use.

Please do not hesitate to contact the undersigned if you require any further information.

Regards,

Lowry Shuler
Senior Geotechnical Engineer
CPEng No. 1029886
TCC Category 2 Geotechnical Engineer

David Sullivan
Principal Geotechnical Engineer
CPEng No. 1025183
TCC Category 1 Geotechnical Engineer

Attachments:

Test Location Plan
Hand Auger Bore Logs
Penetration Resistance Test Results

VENTURE DEVELOPMENTS

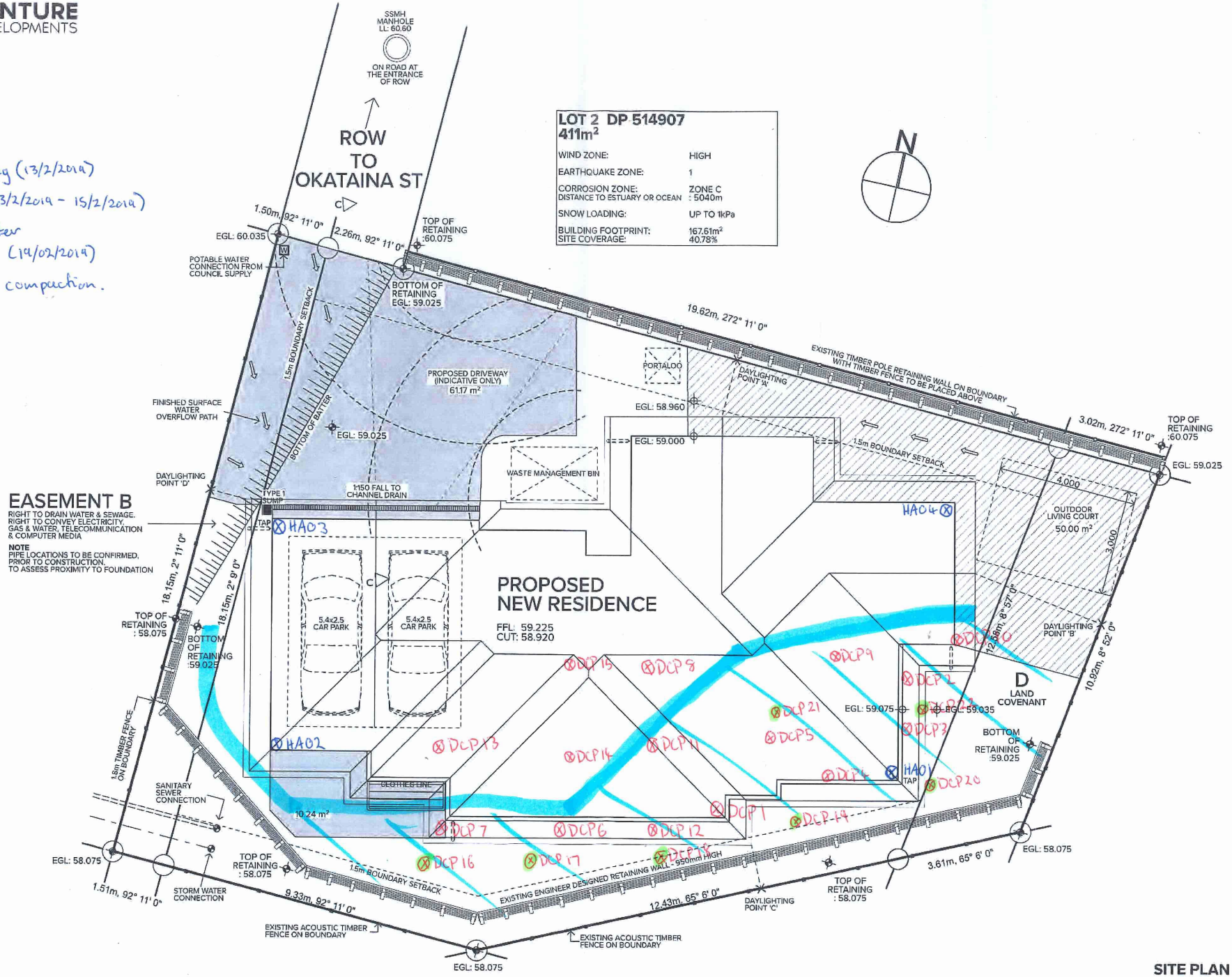
Key:

⊗ = Hand auger testing (13/2/2019)

⊗ = DCP testing (13/2/2019 - 15/2/2019)

⊗ = DCP testing after re-compaction (19/02/2019)

= Area of re-compaction.



huisdesign © copyright 2018

SITE PLAN 1:100

WD-A JOB 18062 LOT 2, DP 514907, 16 OKATAINA STREET, THE LAKES, TAURIKO, TAURANGA CLIENT: KELLY STEWARD & ALLEN BURR DRAWN: M.C.M 28/09/18 **2 / 26**

coffey
A TETRA TECH COMPANY

Engineering Log - Hand Auger

Borehole ID.	**HA01**
sheet:	1 of 1
project no.	**773-TRGGE226846**
client:	***Venture Developments Limited***
date started:	**13 Feb 2019**
principal:	
date completed:	**13 Feb 2019**
project:	***16 Okataina street, Pyes Pa***
logged by:	**ML**
location:	***See attached site plan***
checked by:	**LS**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90° | DCP id.:
drill model: Hand Auger | drilling fluid: | hole diameter : 50 mm | vane id.: 2459

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	DCP (blows/ 100 mm) 2 4 6 8 10	structure and additional observations
HA N		Not Encountered			0.5			**SAND**: fine to coarse grained, white grey, pumice sand.	D to M	L to MD			**PUMICE SAND FILL**
			VS 122/ 46 kPa VS 82/ 30 kPa VS 114/ ~~27 kPa~~		1.0 1.5 2.0			**Silty CLAY**: medium plasticity, brown. Hand Auger HA01 terminated at 2.0 m Target depth	M	St to VSt	⊕ ⊙		**VOLCANIC ASHES**

CDF_0_9_06_LIBRARY.GLB rev:AR Log COF BOREHOLE: NON CORED + DCP 226846 16 OKATAINA ST GINT.GPJ <<DrawingFile>> 22/02/2019 11:50

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger

* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
1 2 3 — no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

coffey
A TETRA TECH COMPANY

Engineering Log - Hand Auger

Borehole ID.	**HA02**
sheet:	1 of 1
project no.	**773-TRGGE226846**
client:	***Venture Developments Limited***
date started:	**13 Feb 2019**
principal:	
date completed:	**13 Feb 2019**
project:	***16 Okataina street, Pyes Pa***
logged by:	**ML**
location:	***See attached site plan***
checked by:	**LS**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90° | DCP id.:
drill model: Hand Auger | drilling fluid: | hole diameter : 50 mm | vane id.: 2459

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	DCP (blows/ 100 mm) 2 4 6 8 10	structure and additional observations
HA N		Not Encountered			0.5			**SAND**: fine to coarse grained, white grey, pumice sand with trace gravels.	D to M	MD to D			**PUMICE SAND FILL**
			VS >190 kPa VS >190 kPa VS >190 kPa		1.0 1.5			**Clayey SILT**: low to medium plasticity, orange brown mottled brown.	M	VSt to H			**SUBDIVISION FILL**
					2.0			Hand Auger HA02 terminated at 1.8 m Target depth					

CDF_0_9_06_LIBRARY.GLB rev:AR Log COF BOREHOLE: NON CORED + DCP 226846 16 OKATAINA ST GINT.GPJ <<DrawingFile>> 22/02/2019 11:50

method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger

* bit shown by suffix
e.g. AD/T
B blank bit
T TC bit
V V bit

support
M mud
C casing
N nil

penetration
1 2 3 no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
E environmental sample
SS split spoon sample
U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

coffey
A TETRA TECH COMPANY

Engineering Log - Hand Auger

Borehole ID.	**HA03**
sheet:	1 of 1
project no.	**773-TRGGE226846**
client:	**Venture Developments Limited**
date started:	**13 Feb 2019**
principal:	
date completed:	**13 Feb 2019**
project:	**16 Okataina street, Pyes Pa**
logged by:	**ML**
location:	**See attached site plan**
checked by:	**LS**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90° | DCP id.:

drill model: Hand Auger | drilling fluid: | hole diameter : 50 mm | vane id.: 2459

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear (remoulded / peak) (kPa) 50 100 150 200	DCP (blows/ 100 mm) 2 4 6 8 10	structure and additional observations
HA N		Not Encountered	VS >190 kPa		0.5			**SAND**: fine to coarse grained, grey white, pumice sand.	D				**PUMICE SAND FILL**
			VS >190 kPa		1.0			**Clayey SILT**: low to medium plasticity, brown mottled orange brown and dark brown.	M	VSt to H			**SUBDIVISION FILL**
			VS >190 kPa		1.5			Hand Auger HA03 terminated at 1.3 m Target depth					
					2.0								

CDF_0_9_06_LIBRARY.GLB rev:AR Log COF BOREHOLE: NON CORED + DCP 226846 16 OKATAINA ST GINT.GPJ <<DrawingFile>> 22/02/2019 11:51

method
- AD auger drilling*
- AS auger screwing*
- HA hand auger
- W washbore
- HA hand auger

* bit shown by suffix e.g. AD/T
- B blank bit
- T TC bit
- V V bit

support
- M mud
- C casing
- N nil

penetration
1 2 3 — no resistance ranging to refusal

water
10-Oct-12 water level on date shown
water inflow
water outflow

samples & field tests
- B bulk disturbed sample
- D disturbed sample
- E environmental sample
- SS split spoon sample
- U## undisturbed sample ##mm diameter
- HP hand penetrometer (kPa)
- N standard penetration test (SPT)
- N* SPT - sample recovered
- Nc SPT with solid cone
- VS vane shear; peak/remouded (kPa)
- R refusal
- HB hammer bouncing

classification symbol & soil description based on Unified Classification System

moisture
- D dry
- M moist
- W wet
- S saturated
- Wp plastic limit
- Wl liquid limit

consistency / relative density

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable
VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

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Engineering Log - Hand Auger

Borehole ID.	**HA04**
sheet:	1 of 1
project no.	**773-TRGGE226846**
client:	***Venture Developments Limited***
date started:	**13 Feb 2019**
principal:	
date completed:	**13 Feb 2019**
project:	***16 Okataina street, Pyes Pa***
logged by:	**ML**
location:	***See attached site plan***
checked by:	**LS**

position: Not Specified | surface elevation: Not Specified | angle from horizontal: 90° | DCP id.:
drill model: Hand Auger | drilling fluid: | hole diameter : 50 mm | vane id.: 2459

drilling information | **material substance**

method & support	penetration 1 2 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description (SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components)	moisture condition	consistency / relative density	vane shear ⊕ remoulded ⊙ peak (kPa) 50 100 150 200	DCP (blows/ 100 mm) 2 4 6 8 10	structure and additional observations
HA — N		Not Encountered	VS 82/ 16 kPa		0.0			**SAND**: fine to coarse grained, grey white, pumice sand.	D				**PUMICE SAND FILL**
								Clayey SILT: low plasticity, brown mottled orange brown.	M				**SUBDIVISION FILL**
								Sandy SILT: low plasticity, brown, sand is fine to medium grained.		St	⊕ ⊙		**VOLCANIC ASHES**
			VS 73/ 16 kPa		1.0			**Silty CLAY**: medium plasticity, brown.			⊕ ⊙		
			VS 98/ 24 kPa		1.5			Hand Auger HA04 terminated at 1.5 m Target depth			⊕ ⊙		
					2.0								

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method
AD auger drilling*
AS auger screwing*
HA hand auger
W washbore
HA hand auger

* bit shown by suffix
e.g. AD/T
B blank bit
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support
M mud
C casing
N nil

penetration
1 2 3 — no resistance ranging to refusal

water
10-Oct-12 water level on date shown
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water outflow

samples & field tests
B bulk disturbed sample
D disturbed sample
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U## undisturbed sample ##mm diameter
HP hand penetrometer (kPa)
N standard penetration test (SPT)
N* SPT - sample recovered
Nc SPT with solid cone
VS vane shear; peak/remouded (kPa)
R refusal
HB hammer bouncing

classification symbol & soil description
based on Unified Classification System

moisture
D dry
M moist
W wet
S saturated
Wp plastic limit
Wl liquid limit

consistency / relative density
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable
VL very loose
L loose
MD medium dense
D dense
VD very dense

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PENETROMETER
PENETRATION RESISTANCE
(Scala)

Client:	Venture Developments Limited	**Job No**	226846
Project:	16 Okataina Street	**Date**	13-Feb-19 / 15-Feb-19
Test Area:	Building platform	**By:** ML	**Checked:** LS

Test No	DCP 1	DCP 2	DCP3	DCP 4	DCP 5	DCP 6	DCP 7	DCP 8
Date Tested	13-Feb	13-Feb	13-Feb	13-Feb	13-Feb	15-Feb	15-Feb	15-Feb
Test Location								
Start depth (mm)	0	0	0	0	0	0	0	0
100	1	4	1	1	2	1	1	6
200	5	3	2	3	3	1	2	6
300	6	3	2	4	4	2	6	7
400	6	3	2	3	4	4	8	5
500	6	1	1	3	3	4	6	4
600	5	3	1	1	4	4	6	4
700	3	2	2	1	2	3	4	6
800	2	2	1	1	1	3	3	4
900	2	2	1	1	2	4	2	2
1000								

Test No	DCP 9	DCP 10	DCP 11	DCP 12	DCP 13	DCP 14	DCP 15	
Date Tested	15-Feb	15-Feb	15-Feb	15-Feb	15-Feb	15-Feb	15-Feb	
Test Location								
Start depth (mm)	0	0	0	0	0	0	0	
100	6	6	2	4	5	4	4	
200	8	6	4	3	6	9	7	
300	6	3	4	6	10	6	7	
400	4	4	3	5	6	6	6	
500	2	3	3	6	5	8	6	
600	3	3	3	4	7	7	2	
700	2	1	2	3	6	4	3	
800	2	1	2	3	5	2	4	
900	1	2	2	2	5	2	3	
1000								

Notes:

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PENETROMETER
PENETRATION RESISTANCE
(Scala)

Client:	Venture Developments Limited	**Job No**	226854
Project:	16 Okataina St	**Date**	19-Feb-19
Test Area:	Building Platform	**By**: ML	**Checked:** LS

Test No	DCP 16	DCP 17	DCP 18	DCP 19	DCP 20	DCP 21	DCP 22	
Date Tested	19-Feb	19-Feb	19-Feb	19-Feb	19-Feb	19-Feb	19-Feb	
Test Location								
Start depth (mm)	0	0	0	0	0	0	0	
100	**1**	**3**	**3**	**3**	**3**	**4**	**3**	
200	**4**	**4**	**4**	**5**	**5**	**5**	**5**	
300	**4**	**4**	**5**	**6**	**6**	**6**	**6**	
400	**5**	**6**	**8**	**7**	**8**	**10**	**7**	
500	**7**	**8**	**8**	**9**	**8**	**8**	**9**	
600	**8**	**9**	**9**	**7**	**8**	**6**	**6**	
700	**7**	**8**	**9**	**8**	**8**	**3**	**5**	
800	**9**	**9**	**9**	**6**	**6**	**3**	**3**	
900	**9**	**8**	**6**	**5**	**4**	**2**	**2**	
1000								
Test No								
Date Tested								
Test Location								
Start depth (mm)								
100								
200								
300								
400								
500								
600								
700								
800								
900								
1000								

Notes: