Western Bay of Plenty District Council

25 KAHAWAI PLACE, OMOKOROA

LIM

Land Information Memorandum

Information in a LIM:

Rates and Water Rates

- Current Rating Valuation.
- Annual Rates.
- Outstanding Rates amounts.
- Water Charges.

Sewer and Stormwater

- Whether the property has district sewer available and whether it is connected.

Natural Hazards

- Actual and potential natural hazards.
- Actual and potential impacts of climate change that exacerbate natural hazards.
- Cumulative or combined effects of these hazards and impacts.

Special Land Features

- Including potential avulsion, falling debris, slippage, alluvion, or inundation on the site which have not identified as natural hazards.
- The status of the land in relation to the contamination of soil by hazardous substances.
- Weathertight Homes information (if relevant).
- Any relevant reports or information held by council in relation to the property.

Archaeological Sites

- Any relevant Archaeological sites.

Building Consents, Licences and Requisitions

- Building Permits/Consents issued on the property.
- Any outstanding works, Code Compliance Certificates for consents issued since 1993.
- If a Compliance Schedule has been issued for the building and when the related Warrant of Fitness expires.

Licences and Environmental Health

- Whether the property has a licence relating to the sale of food, the sale of liquor or any other licence (under Health Act 1956).

Enforcements and Notices

- Any notice, order, or requisition affecting the land or any building on the land previously issued by Council.

Planning and Resource Management

- Zoning of the property as defined by Operative and/or Proposed District Plans.
- All Resource Consents approved in relation to the property.
- Long term Community Plans.
- Structure Plans.

Drainage and Water

- Information on public stormwater and wastewater pipelines on the property as shown on Councils log plans.
- Water toby location.

Maps

- Maps relating to the property including Aerial Photo, Land Information, District Plan, Natural Hazards (not District Plan) and Archaeological Sites and Deposited Plan.

Information not in a LIM:

- Building Plans.
- For information in relation to State Highways please contact the New Zealand Transport Authority (NZTA).
- Western Bay of Plenty District Council does not hold any information concerning electricity, gas and telephone connections.
- Records of Title (previously known as Certificates of Title).

Disclaimer:

- Under section 44D of the Local Government Official Information and Meetings Act 1987 The territorial authority is not liable in a civil or criminal proceeding for making available in good faith the information in a land information memorandum that is known to the territorial authority about natural hazards that is required by s 44B. This includes information that identifies the following:
    - each natural hazard and each impact of climate change that exacerbates natural hazards, that affects the land concerned;
    - each potential natural hazard and each potential impact of climate change that exacerbates natural hazards to the extent that the territorial authority is satisfied that there is a reasonable possibility that the hazard or its impact may affect the land concerned (whether now or in the future);
    - the cumulative or combined effects of the hazards and impacts referred to above; and
    - any further information required by the regulations to make the information above more understandable.
- The Council records can be incomplete in some instances.
- The Council has not carried out an inspection of the land and/or buildings for the purpose of preparing this LIM. The Council records also may not show illegal or unauthorised building or works on the land.
- The Council does not provide interpretation or advice on how to interpret or utilise this information. If this required, the applicant should seek appropriate and independent professional advice.

Land Information Memorandum

Sections 44A and 44B Local Government Official Information and Meetings Act 1987

25 November 2025

P/1225/15

ADAMS, GARTH DEAN
19 KAHAWAI PLACE
OMOKOROA 3114

Kia orā

Thank you for your application for a Land Information Memorandum.

The original of this LIM has been prepared pursuant to Sections 44A and 44B of the Local Government Official Information and Meetings Act 1987, solely for the applicant, and contains information known to Council within its records and only relevant to the site requested. The reliance by other parties on the information within this LIM shall be at that other parties' sole risk. If any interpretation or explanation is required on any of the enclosed information or plans, the services of an independent advisor or consultant should be sought.

It is recommended that the Record of Title, which is not issued by Council, be searched by the purchaser. The LIM does not necessarily include information relating to private covenants or other memoranda affecting the title and those should be obtained from a Land Record search.

In preparing this report, no Council inspection of the property has been undertaken.

This Land Information Memorandum is valid as at the date of issue only.

Ngā mihi

The Consents Services Team (Resource Consents)

limprocessors@westernbay.govt.nz

1 Applicant

Client Name:	
Applicant Name:	ADAMS, GARTH DEAN
	19 KAHAWAI PLACE
	OMOKOROA 3114
Postal Address:	19 KAHAWAI PLACE
	OMOKOROA 3114
Application Date:	13 Nov 2025
Issue Date:	25 November 2025

2 Property

Property Owner:	ADAMS, GARTH DEAN
	ADAMS, SHARON PAULINE
Valuation No:	06829 005 64
Location:	25 KAHAWAI PLACE CENTRAL
Legal Description:	LOT 59 DP 537960
Area (hectares):	0.0575

Copies of any relevant deposited plan(s) can be found in the 'Maps' Section of this LIM (if available). Please note, this is not a Record of Title(s)

3 Rates and Water Rates

The information provided on rates/financial details in this report may not reflect the current details of the legal description/valuation on your application form. This may be due to the property being under subdivision or that the information has not yet been provided or updated for the current valuation and improvements for this financial year.

Note: Rates, Rateable Valuation Details and Water Rates relate to a valuation number. This may be linked to other properties, or a parent property. For this Land Information Memorandum, the valuation number 06829 005 64 is linked to:
Lot 59 Deposited Plan 537960

Land Value:	$455,000
Improvements:	$545,000
Capital Value:	$1,000,000
Tree Value:	$0
Annual Rates:	$4,602.13
Rates Owing:	$0.00

Note: For the period until rates are "set" the Current Annual Rates and Rateable Valuation Details should not be relied upon and any queries should be directed to the Rates Team.

Rates are charged in two equal instalments for the period commencing 1 July and ending 30 June each year.

Water Rates – This information applies to Western Bay of Plenty District Council (WBOPDC) systems only. In some parts of Tauriko, Papamoa, Pyes Pa and Oropi, properties are served by Tauranga City Council system.

Metered Water	YES
Date of Last Reading	19 Aug 2025
Connected	YES
Available	YES
Owing	$0.00

Water rates may be outstanding on this property as meter readings are completed six monthly.

Further information about Council's water supply and water quality is available from Council's website. Please refer to the WBOPDC Water Supply System Bylaw 2008: Water Supply System Bylaw 2008

Rates information and valuation history can be found online at the WBOPDC website: Rating Information Search

For any information regarding Māori Land, please contact the Waiariki or Waikato/Maniapoto Office of the Māori Land Court or view their website and online records at: Māori Land Court

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4 Building

This information is a record of details held on Council files and may not reflect the situation on site if work has been undertaken without consent. If Council holds any as-built drainage plans relevant to this property they will be included in the attachments section of this LIM.

4.1 Building Consents

BC	Project	Status of Consent
92128	NEW RETAINING WALL	CCC FINAL ISSUED 26 Jan 2021
94017	NEW DWELLING	CCC FINAL ISSUED 04 Nov 2020

Building, Plumbing and Drainage Permits issued prior to 1993 will not have a Code Compliance Certificate as the requirement for this did not come into effect until 1 January 1993.

Note: Any information held by Council relating to Building Permits will be listed on the Historical Data page at the back of this section in your LIM.

Information regarding buildings where Council holds no records of consents:

The absence of records for building permits or consents may mean any of the following:

- The building was erected without a permit or consent.
- The building work may be exempt from requiring a permit/consent.
- A Council record is unable to be located.

If building work was carried out without a building permit prior to the 1991 Building Act, or without obtaining building consent under the Building Act 1991 or Building Act 2004, then there is no authority under those Acts for the Council to retrospectively issue a building consent for the work.

For buildings erected prior to the commencement of the Building Act 1991, without any building permit or for which Council holds no records, then Council is generally unlikely to take any action against the current owners of that building unless the building is unsafe or insanitary in terms of the Building Act 2004 or the Health Act 1956. This assumes that the building complies in all other respects with other statutory requirements.

For post-Building Act 1991/Building Act 2004 work, for which the Council holds no record, or the work is not exempt, it is likely that the building work was carried out without consent. If so, the property owner and the person who carried out the work may have contravened the Building Act 1991 and Building Act 2004, and enforcement action may be taken at the Council's discretion. However, some building work is exempt from requiring a permit/consent. This generally applies to small buildings or structures and minor alterations. Irrespective of whether consent is required the Building Act requires that all building work must comply with the Building Code. Potential purchasers of properties requiring further information on building work are advised to engage a qualified building professional to inspect and report.

A certificate of acceptance can be applied for when work is done without a building consent after 1 July 1992, or in specific circumstances when a code compliance certificate (CCC) can't be issued.

For further information go to – Certificate of Acceptance Information

4.2 Certificate of Acceptance

COA	Status
None Known	

4.3 Compliance Schedules / Building Warrant of Fitness:

Premise	Notes
None Known	

4.4 Earthquake Prone Buildings

There are no Earthquake Prone Buildings located on this land.

5 Environmental Health

5.1 Premise Registration

Premises	Category	Licence Status
None Known		

5.2 Liquor Licenses

Type	Status	Licence No	Date Issued
None Known			

5.3 Enforcements and Notices

Parcel ID	Notice Type	Comments	Date Issued	Date Complied
None Known				

6 Natural Hazards

This section contains details of whether the land is affected by one or more natural hazards as defined in the Resource Management Act 1991:

"Natural hazard means any atmospheric or earth or water related occurrence (including earthquake, tsunami, erosion, volcanic and geothermal activity, landslip, subsidence, sedimentation, wind, drought, fire, or flooding) the action of which adversely affects or may adversely affect human life, property, or other aspects of the environment".

This information should not be regarded as a full analysis of the site features of this land as there may be features that the Council is unaware and has no knowledge of. It is the landowner's responsibility to determine whether the property is suitable for any proposed activity or whether any proposed building site is suitable for development (and to undertake tests if necessary).

Notes: The WBOPDC's website linked below contains information about natural hazards which may be relevant to the site. Before using this website it is important that you read the terms of use to understand the limitations of that information. You are advised to seek expert advice regarding applicability and accuracy of the information as it relates to the site. The website does not replace a Land information Memorandum (LIM), which is requested from the District Council, and may contain other information about natural hazards.

The website can be accessed at the following link: Natural Hazards - Western Bay of Plenty District Council.

The Bay of Plenty Regional Council's **Bayhazards** website linked below also contains information about natural hazards which may be relevant to the site. Before using the Bayhazards website it is important that you read the terms of use to understand the limitations of that information. You are advised to seek expert advice regarding applicability and accuracy of the information as it relates to the site. The Bayhazards website does not replace a LIM which is requested from the District Council, and may contain other information about natural hazards. The **Bayhazards** website can be accessed at the following link: Bayhazards Natural Hazards Viewer.

6.1 Natural Hazard Information sourced from Western Bay of Plenty Operative (District Plan)

The District Plan maps currently identify coastal erosion, coastal inundation, flooding and land instability in some of the locations that may be susceptible to them. See the 'District Plan' map in the 'Maps' Section of this LIM.

Property specific Natural Hazard information relating to the Natural Hazards identified by the District Plan map can be found under Section **'6.3 Natural hazard information relating to the land concerned'.**

6.2 Natural Hazard Information Relating to the Building Act 2004

This section contains details of:

- Whether a notification of a building consent that relates to a natural hazard on the land concerned has been provided for under section 73 of the Building Act 2004, or in accordance with section 36(2) of the Building Act 2004 or section 641A of the Local Government Act 1974.
- Signs or notices under section 133BT of the Building Act 2004 on or near building on the land.
- Entries on certificates of title under section 434 of the Building Act 2004

No information known to Council.

Note: If there is an Earthquake Prone Building located on this property it will be identified in Section "Earthquake Prone Buildings" of this LIM report.

6.3 Natural Hazard Information Relating to the Land Concerned

6.3.1 Earthquake

Note: If there is an Earthquake prone building located on this property it will be identified in Section "Earthquake Prone Buildings" of this LIM report.

6.3.2 Active Faults

No information known to Council.

6.3.3 Liquefaction

NOT DISTRICT PLAN
Regionwide

Tonkin + Taylor Ltd have prepared a report titled 'Bay of Plenty Regional Liquefaction Vulnerability Assessment' (April 2021). The report was commissioned by the Bay of Plenty Regional Council.

The report presents the results of a liquefaction mapping exercise for the Bay of Plenty Region.

The Report was prepared in accordance with the Ministry for the Environment (MfE) and Ministry of Business, Innovation and Employment (MBIE) 'Planning and Engineering Guidance for Potentially Liquefaction Prone Land' (2017) to a Level A (basic desktop assessment) level of detail.

The liquefaction maps from the report are shown on the map in this LIM titled 'Natural Hazards (Not District Plan)' and on Council's online natural hazards maps. The mapped categories are 'liquefaction damage is unlikely', 'liquefaction damage is possible' and 'liquefaction category is undetermined'.

The subject property is identified based on information contained in the report as having one or more of these categories.

'Liquefaction damage is unlikely' means a probability of more than 85 percent that liquefaction-induced ground damage will be none to minor in a 1-in-500 year earthquake shaking event.

'Liquefaction damage is possible' means a probability of more than 15 percent that liquefaction-induced ground damage will be minor to moderate (or more) in a 1-in-500 year earthquake shaking event.

'Liquefaction category is undetermined' means that a liquefaction vulnerability category is undetermined, either because a liquefaction assessment has not been undertaken for this area, or there is not enough information to determine the appropriate category with the required level of confidence.

The report can be viewed on Council's natural hazards webpage (liquefaction subpage) at www.westernbay.govt.nz/liquefaction.

6.3.4 Tsunami

No information known to Council.

6.3.5 Coastal Erosion

No information known to Council.

6.3.6 Volcanic and Geothermal activity

No information known to Council.

6.3.7 Landslip

No information known to Council.

6.3.8 Subsidence

No information known to Council.

6.3.9 Sedimentation

No information known to Council.

6.3.10 Wind

No information known to Council.

6.3.11 Drought

No information known to Council.

6.3.12 Fire

No information known to Council.

6.3.13 Flooding

No information known to Council.

6.3.14 Coastal Inundation

No information known to Council.

6.3.15 Other General Natural Hazards Information

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.

LANDSLIDE

Council holds information from a recent regional landslide study (2023) that identifies areas susceptible to landslide (from rainfall and earthquake) across the whole of the district. These results are high-level and not able to be shown at a property level. For more information go to the Land Instability pages on the Western Bay of Plenty District Council's website.

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7 Special Feature(s) or Characteristic(s)

This section contains information about other special features or characteristics of the land that is known to the Council, but is not apparent from a district plan under the Resource Management Act 1991, including:

- potential avulsion, falling debris, slippage, alluvion, or inundation on the site which have not already identified as natural hazards above.
- the likely presence of hazardous substances on the site.

This information should not be regarded as a full analysis of the site as there may be features that the Council has no knowledge of. The applicant is solely responsible for ensuring that the land is suitable for a particular purpose.

7.1 Hazardous Substance(s)

No information known to Council.

7.2 Site Contamination

No information known to Council.

7.3 Hazardous Contaminant(s)

No information known to Council.

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8 Historic Heritage Features and Archaeological Sites

Please refer to the map section of this LIM. The Geographic Information Services (GIS) plan entitled 'Archaeological Sites' will identify any registered archaeological site(s) over the property (depicted as a "U" number in a red/pink box/circle). If a site(s) is recorded on the property, an 'archaeological sites report' will be attached.

Please also refer to the District Plan map, this will also identify any significant historic heritage features located on the property. If a significant historic heritage feature is recorded over the property, the provisions of Section 7 (Historic Heritage) of the Operative District Plan apply.

If the GIS plan or District Plan map does not identify any archaeological site(s) and/or historic heritage feature(s) it should not be assumed there are no sites or features, only that Council has no record of these. Property owners still have obligations under the Heritage New Zealand Pouhere Taonga Act 2014 in that it is an offence for anyone to destroy, damage or modify or cause to be destroyed, damaged or modified, the whole or part of any archaeological site, knowing or having reasonable cause to suspect it is an archaeological site.

Further information on Archaeological Sites and/or Historic Heritage Features in the Western Bay of Plenty District can be found here;

- Operative District Plan
- NZAA Arch Site Hub
- Heritage New Zealand

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9 Sewer and Stormwater

There are Council Services on this property (refer to the 'Land Information' map in the Maps section of this LIM).

District Sewer Connected: YES

District Sewer Available: YES

If a sewer is available, under the Local Government Act 1974, the property must connect to the sewer if it is within 30 metres of the property boundary or if the sewer is within 60 metres of the dwelling.

9.1 Septic Tanks and On-Site Effluent Treatment Systems (OSET)

Most septic tanks in the Western Bay of Plenty are permitted provided they are adequately maintained, however, when making dwelling additions you may need to upgrade the wastewater system, and this will require Building Consent under the Building Act 1991.

The removal and/or upgrade of existing septic tanks and/or OSET may also require Resource Consent from the Bay of Plenty Regional Council. Please contact Bay of Plenty Regional Council directly 0800 884 880 if you have any further questions about this.

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10 Network Utility Operators

The WBOPDC does not hold any information concerning electricity, telecommunication and gas connections. Information may be obtained from the relevant network utility providers.

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11 Projects

We work to provide good-quality local infrastructure and local services to our communities. Council projects tend to be one off, take place over the long term and impact a large area or community. You can read about Council projects here:

Council Projects

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12 Planning/Resource Management

12.1 The Western Bay of Plenty Operative District Plan

This property is zoned **Medium Density Residential (Omokoroa)**. See the District Plan map in the 'Maps' section of this LIM. The District Plan including rules, maps and performance standards, plus any current (and previous) Plan Changes can be found here:

Operative District Plan

District Plan Changes

12.2 Natural Hazards Identified in the District Plan

12.2.1 Flooding

None known

12.2.2 Coastal Erosion

None known

12.2.3 Coastal Inundation

None known

12.2.4 Land Instability

None known

12.3 Identified Significant Features

12.3.1 Significant Ecological Feature(s)

None known

12.3.2 Outstanding Landscape Feature(s)

None known

12.3.3 Cultural and/or Built Heritage Feature(s)

None known

12.3.4 Notable tree(s)

None known

12.3.5 Designation(s)

None known

12.3.6 Proposed Esplanade Strip(s) and /or Reserve(s)

None known

12.3.7 Esplanade Strip(s) and /or Reserve(s)

None known

12.3.8 Other

None known.

12.4 Resource Consents

RC Number	Status	Consent Type	Date Granted
	None Known		-

Notes:

- Resource consents can lapse. Applicants are advised to verify the status of Resource Consents with Council staff.
- If a Resource Consent(s) has been granted on this property it does not infer that the conditions of the consent have been met. Applicants are advised to verify the status of Resource Consent(s) with Council's Customer Service Planner.

12.5 Other Consents, Certificates, and Licences

Any information held by council relating to Historic Planning Consents will be listed on the 'Historical Data' page attached to this LIM.

If there are any Consent Notices (and associated technical reports), Certificates, Bush Protection Inspections and/or Yard Exemption Statements relevant to this property they will be included in the 'Attachments' section of this LIM.

12.6 Community Plans

Council has a programme to help urban communities in the district develop long term plans that detail a vision for each community. Information regarding current Community Plans can be found here:

Community Plans

12.7 Structure Plans

Structure plans have been created by Council to assist in managing the District's growth. These identify new areas for development and show required infrastructure (roading, water supply, wastewater disposal, stormwater and recreation) and associated costs. These structure plans are contained in and shown on the Planning Maps.

Structure Plans

13 Other Useful information

The WBOPDC provides the following discretionary information which it considers to be relevant in accordance with Section 44A(3) of the Local Government Official Information and Meetings Act 1987 (LGOIMA).

13.1 Council Website and ePlan

The Council's Website provides comprehensive information and resources, including details on building and resource consents topics such as natural hazards and zoning.

Council Website

The ePlan is an interactive electronic version of the District Plan. It aims to make it easier to find information relevant to your property and to have your say on changes to the District Plan.

ePlan

13.2 Reserve Management Plans

There are management plans in place for 222 reserves across the District, including plans covering each urban community.

Management plans are a statutory requirement under the Reserves Act. A plan provides a one-stop reference point that includes a reserves classification and legal status, the area it covers, infrastructure and funding for capital projects councils want to undertake.

Reserve Management Plans

Under Council's Reserve Management Plan(s) any property adjoining a public reserve is not permitted to encroach onto that reserve. Where new encroachments occur, or if an existing encroachment exists, Council will give notice to the encroacher to remove the encroachment and reinstate the reserve at their own cost. Please refer to the Reserve Management Plan.

13.3 The Bay of Plenty Regional Council

Regional Council policies and plans may affect the use and management of land, water air and other natural and physical resources.

For further information on whether a property is affected by any Regional Planning instrument or by some other function of the Regional Council please contact Regional Council.

Bay of Plenty Regional Council Website

13.4 The Ministry for the Environment

The Ministry for the Environment administer Acts, National Policy Statements, National Environmental Standards and other regulations.

Act and Regulations

HISTORICAL DATA

There are no historical building permit documents held for this property

There are no historical planning consent documents held for this property

MAPS

Aerial Photography

Land Information

Land Information Legend

District Plan

District Plan Legend

Other Natural Hazards (not in District Plan)

Natural Hazards Legend

Archaeological Sites

Archaeological Sites Report

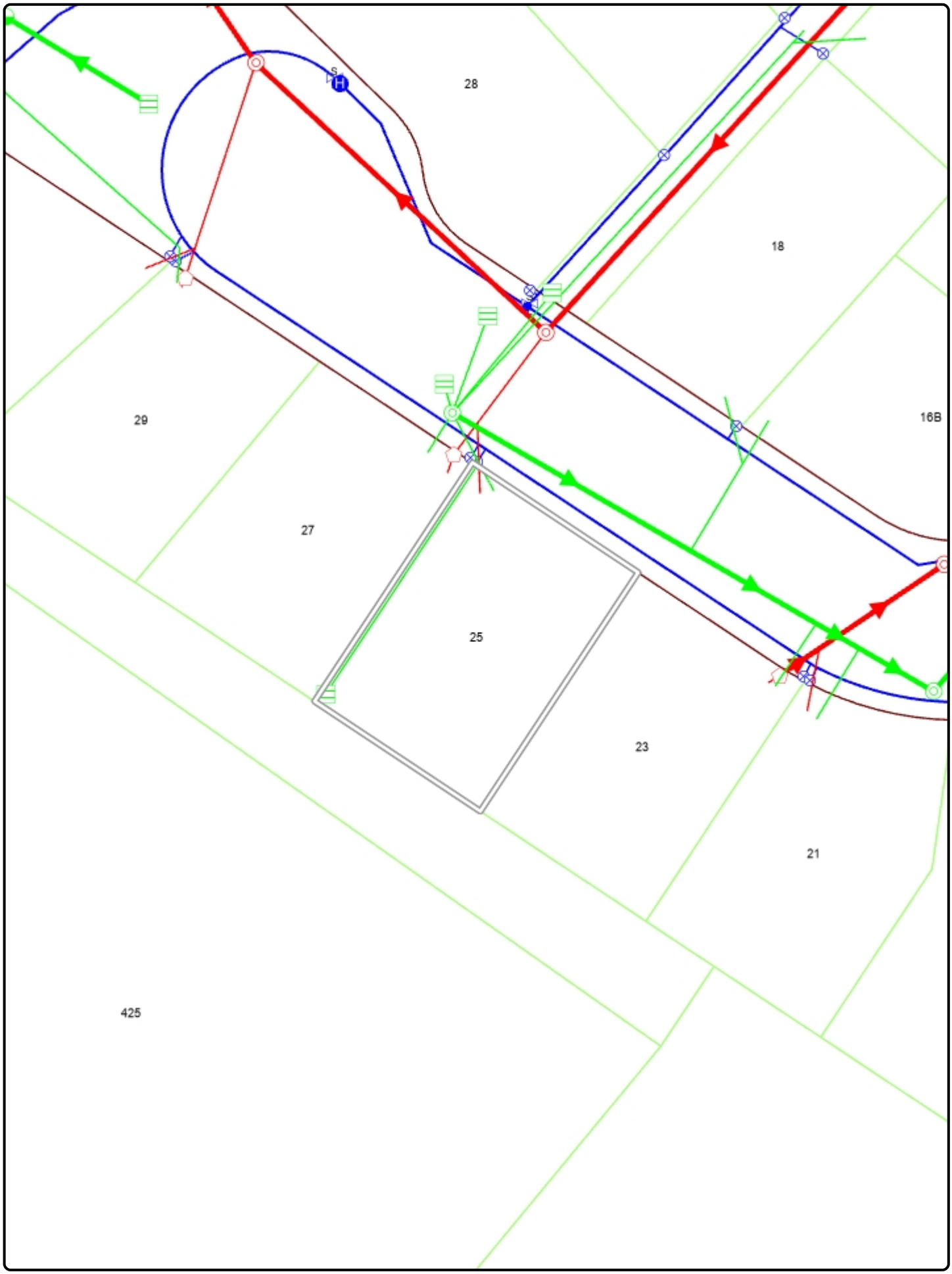
Western Bay of Plenty District Council | For our people

Produced using ArcMap by the Western Bay of Plenty District Council GIS Team.
Crown copyright reserved. LINZ digital license no. HN/352200/03 & TD093522.

Aerial Photo

0 — 25 Meters A4 Scale 1: 500

N



Western Bay of Plenty District Council

For our people

Land Information

0 25 Meters A4 Scale 1: 500

N

Water Supply

- Main
- Rider Main / Connection
- Instruments - Meter / Toby
- Valve - Air Release
- Valve - Altitude
- Valve - Non Return / Backflow Preventer
- Valve - Butterfly
- Valve - Flow Control
- Valve - Flow Meter
- Valve - Hydrant
- Valve - Normally Closed
- Valve - Pressure Reducing
- Valve - Pressure Sustaining
- Valve - Scour
- Valve - Sluice
- End Cap
- Junction
- Treatment Plant
- Containment Structure - Reservoir or Tank
- Pump
- Well - Bore

Stormwater

- Gravity Main
- Gravity Main (Below 1:2000)
- Pressure Main
- Service Main / Connection
- Open Drain
- Grass Swale
- Catchpit
- Chamber - Box
- Chamber - Inspection Shaft
- Chamber - Manhole
- Soakhole
- Valve - Flood Gate
- Valve - Sluice
- Wing Wall
- Inlet
- Junction
- Outlet
- Pump
- RAMM Culvert
- Stormwater Drainage Reserve
- Stormwater Pond

Wastewater

- Gravity Main
- Gravity Main (Below 1:2000)
- Rising Main
- Service Main / Connection
- Chamber - Inspection Shaft
- Chamber - Manhole
- Mechanical - Grinder Pump
- Valve - Air / AirKnife
- Valve - Non Return
- Valve - Pressure Reducing
- Valve - Scour /Knife
- Valve - Sluice
- Inlet
- Treatment Plant
- Junction
- Outlet
- Instruments - Flow Meter
- Pump
- Wastewater Pond

Property

- Paper Road
- Property or Restrictive Area
- Building
- Hydro
- Railway
- Road
- Parcel
- TCC Water Catchment

Protected Land

- Statutory Acknowledgement Areas
- Consent Notice Covenant
- Ecological
- Conservation Covenant
- QE II

RAP

- Class 1
- Class 2
- Class 3

WBOP

- Other Councils
- Western Bay of Plenty
- Ocean, River, Stream
- Selected Parcel

Location of Services is indicative only.
Council accepts no liability for any error.

Western Bay of Plenty District Council | For our people

Land Information Legend

Western Bay of Plenty District Council | For our people

Produced using ArcMap by the Western Bay of Plenty District Council GIS Team.

District Plan

0 25 Meters A4 Scale 1: 500

N

Constraints

- Built Heritage Feature
- Cultural Heritage Feature
- Cultural Heritage Feature Boundary
- Coastal Erosion Area - Primary Risk (1)
- Coastal Erosion Area - Secondary Risk (1)
- Coastal Erosion Area - Access Yard
- Coastal Erosion Area – Rural
- Coastal Inundation Area
- Significant Ecological Feature / RAP
- Flood Hazard
- Outstanding Landscape Feature - 50m (S7a & S8a) - 40m (S9a)
- Outstanding Landscape Feature
- Stability Area - Minden A
- Stability Area - Minden B1
- Stability Area - Minden B2
- Stability Area - Minden C
- Stability Area - Minden U
- Stability Area - General
- Stability Area - Landslip
- Viewshaft

Infrastructure

- Airport Approach Surface
- Formed Roads
- Limited Access State Highways
- Stop Bank

Reserves

- Kaimai - Mamaku Forest Park Boundary
- Esplanade Strip
- Priority proposed esplanade strip/reserve
- Proposed esplanade strip/reserve
- Reserve
- Reserve, Department of Conservation

Urban Map Display

- Notable Trees
- Town Centre Boundary
- Designation

Structure Plans

- Greenlane
- Intersection Upgrades
- Pedestrian Bridge
- Road Bridge
- Road
- Walk / Cycle Way
- Stormwater
- Wastewater Pump Station
- Wastewater
- Water Supply
- Stormwater Pond
- Identified Area (2)
- Minden Lifestyle Structure Plan Area Overland Flowpaths & Local Ecological Features
- Ōmokoroa Mixed Use Residential Precinct
- Ōmokoroa Stages 3A, 3B and 3C
- Te Puke Stormwater Management Area
- Reserve Area
- Structure Plan Boundary

Zones

- Commercial
- Commercial Transition
- Future Urban
- Horticulture Post Harvest
- Industrial
- Light Industrial
- Lifestyle
- Medium Density Residential
- Natural Open Space
- Residential
- Rural
- Rural Residential
- TECT All Terrain Park

Zone Overlays

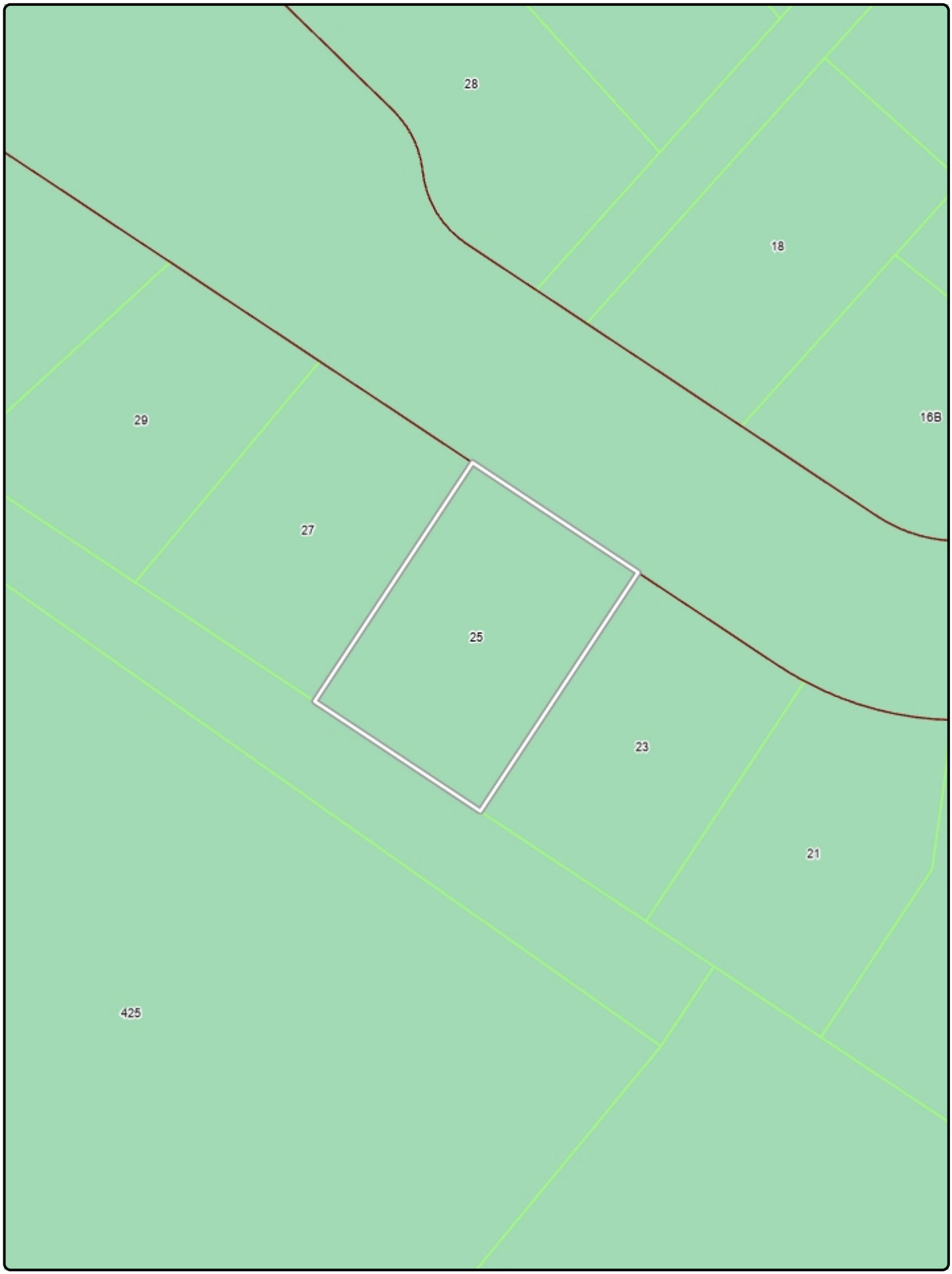
- Matakana Island Forested Sand Barrier
- TNL 100m Building Line Setback
- Electricity Transmission Line
- Electricity Transmission Line Buffer 16m (3)
- District Boundary
- Firing Range Exclusion Zone
- Quarry Effects Management Area

Bay of Plenty Regional Council should be consulted before undertaking any activity in the vicinty of Mean High Water Springs to establish the actual line of Mean High Water Springs.
Formed roads are indicated as white shading on the road land parcels. Unformed roads have the underlying zone indicated.

(1) Primary risk includes the whole of the red line and the land towards the sea. Secondary risk includes the whole of the green line up to the edge of the red line.
(2) The identified areas include; the community service area at Rangiuru, the central hub site within the All Terrain Park and buffer zones in Stage 2 Omokoroa and Binnie Road.
(3) Compliance with NZECP 34:2001 is required in this area for buildings/structures and earthworks. The distance quoted is from the centreline of the transmission line.

Western Bay of Plenty District Council | For our people

District Plan Legend



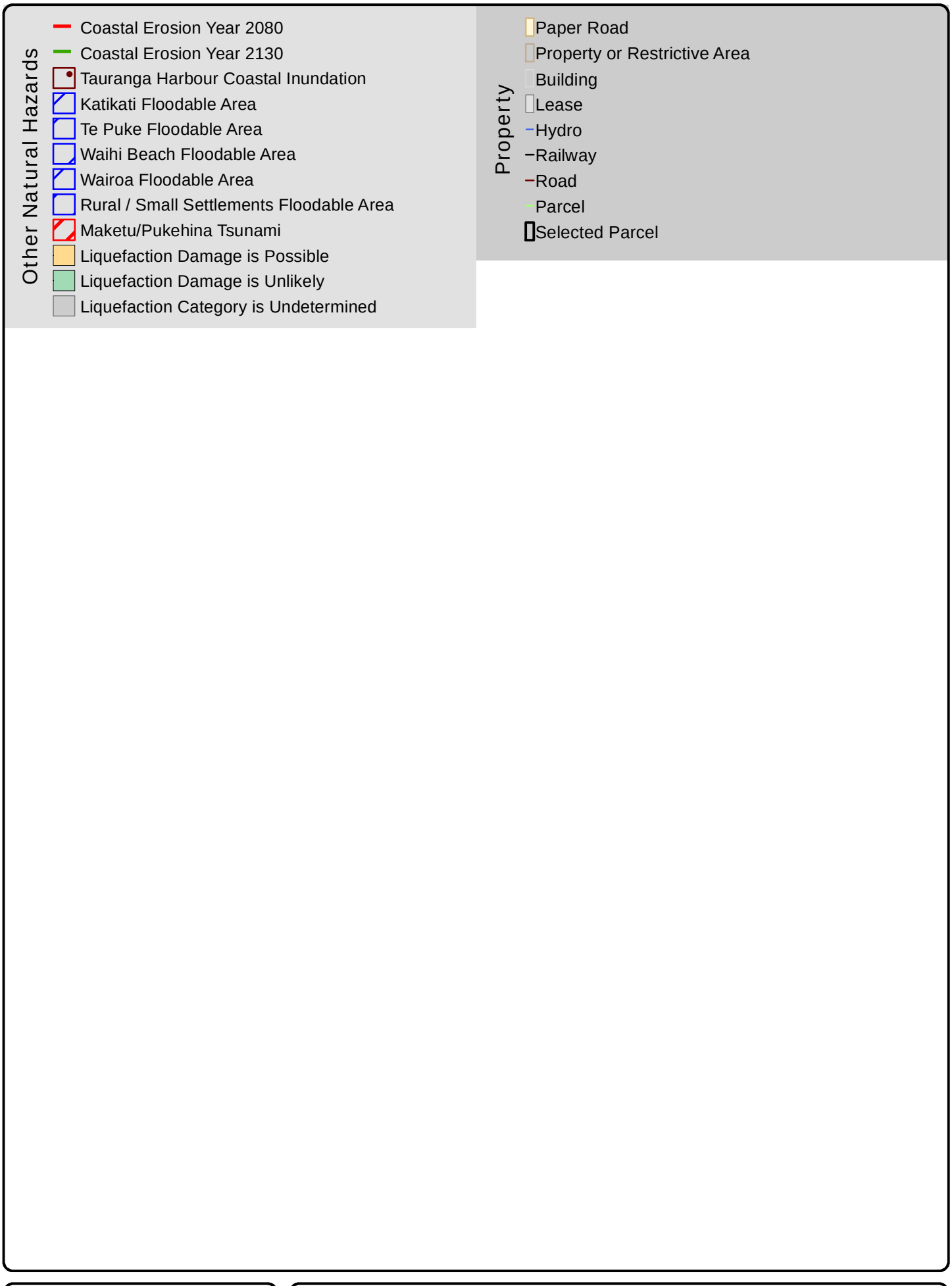
Western Bay of Plenty District Council | For our people

Natural Hazards (not District Plan)

0 — 25 Meters

A4 Scale 1: 500

N



Western Bay of Plenty District Council | For our people

Natural Hazards Legend

Western Bay of Plenty District Council | For our people

Archaeological Sites

0 — 25 Meters — A4 Scale 1: 500

N

Archaeological Sites Report as at 13 Nov 2025

INTERPRETATION OF DATA FROM NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION SITE RECORDING SCHEME

An archaeological site or sites exist within the identified area shown on the attached GIS A3 colour plan of the property.

It should be noted that the supplied ArchSite data contains information on site position collected since the mid-1950s, prior to the advent of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) technology. The methods used range from manually plotted coordinates on topographical maps through to the GPS technology of today.

The archaeological sites can be displayed in one of 3 ways:

1. A large pink square representing a100m grid means that the site(s) is one of the original sites recorded in the CINZAS database
2. A smaller purple 50m square means the site has been captured on screen (GIS)
3. A red 50m circle means the site has been surveyed by GPS

Regardless of capture method, the areas show there is at least one recorded site in that vicinity but it does not necessarily mean that the site occupies all of the parcels of land that lie within the areas. All areas are a flag and the exact location and extent of the site should be determined before anything else.

For many purposes, an inspection by a qualified archaeologist will be required. Information from the Site Recording Scheme is not a substitute for this.

Information from the Site Recording Scheme is available to members of the public. A fee may be charged for searching the files, extracting relevant information, and photocopying.

The following features of the data should be noted:

- ☐ A grid reference gives the location of a site, but it does not delimit its extent. The location of sites is usually only recorded to within about the nearest 100 m but the accuracy may in some cases be less than this.
- ☐ The absence of data for any particular area should not be taken to mean that it contains no archaeological sites. It may mean that no survey has been carried out, or that sites were obscured at the time the survey was done.
- ☐ Some recorded sites may no longer exist. (They may, for example, have been destroyed since they were recorded.)
- ☐ Historical (European period) archaeological sites, in particular, are currently under-represented in the Site Recording Scheme.
- ☐ Not all sites recorded in the Site Recording Scheme are archaeological sites in terms of the Heritage New Zealand Pouhere Taonga Act 2014. They may, for example, post-date 1900 or no longer be able, through investigation by archaeological methods, to provide evidence relating to the history of New Zealand.
- ☐ The formal evaluation of site significance is not a function of the Site Recording Scheme.
- ☐ While some archaeological sites may also be considered wahi tapu, the Site Recording Scheme is not specifically concerned with such places. If information about wahi tapu is required, it should be obtained from the relevant iwi.
- ☐ Information about burial sites will, in some circumstances, be withheld.

There are legal responsibilities that relate to all archaeological sites located at the grid references listed below, whether they are listed or recorded. This section lists all the archaeological sites which have been recorded as part of the New Zealand Archaeological Association site-recording scheme.

Note that some of these sites are also listed.

Section 42 of the Heritage New Zealand Pouhere Taonga Act 2014 makes it an offence for anyone to destroy, damage or modify or cause to be destroyed, damaged or modified, the whole or any part of any archaeological site, knowing or having reasonable cause to suspect it is an archaeological site.

Section 44 of the Act allows an application to destroy, damage or modify an archaeological site. In processing the application, the Trust may consider that the site should be listed and it will act accordingly.

For a copy of the Site Record Form please contact the Archsite Administrator for the New Zealand Archaeological Association (admin@archsite.org.nz).

For further information about what development can be carried out on the site please contact:

Ben Pick
Area Manager Lower Northern
Heritage New Zealand Pouhere Taonga
PO Box 13339
Tauranga 3141

Phone: 07 577 4530
Email: infolowernorthern@heritage.org.nz
Web: https://www.heritage.org.nz/

The Western Bay of Plenty District Council holds no further information except that the site or sites have been identified as follows:

Site Code	Feature Type	Description	Category	Age Group	Capture Method
U14/3563	Pit, Soil - garden	Pits and cultivated soils	Maori	Indigenous pre-1769, Contact 1769-1840	On Screen
U14/3898	Pit, Post hole, Midden	Pits, deflated terraces, dense and sparse shell middens, clusters of postholes, split obsidian fragment, revealed by topsoil stripping	Maori	Contact 1769-1840, Indigenous pre-1769	On Screen

Title Plan - DP 537960

Survey Number	DP 537960
Surveyor Reference	21118-LT-Stage2
Surveyor	Scott Rodney Carley
Survey Firm	Shrimpton and Lipinski Limited Partnership
Surveyor Declaration	I Scott Rodney Carley, being a licensed cadastral surveyor, certify that: (a) this dataset provided by me and its related survey are accurate, correct and in accordance with the Cadastral Survey Act 2002 and the Rules for Cadastral Survey 2010, and (b)the survey was undertaken by me or under my personal direction. Declared on 25 Oct 2019 08:57 AM

Survey Details

Dataset Description	Lots 36-61, 196, 212 and 301 being Subdivision of Lot 301 DP 524760		
Status	Deposited		
Land District	South Auckland	**Survey Class**	Class A
Submitted Date	25/10/2019	**Survey Approval Date**	04/11/2019
		Deposit Date	25/10/2019

Territorial Authorities

Western Bay of Plenty District

Comprised In

RT 840983

Created Parcels

Parcels	Parcel Intent	Area	RT Reference
Lot 36 Deposited Plan 537960	Fee Simple Title	0.0599 Ha	901278
Lot 37 Deposited Plan 537960	Fee Simple Title	0.0600 Ha	901279
Lot 38 Deposited Plan 537960	Fee Simple Title	0.0669 Ha	901280
Lot 39 Deposited Plan 537960	Fee Simple Title	0.0600 Ha	901281
Lot 40 Deposited Plan 537960	Fee Simple Title	0.0697 Ha	901282
Lot 41 Deposited Plan 537960	Fee Simple Title	0.0606 Ha	901283
Lot 42 Deposited Plan 537960	Fee Simple Title	0.0560 Ha	901284
Lot 43 Deposited Plan 537960	Fee Simple Title	0.0651 Ha	901285
Lot 44 Deposited Plan 537960	Fee Simple Title	0.0622 Ha	901286
Lot 45 Deposited Plan 537960	Fee Simple Title	0.0599 Ha	901287
Lot 46 Deposited Plan 537960	Fee Simple Title	0.0599 Ha	901288
Lot 47 Deposited Plan 537960	Fee Simple Title	0.0600 Ha	901289
Lot 48 Deposited Plan 537960	Fee Simple Title	0.0599 Ha	901290
Lot 49 Deposited Plan 537960	Fee Simple Title	0.0601 Ha	901291
Lot 50 Deposited Plan 537960	Fee Simple Title	0.0638 Ha	901292
Lot 51 Deposited Plan 537960	Fee Simple Title	0.0639 Ha	901293
Lot 52 Deposited Plan 537960	Fee Simple Title	0.0724 Ha	901294
Lot 53 Deposited Plan 537960	Fee Simple Title	0.0624 Ha	901295
Lot 54 Deposited Plan 537960	Fee Simple Title	0.0661 Ha	901296
Lot 55 Deposited Plan 537960	Fee Simple Title	0.0719 Ha	901297

Title Plan - DP 537960

Created Parcels

Parcels	Parcel Intent	Area	RT Reference
Lot 56 Deposited Plan 537960	Fee Simple Title	0.0683 Ha	901298
Lot 57 Deposited Plan 537960	Fee Simple Title	0.0575 Ha	901299
Lot 58 Deposited Plan 537960	Fee Simple Title	0.0576 Ha	901300
Lot 59 Deposited Plan 537960	Fee Simple Title	0.0575 Ha	901301
Lot 60 Deposited Plan 537960	Fee Simple Title	0.0575 Ha	901302
Lot 61 Deposited Plan 537960	Fee Simple Title	0.0625 Ha	901303
Lot 196 Deposited Plan 537960	Fee Simple Title	0.0308 Ha	Multiple
	Road	0.6140 Ha	
Lot 301 Deposited Plan 537960	Fee Simple Title	13.1400 Ha	901305
Area A Deposited Plan 537960	Easement		
Area B Deposited Plan 537960	Easement		
Area C Deposited Plan 537960	Easement		
Area D Deposited Plan 537960	Easement		
Area E Deposited Plan 537960	Easement		
Total Area		15.4064 Ha	

S&L
Land Development
and Design Specialists

S&L File: 21118 - Stage 2
TA Ref: S/B/11976

Land Registration District
South Auckland

Plan Number
DP 537960

Territorial Authority (the Council)
Western Bay of Plenty District Council

Memorandum of Easements			
Purpose	**Shown**	**Servient Tenement (Burdened Land)**	**Dominant Tenement (Benefited Land)**
Right of Way and Right to Convey Water, Electricity, Gas and Telecommunications	B	Lot 196 hereon	Lots 51, 52, 53, 54 and 55 hereon
Right to Drain Water	D	Lot 59 hereon	Lot 60, 61 hereon
	E	Lot 60 hereon	Lot 61 hereon

Memorandum of Easements in Gross			
Purpose	**Shown**	**Servient Tenement (Burdened Land)**	**Grantee**
Right to Convey Water Right to Drain Water Right to Drain Sewage	B	Lot 196 hereon	Western Bay of Plenty District Council
Right to Drain Water Right to Drain Sewage	A	Lot 39 hereon	
Right to Drain Sewage	C	Lot 52 hereon	
Right to Convey Telecommunications	B	Lot 196 hereon	Chorus New Zealand Limited

S&L
Land Development
and Design Specialists

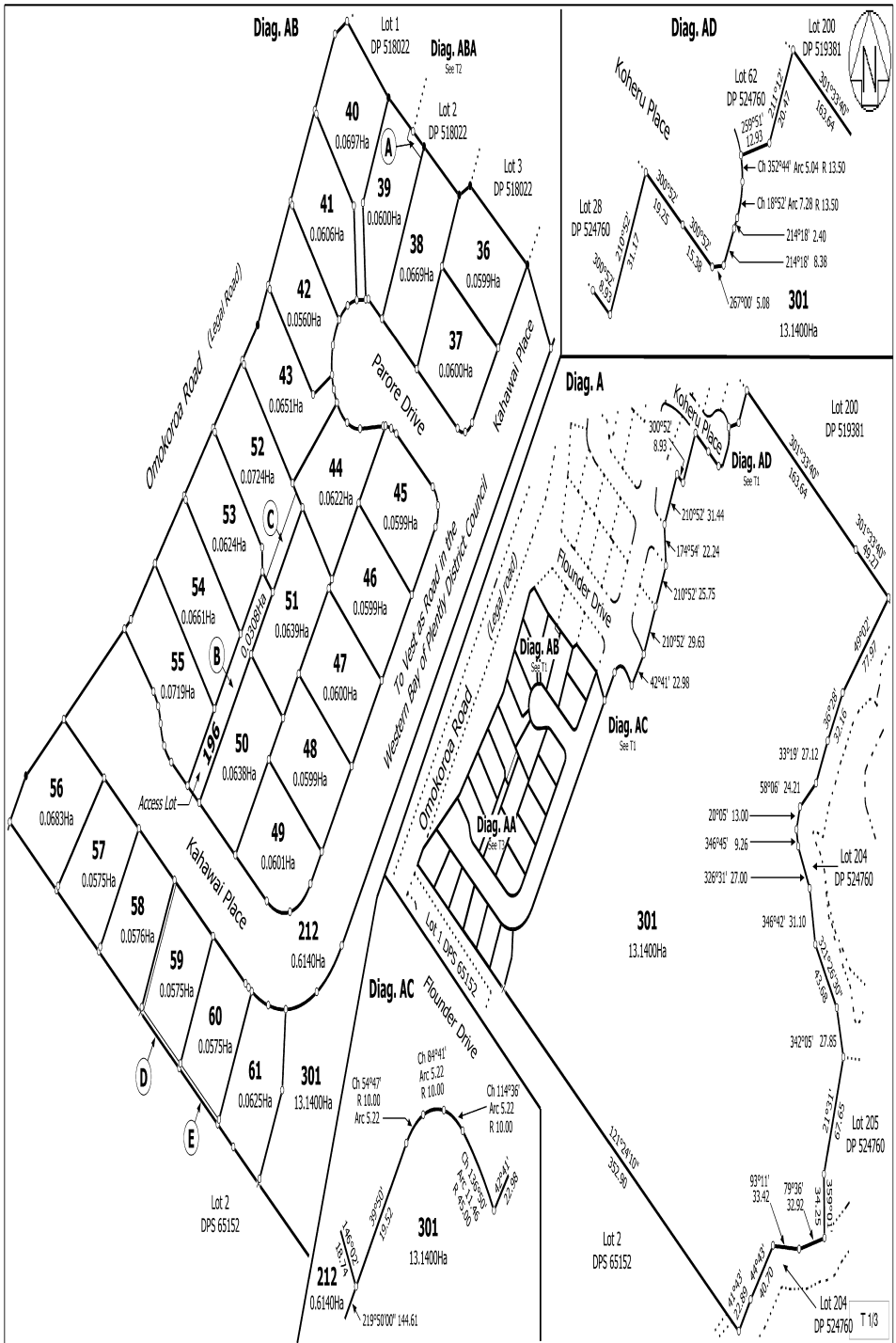
S&L File: 21118 - Stage 2
TA Ref: S/B/11976

Land Registration District	Plan Number
South Auckland	DP 537960

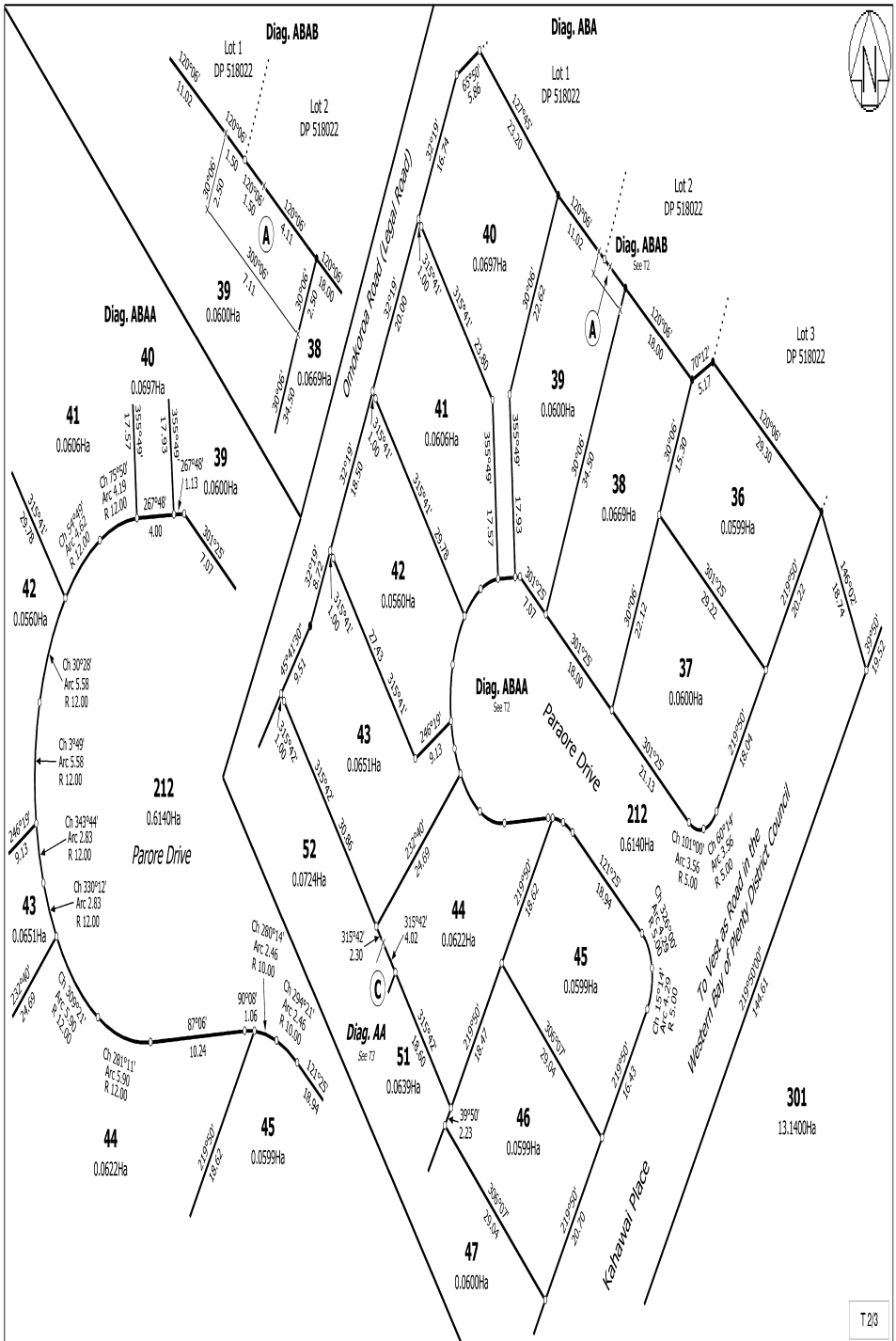
Territorial Authority (the Council)

Western Bay of Plenty District Council

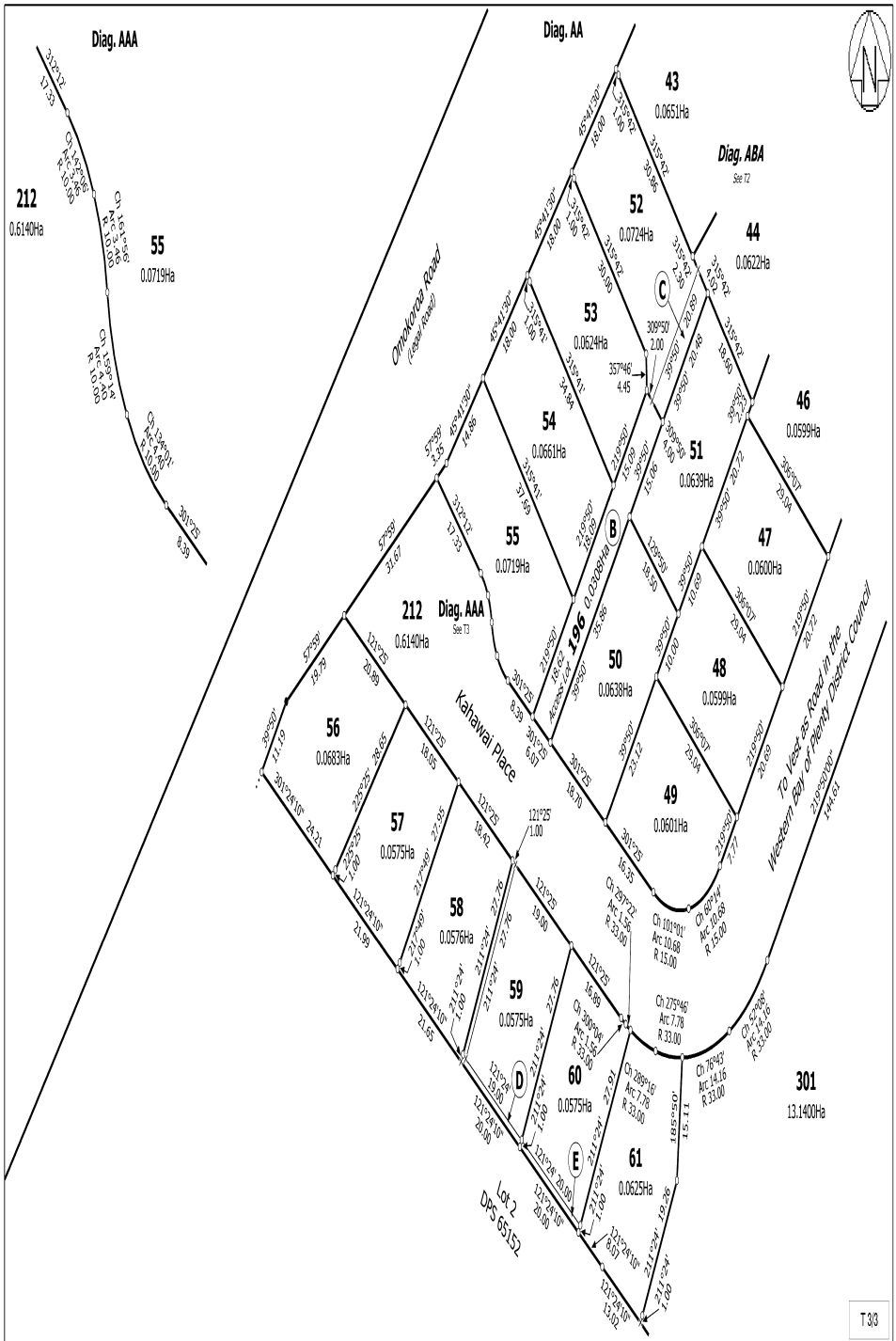
Amalgamation Conditions
That Lot 196 hereon (Legal access) be held as to five undivided one fifth shares by the owners of Lots 51, 52, 53, 54 and 55 hereon and individual certificates of title be issued in accordance therewith. (LINZ Reference 1389475)



Land District: South Auckland Digitally Generated Plan Generated on: 21/11/2019 12:21am Page 5 of 7	Lots 36-61, 196, 212 and 301 being Subdivision of Lot 301 DP 524760	Surveyor: Scott Rodney Carley Firm: Shrimpton and Lipinski Limited Partn	Title Plan DP 537960 Deposited on: 25/10/2019



Land District: South Auckland Digitally Generated Plan Generated on: 21/11/2019 12:21pm Page 6 of 7	Lots 36-61, 196, 212 and 301 being Subdivision of Lot 301 DP 524760	Surveyor: Scott Rodney Carley Firm: Shrimpton and Lipinski Limited Partn	Title Plan DP 537960 Deposited on: 25/10/2019



Land District: South Auckland Digitally Generated Plan Generated on: 27/11/2019 12:21pm Page 7 of 7	Lots 36-61, 196, 212 and 301 being Subdivision of Lot 301 DP 524760	Surveyor: Scott Rodney Carley Firm: Shrimpton and Lipinski Limited Partn	Title Plan DP 537960 Deposited on: 25/10/2019

Attachments

A3541016: RC10123 - Geotechnical Report TGA2018-0199AB Rev0 STAGE 2 GCR 060819
A3599258: RC10123 - Stage 2 - 221 Consent Notice - Lots 36-61(Geotech) Invoice

6 August 2019

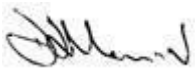
STAGE 2, TE AWANUI WATERS SUBDIVISION
423 OMOKOROA ROAD, OMOKOROA

GEOTECHNICAL COMPLETION REPORT

Neil Construction Limited

TGA2018-0199AB Rev.0

TGA2018-0199AB		
Date	**Revision**	**Comments**
28 June 2019	A	Initial draft for internal review
29 July 2019	B	Final draft for internal review
6 August 2019	0	Final issue to client

	Name	**Signature**	**Position**
Prepared by	Alex Zohrab		Engineering Geologist
	Greg Snook		Senior Engineering Geologist
Authorised by	Dave Morton		Principal Geotechnical Engineer CMEng NZ, CPEng TCC Category 1 Geotechnical Engineer

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DRAWINGS

APPENDICES

APPENDIX C: PRE-DEVELOPMENT FIELD INVESTIGATION DATA

APPENDIX D: EARTHFILL QUALITY CONTROL DATA

APPENDIX E: POST CONSTRUCTION HAND AUGER BOREHOLE LOGS

1. INTRODUCTION

This Geotechnical Completion Report (GCR) has been prepared for Neil Construction Limited, as part of the documentation to be submitted to Western Bay of Plenty District Council (WBoPDC) following residential subdivision development in general accordance with Resource Consent Number RM15-0050-AP.

This report covers the earthworks construction period from March 2017 to April 2019 and is intended to be used for certification purposes for new Lots 36 to 61 inclusive, located within Stage 2 of the Te Awanui Waters subdivision at 423 Omokoroa Road, Omokoroa as shown on the appended Shrimpton and Lipinski Consultants Limited (S&L) Subdivision Scheme Drawing (***Drawing 21118-RC1 Revision 5***).

CMW was engaged as the geotechnical consultant to this project from October 2018 and therefore some initial works within the Stage 2 subdivision have relied on information and inspections from S&L Consultants during the initial construction of the Stage 1 subdivision, which started in March 2017.

This report is intended to be used for geotechnical certification purposes for residential lots 36 to 61, together with the recently constructed portions of Kahawai Place and Parore Drive (Lot 212) and the jointly owned access Lot 196.

It forms the basis of our Geotechnical Suitability Statement (WBoPDC Cert 10c) provided in ***Appendix A***. The report provides a review of existing geotechnical investigation data, the results of construction observations and quality control test data provided by WSP Opus and S&L.

2. SUBDIVISION SCOPE

This report provides certification for 26 residential lots (numbered 36 to 61) that make up Stage 2 of the Te Awanui Waters subdivision, which is situated over a gently graded earthworked surface. These lots will be accessed from a new road network that extends from the eastern side of Omokoroa Road.

Prior to subdivision earthworks, the site comprised two prominent hills in the northern and north-western portions of the site. A peninsula extended near the south-eastern boundary into Mangawhai Creek with east-west trending gully formations in the central and southern portions of the site. Slope gradients through the gully are gentle to moderately sloping (6 to 26 degrees).

Stage 2 is located in the western portion of the subdivision within gently sloping ground to the west of the central and southern gully features.

3. RELATED REPORTS

The following geotechnical reports have been completed for the Te Awanui Waters subdivision:

- Geotechnical Assessment report – 423 Omokoroa Road, Omokoroa, prepared by S & L Consultants, dated 9 August 2016 (ref: 211118.R1) to support a resource consent application for the Te Awanui Waters subdivision;
- Geotechnical Completion report (GCR) for Stage 1 – 423 Omokoroa Road, Omokoroa, prepared by S & L Consultants, dated 5 April 2018 (ref: 211118) to provide certification for a previous stage of the Te Awanui Waters subdivision.

The conclusions and recommendations from the previous reports that were applicable to the subject area were considered during the earthworks development and have been reviewed during the preparation of this document.

4. PRE-DEVELOPMENT INVESTIGATIONS

The landform over which Te Awanui Waters subdivision is situated was investigated under the direction of S&L during preparation of the above-referenced Geotechnical Assessment Report and comprised a combination of cone penetrometer tests (CPTs) and hand auger boreholes.

The location of the above investigation sites within the general Stage 2 area are shown on ***Drawing 02***. A copy of the field investigation logs, and CPT traces are provided in ***Appendix C***.

5. OVERVIEW OF GEOLOGICAL CONDITIONS

Published geological information for Omokoroa is presented in the 1:50,000 scale Geology Map of the Tauranga Area[1]. Those documents indicate that the site is underlain by Pliocene aged Waiteariki Ignimbrite (2.18 Ma) The Waiteariki Ignimbrite is typically overlain by several metres of fluvially reworked volcanic sediments comprising sands, silts and clays of the Pleistocene aged Matua Subgroup.

Within the elevated topography surrounding the Tauranga area, and as encountered during the pre-construction investigations, the Matua Subgroup is mantled by volcanic ash deposits comprising interbedded silts and sand, comprising from oldest to youngest the Hamilton ash, Rotoehu ash and the recent post-Rotoehu ash (Younger Ash).

6. DESCRIPTION OF EARTHWORKS

6.1. Plant

The main items of plant used by the contractor, HEB Construction Ltd and their bulk earthworks subcontractor McPherson Contractors, during bulk earthworks included:

- Excavators
- Tractors and skid scoops
- Pad-foot and sheep-foot compactors
- Bulldozers

6.2. Construction Programme

Earthworks operations for Stage 2 were undertaken between March 2017 and April 2019 following the stripping and stockpiling of topsoil to expose the underlying natural ashes.

Following the topsoil stripping operations, the site was shaped into a gently graded landform to design levels. This involved down-cutting the prominent hill in the central portion of Stage 2 and filling the adjacent swales to the north and west. The fill comprised cohesive ash soils. The fill was tested by WSP Opus to ensure the fill compaction met project specifications outlined in the S&L Geotechnical Assessment Report.

A temporary stormwater attenuation pond was constructed within Lot 55 during construction of Stage 2 and was backfilled in March and April 2019 as part of the final earthworks for the subdivision. The pond base, forebay and sides were undercut as part of the pond decommissioning to remove any soft silts.

6.3. Completed Landform

As depicted on the appended ***Drawing 03, Drawing 04 and Drawing 05***, Lots 36 to 61 have been formed from earthworks cuts and fills of up to 8.2m and 4.8m deep respectively to form near level to sloping residential lots to slope gradients of up to 1V:5H.

Earthworks to complete this stage of the subdivision extended well beyond the stage boundaries into the adjacent Stage 1 and future Stage 4 areas to design subgrade levels.

A low height (up to 1.5m) timber pole retaining wall has been constructed on the southern stage boundary to support a cut batter.

[1] Briggs, R.M. et al, 1996, Geology of the Tauranga Area, Institute of Geological and Nuclear Sciences Limited, Sheet U14, 1:50,000

7. GEOTECHNICAL QUALITY CONTROL

7.1. Site Observations

Site observations were periodically undertaken by CMW, S&L and WSP Opus during bulk earthworks to assess compliance with NZS 4431, Western Bay of Plenty District Council (WBoPDC) 2009 Development Code (DC), and the project specification.

As discussed in Section 1 above, S&L consultants were engaged as the geotechnical consultants for the subdivision until October 2018, therefore some initial stripping and pre-fill observations were undertaken by S&L and WSP Opus within the Stage 2 boundary prior to CMW's engagement.

Site visits were carried out to observe and confirm compliance relating to:

- Adequate topsoil stripping (CMW, S&L);
- Subgrade preparation prior to the placement of fill materials to ascertain that all organic subsoils had been removed (CMW, S&L);
- Placement of engineered fills during construction (WSP Opus);
- Drilling hand auger boreholes across the as-built landform to verify soil shear strength and consistency.

The results of our observations, and those of S&L, WSP Opus, and associated correspondence with the developer and earthworks contractor show that the works appear to have generally been carried out in accordance with the relevant codes and standards and our on-site recommendations.

7.2. Compaction Control

Regular fill compaction testing was carried out by WSP Opus with respect to NZS 4431:1989 and the WBoPDC 2009 DC. Based on a fill volume of 9,000m^3 and 13 fill compaction tests across Stage 2, as shown in ***Drawing 2,*** the minimum testing frequencies stipulated by NZS 4431:1989 and the WBoPDC have been satisfied.

The compaction control criteria adopted for cohesive engineered fills on this site were as follows:

Air voids percentage average value* less than	10 %
Air voids percentage maximum single value	12 %
Undrained shear strength average value* not less than	150 kPa
Undrained shear strength minimum single value	100 kPa

*The average value is determined over any ten consecutive tests.

Minimum Shear Strength was measured by hand-held shear vane calibrated using NZGS 2001 method, whilst maximum air voids was as defined in NZS 4402:1986.

7.3. Post Construction Investigations

At the completion of the subdivision earthworks a series of post construction hand auger boreholes in conjunction with in-situ shear vane tests were completed by CMW to provide representative near-surface subsoil information for residential building construction.

Test locations are presented on ***Drawing 05*** and borehole logs with detailed descriptions and depth of strata encountered during the post construction investigations are appended (refer ***Appendix E***).

7.4. Contractors Work

CMW's site presence during earthworks construction for this project included periodic observations of specific elements of work as described herein. As we were not on site at all times during construction, we

have relied on the Contractor's diligence and construction observations to ensure that the works have been carried out in accordance with:

a) The approved Contract drawings and design details;

b) The approved Contract specifications;

c) Authorised Variations to (a) and (b) during the execution of the works;

d) The conditions of Resource, Earthworks and Building Consents where applicable;

e) The relevant Geotechnical Investigation reports, recommendations and site instructions,

and that all as-built information and other details provided to the Client and CMW are accurate and correct in all respects.

8. EVALUATION OF COMPLETED LANDFORM

8.1. Earthfill Suitability

Results of the earthfill quality control testing are provided in ***Appendix D***, with fill test locations depicted on ***Drawing 04***.

Based on the appended fill quality control test results, the results of our post construction investigations, together with having some reliance on the diligence of the bulk earthworks contractor at times when engineering staff were not present on site, the fill areas across Stage 2 area are considered to have generally been constructed in accordance with NZS4431:1989, the WBoPDC 2009 DC and the compaction control criteria.

8.2. Liquefaction and Lateral Spread

Due to the generally cohesive nature of the ground conditions exposed, their geological age and presence of a suppressed groundwater table with several metres of non-saturated subsoils, the risk of damage due to the effects of liquefaction and lateral spreading during an Ultimate Limit State seismic event for an Importance Level 2 structure is considered to be low.

8.3. Slope Stability

The landform across Stage 2 comprises a series of terraced building platforms, with the nearest slope occurring in the north-western sides of lots 41-43 and lots 52-56 towards Omokoroa Road. It is gently to moderately sloping at slope gradients of less than 1(v) in 5(h). We consider the risk of slope instability for the lots within Stage 2 to be low.

8.4. Foundation Bearing Capacity

Post construction boreholes and shear vane testing were completed following earthworks and based on the engineered fill test results all lots in cut and fill across the Stage 2 area may assume a Geotechnical Ultimate Bearing Capacity of 300 kPa for the construction of shallow foundations in accordance with NZS 3604.

The upper silts and sandy silts are susceptible to shear strength fluctuations with seasonal moisture content variations and accordingly all building platforms must be subject to routine foundation inspection by the area building inspector at the time of building construction.

Where any isolated lenses of soft or loose soils are encountered, they must be over-excavated and replaced with suitably compacted granular filling or footings widened / deepened accordingly necessitating the involvement of a Chartered Professional Engineer.

8.5. Cut and Fill Restrictions

The lots are relatively flat to gently sloping and as such it is anticipated that only minor cut to fill earthworks will be required to create level building platforms. Normal topsoil stripping, conditioning and appropriate compaction where applicable for any filling must be in accordance with the requirements of NZS 4431 and the WBoPDC 2009 Development Code and subject to engineer inspections and certification at that time.

In completing the earthworks, the following shall be adopted unless specifically endorsed by CMW review:

- Unsupported cut and fill batters shall be graded no steeper than 1 vertical to 2.5 horizontal unless supported by engineer designed retaining walls.
- Temporary unsupported cut and fill batters graded at up to 2(V):1(H) to a maximum height of 2.0 metres are considered permissible for a short duration (weeks only) during building construction.

It should be noted that re-compaction of locally derived clay/silt materials to engineer standard can be problematic during winter months due to elevated soil moisture conditions. Where earthworks are scheduled during wet weather, allowance may be required for importing sand or pumice as a fill source.

8.6. Fill Induced Settlements

Due to the presence of stiff natural subsoils beneath the fills placed and the time passed since initial fill placement, we are of the opinion that fill induced settlements should be insignificant with respect to future residential development. On this basis, the building platforms should comply with minimum settlement criteria of 25mm over 6 metres for the serviceability limit state scenario stated in Appendix B of Section B1/VM4 of the NZ Building Code.

It is noted that NZS3604 only allows for a maximum backfill of 600mm over the building platform due to the net increase in stress resulting in ground settlement, unless preceded by specific investigation and assessment by a Chartered Professional Engineer.

8.7. Common Boundaries Restriction

All future engineer designed boundary retaining walls must be specifically designed to consider potential future developments on adjacent lot boundaries.

Upslope property boundary retaining wall foundations must extend no less than 0.5m below the downslope ground level and must be specifically designed by a Chartered Professional Engineer. Temporary excavations on or near the downslope property boundary must be restricted to 0.5m unless structural support is provided that is designed by a Chartered Professional Structural Engineer.

8.8. Retaining Walls

An existing timber cantilever retaining wall has been completed as part of Stage 2 supporting the southern boundary adjacent to Lots 59 to 61. Design and construction inspections related to construction of this wall was undertaken by S&L Consultants.

The position of the existing retaining wall is depicted on the appended as-built contours plans prepared by S&L (Appendix B). Any proposed excavation within a horizontal distance equal to the retained height of the existing wall on Lots 59 to 61 will require specific engineering design by a Category 1 Geotechnical Engineer familiar with the contents of this report.

Given the slope gradients present across the completed lots, retaining wall construction may be required as part of future building consents. The following design parameters may be adopted for permanent retaining walls:

Table 1: Retaining Wall Design Parameters

Soil Unit	Y (kN/m^3)	Ø' (deg)	K_0	E' (MPa)	No wall friction		Wall friction = 2/3Ø	
					K_a	K_p	K_a	K_p
Engineered Fill (Hard clayey silt)	18.0	30	0.50	20	0.31	3.27	0.27	6.24
Younger Ashes (Firm to very stiff clayey silt and sandy silt)	16.0	28	0.53	16	0.34	3.00	0.29	5.25
Matua Subgroup (stiff to very stiff silty and clayey silts)	16.0	28	0.53	18	0.34	3.00	0.29	5.25

Notes:

1. Y – soil unit weight; Ø' - angle of internal soil friction; K_0 - coefficient of earth pressure at rest, K_a - coefficient of active earth pressure, K_p - coefficient of passive earth pressure; E' – long term Young's modulus.
2. Values of K_0 are based on initial conditions.
3. The retaining wall designer must adopt the above set of K_a and K_p parameters relevant to the actual construction method adopted

Table 1: Retaining Wall Design Parameters								
Soil Unit	**Ɣ (kN/m³)**	**Ø' (deg)**	**K_0**	**E' (MPa)**	**No wall friction**		**Wall friction = 2/3Ø**	
					K_a	**K_p**	**K_a**	**K_p**
4. The above parameters are based on the condition of a horizontal ground surface behind the retaining structure. Applicable surcharge loads behind the wall must also be considered in the design.								

It should be noted that some ground movement will occur behind any temporary or permanent walls. By definition, movement of the wall must occur to fully mobilise the active and passive earth pressure coefficients provided in Table 1 above. The extent of this movement is dependant on the height of retaining, type of wall constructed and construction methodology. This must be considered during the design and construction of the retaining walls to ensure that adjacent properties and any existing services are not adversely affected.

8.9. Respread Topsoil

Topsoil depths were checked during advancement of the post construction hand auger boreholes, with indicative topsoil depths ranging from 50 to 300mm, though it is noted that topsoil depths may vary away from test locations.

8.10. Stormwater Controls

In terms of future stormwater management, it is important that due care is paid to the design and construction of appropriate stormwater disposal systems. These systems should collect all runoff from roofs and paved areas, together with discharge from any future retaining wall drains and other subsoil drains, which should connect directly into the public stormwater drainage network.

Uncontrolled stormwater discharges onto the ground surface or into soakage pits can cause erosion, scour and/or instability and are not permitted under any circumstances.

It should be noted that any future site owner will become responsible for Erosion and Sediment Control Measures that comply with Regional Council requirements as soon as development works begin on the site. Measures deemed necessary will need to be maintained until the development lot area is re-stabilised and/or stormwater is disposed to reticulation.

8.11. Service Trenches

The backfilling and compaction of service trenches on this subdivision were not inspected as part of CMW observations. As is normal on all subdivisions, building developments involving foundations within a 45-degree zone of influence from pipe inverts will require specific design by a Chartered Professional Engineer with a view to piling foundation loads below that zone.

8.12. Road Subgrade

All road subgrade preparation, inspections and certification have been completed under the direction of S&L.

9. SUITABILITY STATEMENT

A copy of our suitability statement, in the form of the Western Bay of Plenty District Council Cert 10C – Suitability of Land for Building, is attached as ***Appendix A.***

10. LIMITATION

This report has been prepared for use by our client Neil Construction Limited, their consultants and Western Bay of Plenty District Council. Liability for its use is limited to the scope of work for which it was prepared as it may not contain sufficient information for other parties or for other purposes.

Although regular site visits have been undertaken for observation, for providing guidance and instruction, the geotechnical services scope did not include full time site presence. To this end, our appended suitability statement relies on the Contractors' work practices and assumes that when we have not been present to observe the work, it has been completed to high standards and in accordance with the drawings, instructions and consent conditions provided to them.

There may be special conditions pertaining to this site which have not been disclosed by the investigations and which have not been taken into account in the report. If variations in the subsoils occur from those described or assumed to exist then the matter should be referred back to CMW immediately.

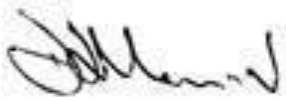
For and on behalf of CMW Geosciences

Prepared By:

Greg Snook

Senior Engineering Geologist

Reviewed by:

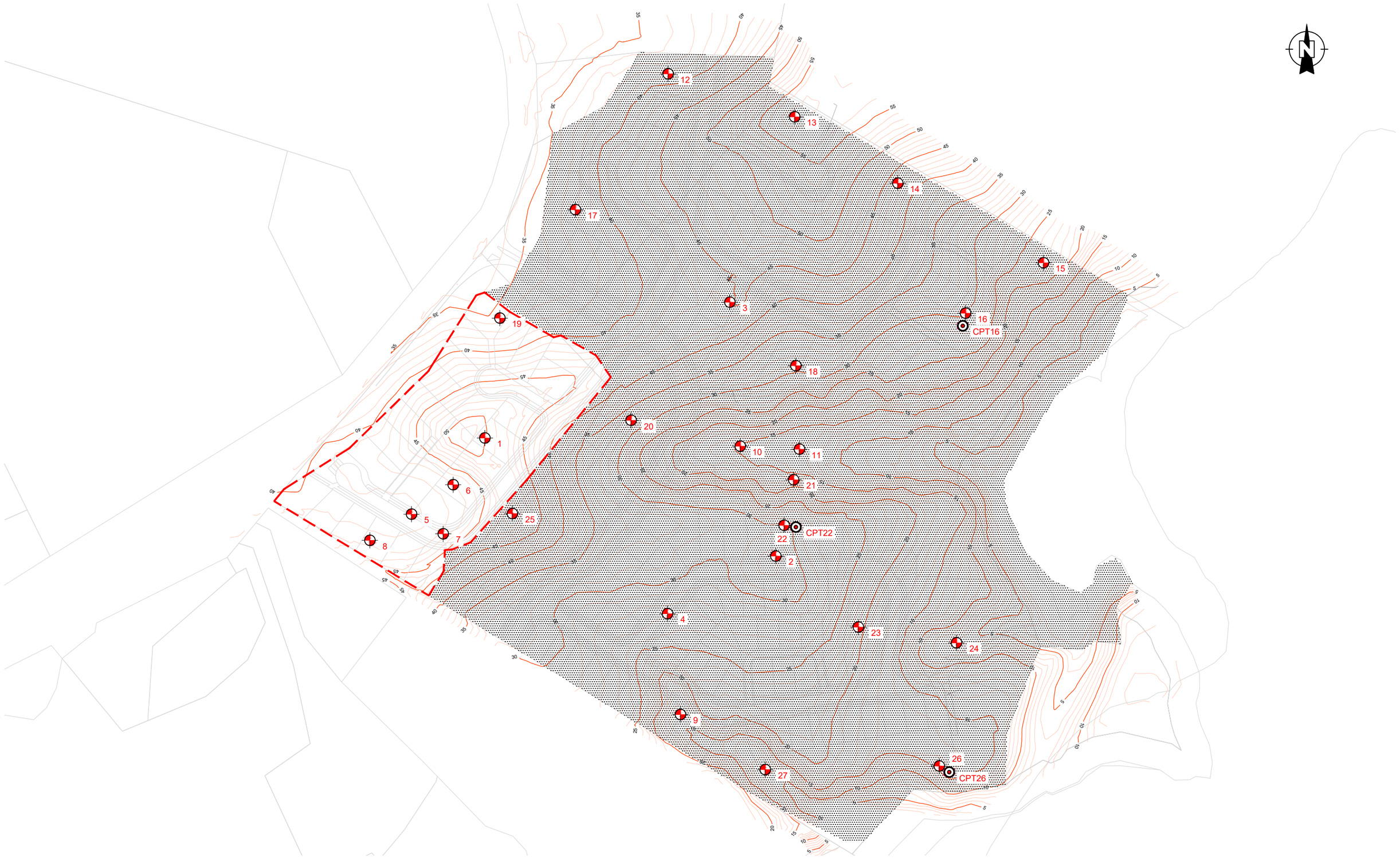


Dave Morton

Principal Geotechnical Engineer

CMEngNZ (Geotechnical), CPEng

Drawings



LEGEND:

- 15 — S&L HAND AUGER (HA) LOCATION
- CPT22 — S&L CONE PENETROMETER TEST (CPT) LOCATION
- STAGE 2 SITE BOUNDARY
- 10 — EXISTING CONTOUR (MAJOR)
- EXISTING CONTOUR (MINOR)

NOTES:

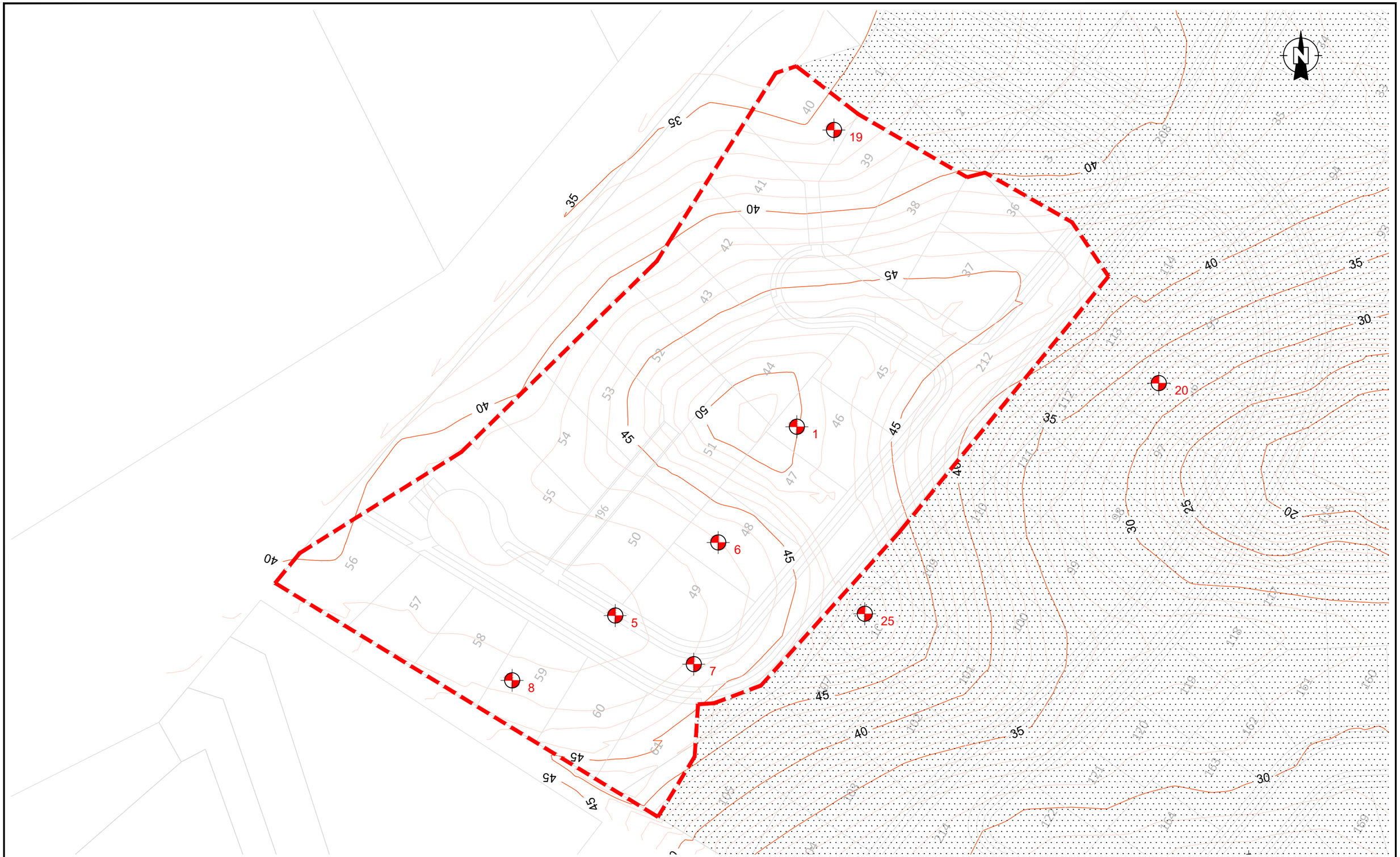
1. BASE PLAN ADAPTED FROM "21118-G03 GEOTECHNICAL REFERENCE PLAN - G03."

1:2500 0 25 50 75 100 125 m

CMW Geosciences

CLIENT: NEIL CONSTRUCTION LIMITED		DRAWN: FMS	PROJECT No: TGA2018-0199(AB)
PROJECT: TE AWANUI WATERS SUBDIVISION, STAGE 2		CHECKED: GS	DRAWING: 01
		REVISION: 0	SCALE: 1:2500
TITLE: OVERALL SITE LOCATION PLAN		DATE: 02/08/2019	SHEET: A3

X:\01 PROJECTS\TGA\TGA2018\TGA2018-0151 TO -0200\TGA2018-0199 423 OMOKOROA RD NEIL CONST\07 DRAWINGS\CAD\AS-BUILT\TGA2018-0199-DG01 SITE LOCATION PLAN.DWG



LEGEND:

- 15 — S&L HAND AUGER (HA) LOCATION
- CPT22 — S&L CONE PENETROMETER TEST (CPT) LOCATION
- STAGE 2 SITE BOUNDARY
- 10 — EXISTING CONTOUR (MAJOR)
- EXISTING CONTOUR (MINOR)

NOTES:

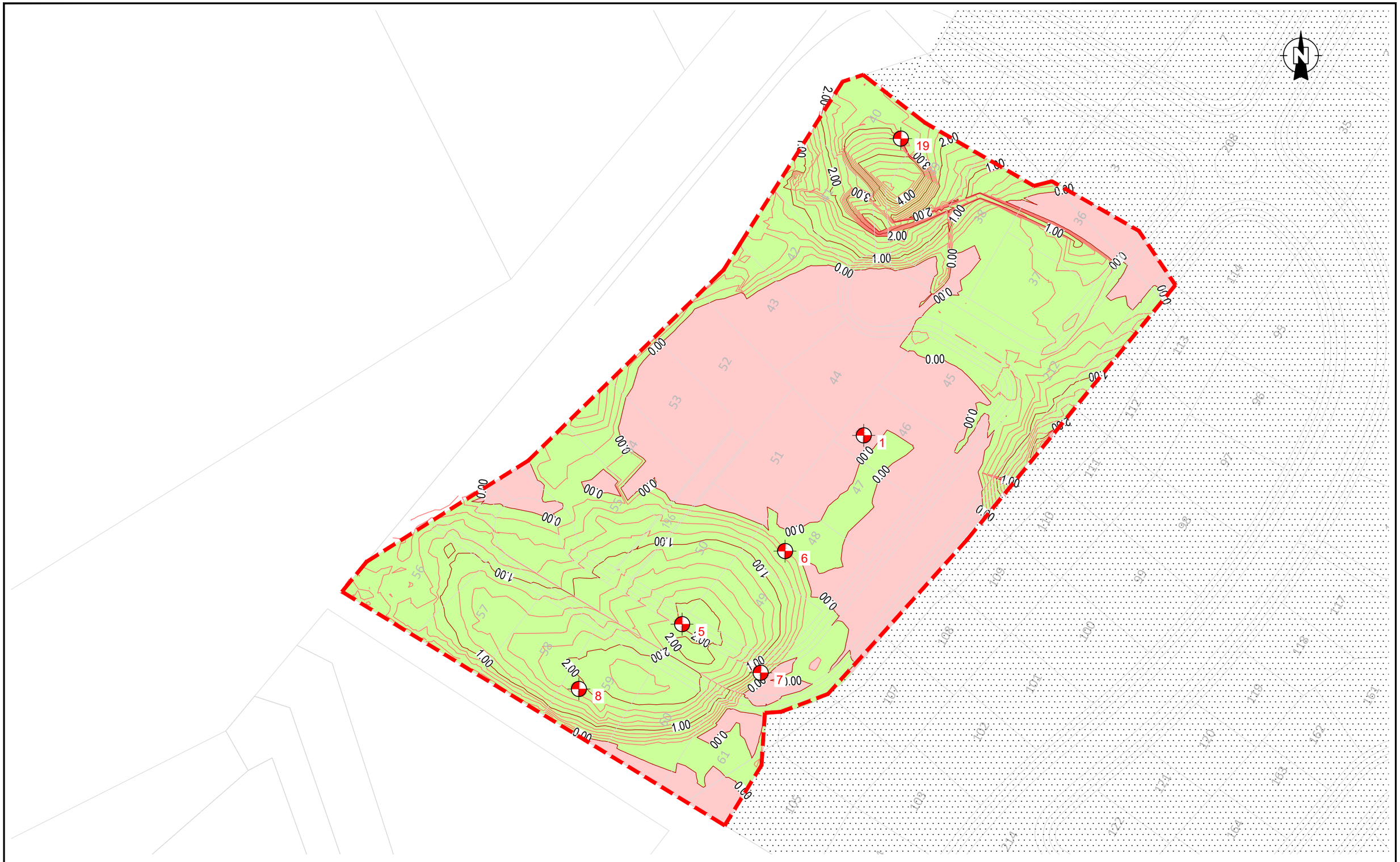
1. BASE PLAN ADAPTED FROM "21118-G03 GEOTECHNICAL REFERENCE PLAN - G03."

1:1000 0 10 20 30 40 50 m

CMW Geosciences

CLIENT: NEIL CONSTRUCTION LIMITED		DRAWN: FMS	PROJECT No: TGA2018-0199(AB)
PROJECT: TE AWANUI WATERS SUBDIVISION, STAGE 2		CHECKED: GS	DRAWING: 02
		REVISION: 0	SCALE: 1:1000
TITLE: SITE LOCATION PLAN - STAGE 2		DATE: 02/08/2019	SHEET: A3

X:\01 PROJECTS\TGA\TGA2018\TGA2018-0151 TO -0200\TGA2018-0199 423 OMOKOROA RD NEIL CONST\07 DRAWINGS\CAD\AS-BUILT\TGA2018-0199-DG01 SITE LOCATION PLAN.DWG



LEGEND:

- 15 — WSP OPUS FILL TEST LOCATION
- STAGE 2 SITE BOUNDARY
- 1.00 — FILL CONTOUR (MAJOR)
- FILL CONTOUR (MINOR)
- CUT AREA
- FILL AREA

NOTES:

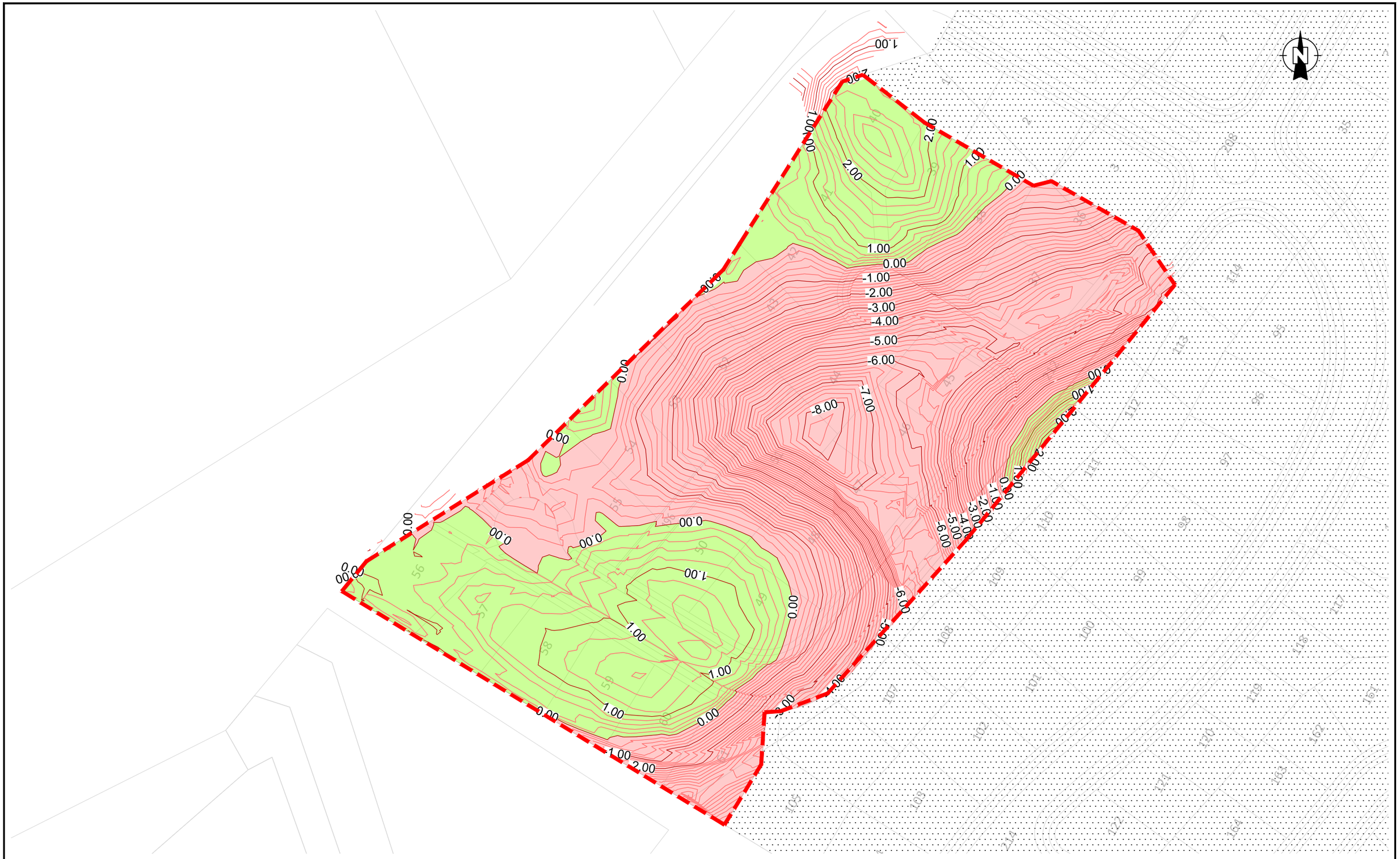
1. BASE PLAN ADAPTED FROM "21118-STG2-EW1-2 - CUT AND FILL PLAN(AB)."

1:1000 0 10 20 30 40 50 m

CMW Geosciences

CLIENT: NEIL CONSTRUCTION LIMITED		DRAWN: FMS	PROJECT No: TGA2018-0199(AB)
PROJECT: TE AWANUI WATERS SUBDIVISION, STAGE 2		CHECKED: GS	DRAWING: 03
		REVISION: 0	SCALE: 1:1000
TITLE: TOTAL FILL AS-BUILT CONTOUR PLAN		DATE: 02/08/2019	SHEET: A3

X:\01 PROJECTS\TGA\TGA2018\TGA2018-0151 TO -0200\TGA2018-0199 423 OMOKOROA RD NEIL CONST\07 DRAWINGS\CAD\AS-BUILT\TGA2018-0199-DG01 SITE LOCATION PLAN.DWG



LEGEND:

15	WSP OPUS FILL TEST LOCATION		
	STAGE 2 SITE BOUNDARY	🟥	CUT AREA
1.00	CUT FILL CONTOUR (MAJOR)	🟩	FILL AREA
	CUT FILL CONTOUR (MINOR)		

NOTES:

1. BASE PLAN ADAPTED FROM "21118-STG2-EW1-2 - CUT AND FILL PLAN(AB)."

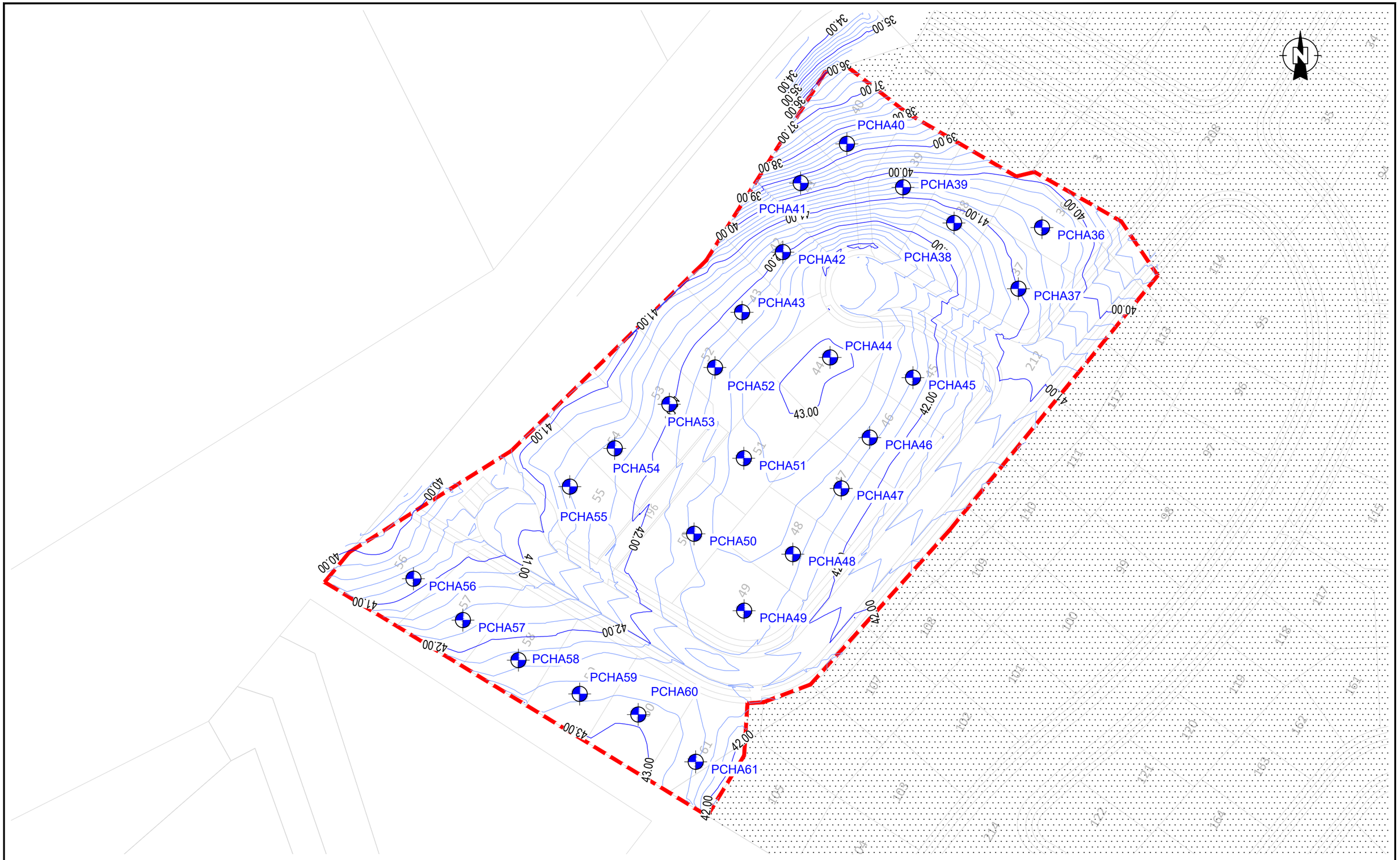
0 10 20 30 40 50 m

1:1000

CMW Geosciences

CLIENT: NEIL CONSTRUCTION LIMITED		DRAWN: FMS	PROJECT No: TGA2018-0199(AB)
PROJECT: TE AWANUI WATERS SUBDIVISION, STAGE 2		CHECKED: GS	DRAWING: 04
		REVISION: 0	SCALE: 1:1000
TITLE: CUT FILL (ORIGINAL TO FINAL) AS-BUILT PLAN		DATE: 02/08/2019	SHEET: A3

X:\01 PROJECTS\TGA\TGA2018\TGA2018-0151 TO -0200\TGA2018-0199 423 OMOKOROA RD NEIL CONST\07 DRAWINGS\CAD\AS-BUILT\TGA2018-0199-DG01 SITE LOCATION PLAN.DWG



LEGEND:

- PCHA36 — CMW HAND AUGER (PCHA) TEST LOCATION
- STAGE 2 SITE BOUNDARY
- 1.00 — AS-BUILT CONTOUR (MAJOR)
- AS-BUILT CONTOUR (MINOR)

NOTES:

1. BASE PLAN ADAPTED FROM "21118-S2-ASBUILTS CAD(AB)."
2. TEST LOCATIONS ARE APPROXIMATE ONLY.

1:1000 0 10 20 30 40 50 m

CMW Geosciences

CLIENT: NEIL CONSTRUCTION LIMITED		DRAWN: FMS	PROJECT No: TGA2018-0199(AB)
PROJECT: TE AWANUI WATERS SUBDIVISION, STAGE 2		CHECKED: GS	DRAWING: 05
		REVISION: 0	SCALE: 1:1000
TITLE: AS-BUILT CONTOUR PLAN		DATE: 02/08/2019	SHEET: A3

X:\01 PROJECTS\TGA\TGA2018\TGA2018-0151 TO -0200\TGA2018-0199 423 OMOKOROA RD NEIL CONST\07 DRAWINGS\CAD\AS-BUILT\TGA2018-0199-DG01 SITE LOCATION PLAN.DWG

APPENDIX A:

STATEMENT OF PROFESSIONAL OPINION AS TO THE SUITABILITY OF LAND FOR BUILDING DEVELOPMENT

To: Western Bay of Plenty District Council

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

Development: Stage 2 Te Awanui Waters Subdivision
Owner: Neil Construction Limited
Location: 423 Omokoroa Road, Omokoroa

I, David John Morton of CMW Geosciences (NZ) Limited Partnership

Hereby confirm that:

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

2. An appropriate level of site investigation and construction supervision has been carried out under direction of the previous geotechnical engineers S&L Consultants Limited which we have reviewed prior to our engagement at the site and is described in my Geotechnical Completion Report dated 6 August 2019 (ref. TGA2018-0199AB).

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

   a) Every part of the areas shown in my report dated 6 August 2019 of each new residential allotment is suitable for the erection thereon of the building types appropriate to the zoning of the land, provided that:

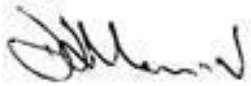
      I. The specific recommendations provided in my 6 August 2019 report relating to foundation bearing capacity, are followed;
      II. The specific recommendations provided in my 6 August 2019 report relating to fill induced settlements, are followed.
      III. The specific recommendations provided in my 6 August 2019 report relating to building setbacks from the existing retaining wall on the subdivision boundary affecting lots 59 to 61 are followed.
      IV. The specific recommendations provided in my 6 August 2019 report relating to common boundary restrictions between residential lots are followed.

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

   c) The earth fills identified in my 6 August 2019 report and as shown on the As-Built Cut Fill Contour Plan (Drawing 04) appended to my 6 August 2019 report has been placed in accordance with the Subdivision and Development Code of Practice of the Western Bay of Plenty District Council.

   d) The engineer filled ground within lots 36 to 61 are suitable for the erection of residential building not requiring specific design in terms of NZS 3604 and related documents subject to routine inspections at the time of building construction. A geotechnical ultimate bearing capacity of 300 kPa may be assumed for the subsoils beneath these lots.

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



Signed …….. Date …6 August 2019……

SUMMARY OF GEOTECHNICAL DATA FOR INDIVIDUAL LOTS			
Property Address:	Te Awanui Waters Subdivision Stage 2, 423 Omokoroa Road, Omokoroa	RC No:	RM15-0050-AP

Lot No:	Area (m²)	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	Comment
		Shear Strength (kPa)	Subdivision Filling		Natural Topography Unworked	Natural Topograpghy 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										
36	599	>193	Y	1.0	N	Y	4.6	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
37	600	>193	Y	0.4	N	Y	5.0	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
38	669	138	Y	1.4	N	Y	3.2	Y	N	N	N	N	Y	N	N	N	N	N	
39	600	133	Y	4.8	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	Y	Note 1, Note 2, Note 3
40	697	156	Y	4.8	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
41	606	108	Y	4.2	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	N	
42	560	108	Y	0.6	N	Y	2.4	Y	N	N	N	N	Y	N	N	N	N	N	
43	651	108	Y	0.8	N	Y	5.0	Y	N	N	N	N	Y	N	N	N	N	N	
44	622	>193	Y	0.2	N	Y	8.2	Y	N	N	N	N	Y	N	N	N	N	N	
45	599	96	Y	0.2	N	Y	6.2	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3

SUMMARY OF GEOTECHNICAL DATA FOR INDIVIDUAL LOTS			
Property Address:	Te Awanui Waters Subdivision Stage 2, 423 Omokoroa Road, Omokoroa	RC No:	RM15-0050-AP

Lot No:	Area (m²)	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	Comment
		Shear Strength (kPa)	Subdivision Filling		Natural Topography Unworked	Natural Topograpghy 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										
46	599	148	Y	<0.2	N	Y	8.0	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
47	600	96	Y	<0.2	N	Y	8.0	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
48	599	141	Y	1.0	N	Y	4.0	Y	N	N	N	N	Y	N	N	N	N	N	
49	601	146	Y	2.0	N	Y	1.0	Y	N	N	N	N	Y	N	N	N	N	N	
50	638	145	Y	2.0	N	Y	1.8	Y	N	N	N	N	Y	N	N	N	N	N	
51	639	114	Y	<0.2	N	Y	8.2	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
52	724	83	Y	0.4	N	Y	6.8	Y	N	N	N	N	Y	N	N	N	N	Y	Note 1, Note 2, Note 3
53	624	147	Y	0.4	N	Y	4.8	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
54	661	118	Y	0.8	N	Y	2.2	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
55	719	121	Y	1.0	N	Y	0.6	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
56	683	178	Y	1.2	N	Y	<0.2	Y	N	N	N	N	Y	N	N	N	N	N	
57	575	177	Y	1.4	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3

SUMMARY OF GEOTECHNICAL DATA FOR INDIVIDUAL LOTS

Property Address:	Te Awanui Waters Subdivision Stage 2, 423 Omokoroa Road, Omokoroa	RC No:	RM15-0050-AP

Lot No:	Area (m²)	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	Comment
		Shear Strength (kPa)	Subdivision Filling		Natural Topography Unworked	Natural Topograpghy 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										
58	576	>191	Y	2.0	Y	N	-	Y	N	N	N	N	Y	N	N	N	N	N	Note 1, Note 3
59	575	177	Y	2.2	N	Y	0.8	Y	N	N	N	N	Y	N	N	N	N	Y	Note 1, Note 2, Note 3, Note 4
60	575	177	Y	2.2	N	Y	3	Y	N	N	N	N	Y	N	N	N	N	Y	Note 1, Note 3, Note 4
61	625	163	Y	1.0	N	Y	4.0	Y	N	N	N	N	Y	N	N	N	N	Y	

COMMENTS:

Note 1: 300kPa geotechnical ultimate bearing capacity

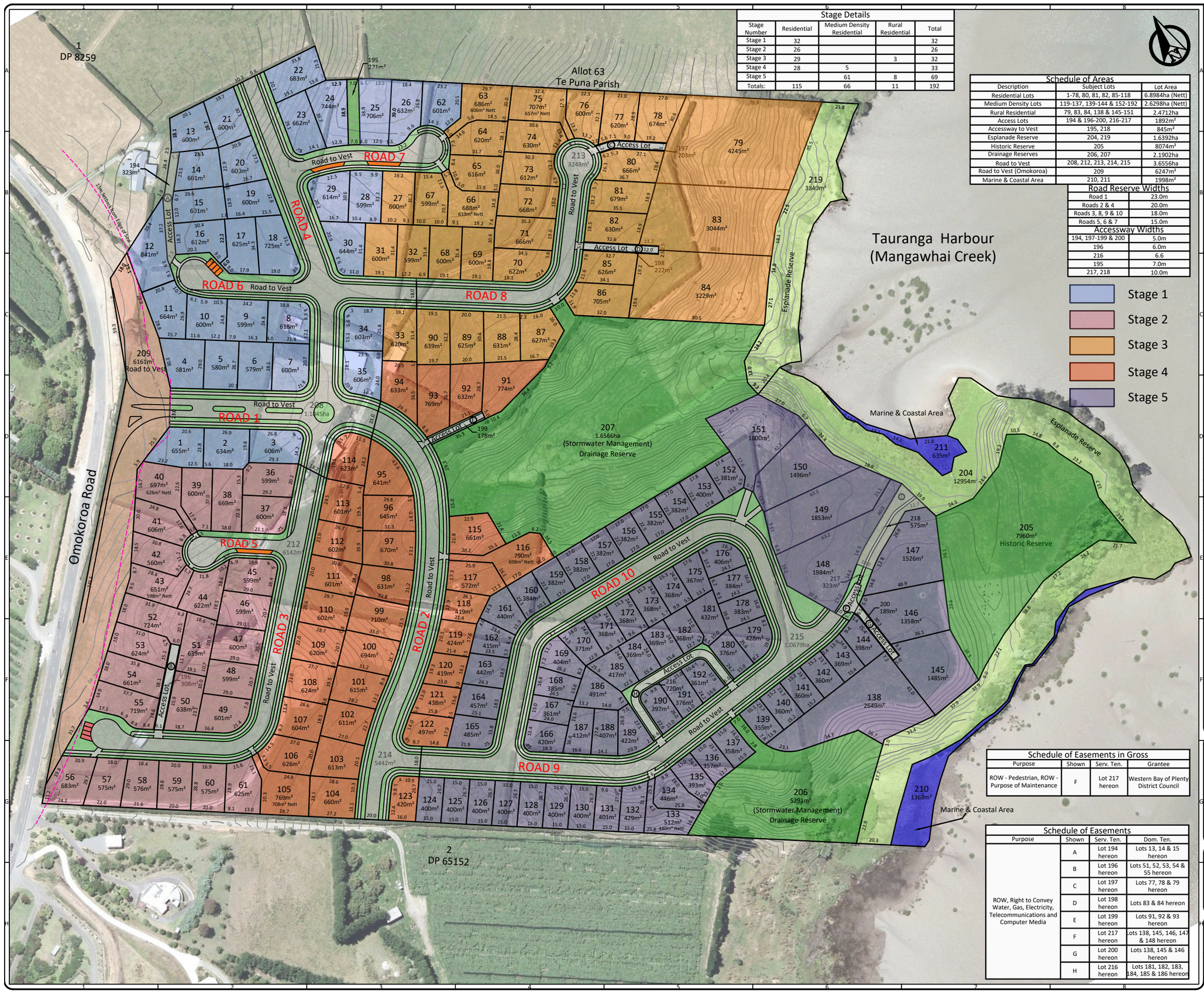
Note 2: Service Line Restrictions, Service Trenches within Lot, refer Section 8.9 of report

Note 3: Common boundary restrictions apply for future excavations and retaining, refer Section 8.7 of report.

Note 4: Excavation restrictions apply for Lots 59 to 61 in proximity to existing retaining wall on boundary, refer Section 8.8 of report.

APPENDIX B:

S&L CONSULTANTS LIMITED AS-BUILT PLANS



Stage Details

Stage Number	Residential	Medium Density Residential	Rural Residential	Total
Stage 1	32			32
Stage 2	26			26
Stage 3	29		3	32
Stage 4	28	5		33
Stage 5		61	8	69
Totals:	115	66	11	192

Schedule of Areas

Description	Subject Lots	Lot Area
Residential Lots	1-78, 80, 81, 82, 85-118	6.8984ha (Nett)
Medium Density Lots	119-137, 139-144 & 152-192	2.6298ha (Nett)
Rural Residential	79, 83, 84, 138 & 145-151	2.4712ha
Access Lots	194 & 196-200, 216-217	1892m²
Accessway to Vest	195, 218	845m²
Esplanade Reserve	204, 219	1.6392ha
Historic Reserve	205	8074m²
Drainage Reserves	206, 207	2.1902ha
Road to Vest	208, 212, 213, 214, 215	3.6556ha
Road to Vest (Omokoroa)	209	6247m²
Marine & Coastal Area	210, 211	1998m²

Road Reserve Widths

Road 1	23.0m
Roads 2 & 4	20.0m
Roads 3, 8, 9 & 10	18.0m
Roads 5, 6 & 7	15.0m

Accessway Widths

194, 197-199 & 200	5.0m
196	6.0m
216	6.6
195	7.0m
217, 218	10.0m

Schedule of Easements in Gross

Purpose	Shown	Serv. Ten.	Grantee
ROW - Pedestrian, ROW - Purpose of Maintenance	F	Lot 217 hereon	Western Bay of Plenty District Council

Schedule of Easements

Purpose	Shown	Serv. Ten.	Dom. Ten.
ROW, Right to Convey Water, Gas, Electricity, Telecommunications and Computer Media	A	Lot 194 hereon	Lots 13, 14 & 15 hereon
	B	Lot 196 hereon	Lots 51, 52, 53, 54 & 55 hereon
	C	Lot 197 hereon	Lots 77, 78 & 79 hereon
	D	Lot 198 hereon	Lots 83 & 84 hereon
	E	Lot 199 hereon	Lots 91, 92 & 93 hereon
	F	Lot 217 hereon	Lots 138, 145, 146, 147 & 148 hereon
	G	Lot 200 hereon	Lots 138, 145 & 146 hereon
	H	Lot 216 hereon	Lots 181, 182, 183, 184, 185 & 186 hereon

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.

Amalgamation Conditions

That Lot 194 hereon (Legal access) be held as to three undivided one third shares by the owners of Lots 13, 14 and 15 hereon and individual certificates of title be issued in accordance therewith.

That Lot 196 hereon (Legal access) be held as to five undivided one fifth shares by the owners of Lots 51, 52, 53, 54 and 55 hereon and individual certificates of title be issued in accordance therewith.

That Lot 197 hereon (Legal access) be held as to three undivided one third shares by the owners of Lots 77, 78 and 79 hereon and individual certificates of title be issued in accordance therewith.

That Lot 198 hereon (Legal access) be held as to two undivided one half shares by the owners of Lots 83 and 84 hereon and individual certificates of title be issued in accordance therewith.

That Lot 199 hereon (Legal access) be held as to three undivided one third shares by the owners of Lots 91, 82 and 93 hereon and individual certificates of title be issued in accordance therewith.

That Lot 200 hereon (Legal access) be held as to three undivided one third shares by the owners of Lots 138, 145 and 146 hereon and individual certificates of title be issued in accordance therewith.

That Lot 217 hereon (Legal access) be held as to five undivided one fifth shares by the owners of Lots 138, 145, 146, 147 and 148 hereon and individual certificates of title be issued in accordance therewith.

That Lot 216 hereon (Legal access) be held as to six undivided one sixth shares by the owners of Lots 181, 182, 183, 184, 185 and 186 hereon and individual certificates of title be issued in accordance therewith.

checked. by.	Rev. No.	Description	DATE
	5	Esplanade Bdy Updated	11/17
	4	Lots 25-26 updated	03/17
	3	Entrance Updated	11/16
	2	Accessway 194 Moved	07/16
	1	Scheme and Stage Bdy updated	07/16

	NAME	DATE	SIGNED
Surveyed			
Designed			
Drawn	NP	06/16	
Checked			
Approved			

REFERENCES

S & L CONSULTANTS LTD

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 Subdivision of Lot 2 DP 312635 & Lot 1 DP 488385

423 Omokoroa Road
Omokoroa

Prepared for:
Neil Construction Limited

Original Scales @ A1	Date
1:1000	07/16
Do Not Scale Dimensions	

Drawing No	Revision:
21118 - RC1	5

H:\21000 - 21999\21100 - 21199\21118 - Neil Construction - Omokoroa Development\Drawings\Scheme\21118 - RC1 - Scheme Plan - RS.dwg - Plotted: 10/11/2017

PROPOSED STAGE 1 BULK EARTHWORKS AREA.

Key

- Borehole Location (30/11/2006 - 20/12/2006)
- Borehole Location (16/6/2015-22/6/2015)
- CPT Location
- X/S AA — Geotechnical Cross-Section
- 14 — Existing Ground Level Contour

REV No.	DESCRIPTION	DATE
1	Revised scheme plan	8/8/16

	NAME	DATE	SIGNED
Surveyed			
Designed			
Drawn	L. Shuler	11/15	
Checked			
Approved			

References

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

Geotechnical Reference Plan

Omokoroa Subdivision

Original Scales @ A3	Date
1:2000 Do Not Scale Dimensions	11/15
Drawing No: 21118 - G03	Revision: 1

H:\21000 - 21999\21100 - 21199\21118 - Neil Construction - Omokoroa Development\Drawings\Geotechnical\21118-G01 Geotechnical Reference Plan - R2.dwg - Plotted: 9/08/2016

Legend

- Street Sign
- Tree
- Streetlight
- Driveway
- Roads
- Parking Bay
- Indicating Fire Hydrant Location
- Indicating Valve Location

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	7.19
0	DRAFT AS-BUILT	NW	CST	NF	7.19

	Name	Date		Name	Date
Surveyed	CST	07/19	Designed		

Coordinate System:NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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www.sltga.co.nz

Title

ROADING AS-BUILT PLAN

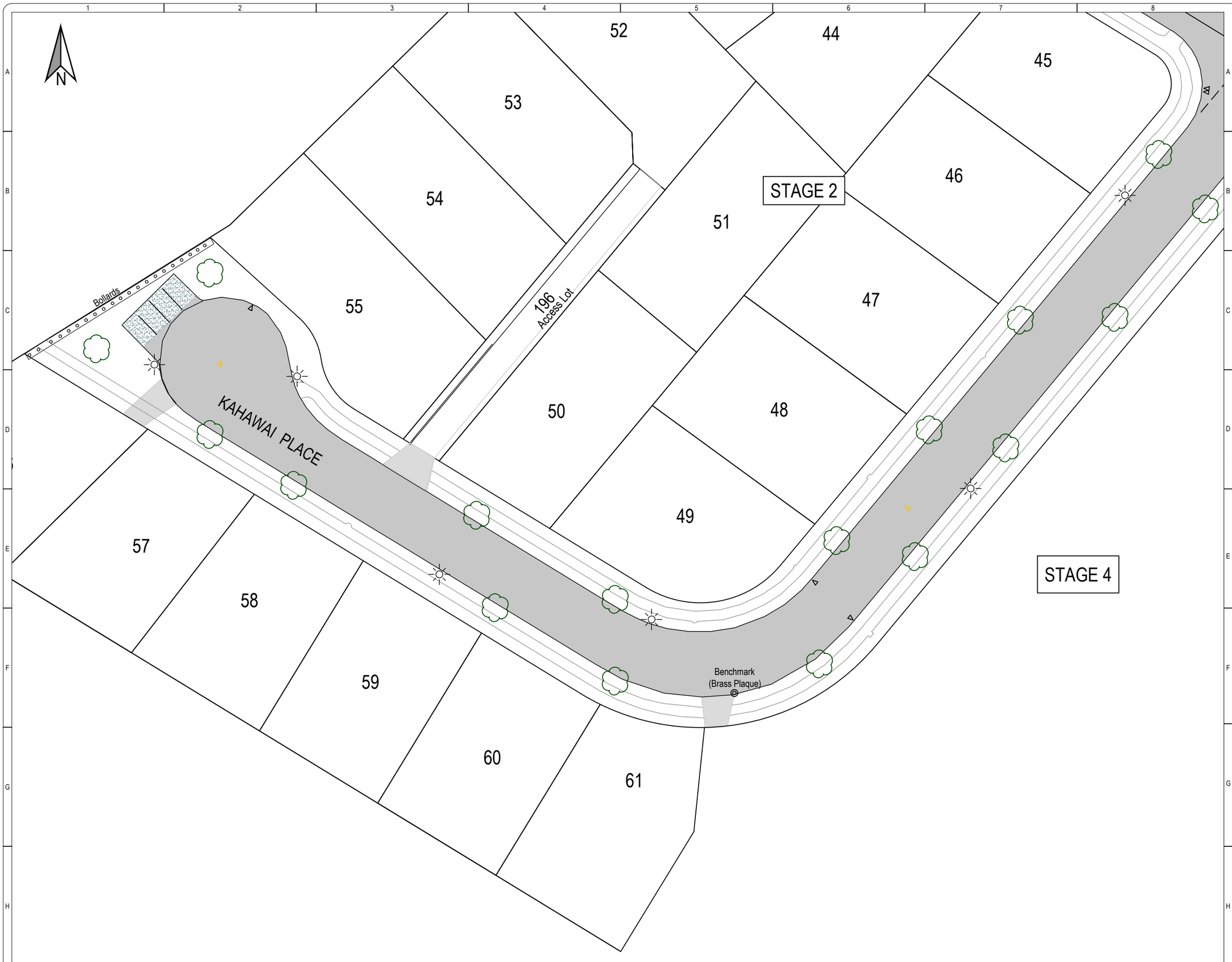
OMOKOROA DEVELOPMENT
STAGE 2

Original Scales @ A3
1:500
Do Not Scale Dimensions

Status
AS-BUILT

Drawing No
21118-S2-R01

Revision
AB



Legend

- Street Sign
- Tree
- Streetlight
- Driveway
- Roads
- Parking Bay
- Indicating Fire Hydrant Location
- Indicating Valve Location

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	7.19
0	DRAFT AS-BUILT	NW	CST	NF	7.19

	Name	Date		Name	Date
Surveyed	CST	07/19	Designed		

Coordinate System: NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

ROADING AS-BUILT PLAN

OMOKOROA DEVELOPMENT
STAGE 2

Original Scales @ A3: 1:500
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-R02

Revision: AB

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Legend

- Street Sign
- Tree
- Streetlight
- Driveway
- Roads
- Parking Bay
- Indicating Fire Hydrant Location
- Indicating Valve Location

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	7-19
0	DRAFT AS-BUILT	NW	CST	NF	7.19

	Name	Date		Name	Date
Surveyed	CST	07/19	Designed		

Coordinate System:NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

ROADING AS-BUILT PLAN

OMOKOROA DEVELOPMENT
STAGE 2

Original Scales @ A3: 1:1000
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-R03

Revision: AB

CODE	EASTING	NORTHING	LID LEVEL
EXSWMHE/1	1866900.8	5827731.5	39.01
SWCP01	1866931.0	5827664.6	40.65
SWCP02	1866916.2	5827672.7	40.81
SWCP03	1866913.0	5827665.9	40.92
SWCP04	1866913.4	5827664.9	40.91
SWCP05	1866886.8	5827615.5	41.51
SWCP06	1866880.7	5827620.8	41.50
SWCP07	1866787.2	5827605.1	41.33
SWCP08	1866791.6	5827611.9	41.34
SWCP09	1866758.3	5827633.9	40.36
SWCP10	1866757.5	5827633.2	40.35
SWCP196	1866798.1	5827614.2	41.66
SWCP59	1866775.3	5827573.9	42.61
SWMHA/4	1866923.1	5827672.7	40.88
SWMHA/5	1866880.5	5827623.7	41.72
SWMHA/6	1866836.5	5827574.2	42.40
SWMHA/7	1866788.1	5827602.2	41.64
SWRE196	1866823.4	5827640.5	42.27
SWRE44	1866886.2	5827680.5	42.54

STAGE 1

N

Scruffy Dome

Ex. SWMHA/1

Ex. SWMHA/2

Ex. SWMH E/1

EXSWMHA/3

FLOUNDER DRIVE

PARORE DRIVE

KAHAWAI PLACE

Stormwater Swale

Stormwater Swale

SWHC40

SWHC40

SWHC41

SWHC39

SWHC38

SWHC43

SWHC42

SWHC43

SWHC36

SWHC37

SWGM100 450Ø

SWHC52

SWHC53

SWRE44

SWSM44a 150Ø

SWHC44

SWSM105

225Ø

SWCP02

SWMHA/4

SWGM107 225Ø

SWSM106 300Ø

SWCP03

SWCP04

SWCP01

40

41

39

38

36

37

42

43

52

44

45

53

Notes:

SWHC - Stormwater House Connection
SWMH - Stormwater Manhole
SWCP - Stormwater Catchpit
SWGM - Stormwater Gravity Main
SWSM - Stormwater Service Main
SWRE - Stormwater Rodding Eye

LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Stormwater Pipe
- Stormwater House Connection
- Stormwater Manhole
- Double Catchpit
- Catchpit
- Rodding Eye

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	7.19
0	DRAFT AS-BUILT	ER	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	-	Designed	-	-

Coordinate System:NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

STORMWATER AS-BUILT PLAN

OMOKOROA DEVELOPMENT
STAGE 2

Original Scales @ A3: 1:500
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-SW01

Revision: AB

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CODE	EASTING	NORTHING	LID LEVEL
EXSWMHE/1	1866900.8	5827731.5	39.01
SWCP01	1866931.0	5827664.6	40.65
SWCP02	1866916.2	5827672.7	40.81
SWCP03	1866913.0	5827665.9	40.92
SWCP04	1866913.4	5827664.9	40.91
SWCP05	1866886.8	5827615.5	41.51
SWCP06	1866880.7	5827620.8	41.50
SWCP07	1866787.2	5827605.1	41.33
SWCP08	1866791.6	5827611.9	41.34
SWCP09	1866758.3	5827633.9	40.36
SWCP10	1866757.5	5827633.2	40.35
SWCP196	1866798.1	5827614.2	41.66
SWCP59	1866775.3	5827573.9	42.61
SWMHA/4	1866923.1	5827672.7	40.88
SWMHA/5	1866880.5	5827623.7	41.72
SWMHA/6	1866836.5	5827574.2	42.40
SWMHA/7	1866788.1	5827602.2	41.64
SWRE196	1866823.4	5827640.5	42.27
SWRE44	1866886.2	5827680.5	42.54

Notes:

SWHC - Stormwater House Connection
SWMH - Stormwater Manhole
SWCP - Stormwater Catchpit
SWGM - Stormwater Gravity Main
SWSM - Stormwater Service Main
SWRE - Stormwater Rodding Eye

LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Stormwater Pipe
- Stormwater House Connection
- Stormwater Manhole
- Double Catchpit
- Catchpit
- Rodding Eye

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	7.19
0	DRAFT AS-BUILT	ER	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	-	Designed	-	-

Coordinate System:NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

STORMWATER AS-BUILT PLAN

OMOKOROA DEVELOPMENT
STAGE 2

Original Scales @ A3: 1:500
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-SW02

Revision: AB

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CODE	EASTING	NORTHING	LID LEVEL
EXSWMHE/1	1866900.8	5827731.5	39.01
SWCP01	1866931.0	5827664.6	40.65
SWCP02	1866916.2	5827672.7	40.81
SWCP03	1866913.0	5827665.9	40.92
SWCP04	1866913.4	5827664.9	40.91
SWCP05	1866886.8	5827615.5	41.51
SWCP06	1866880.7	5827620.8	41.50
SWCP07	1866787.2	5827605.1	41.33
SWCP08	1866791.6	5827611.9	41.34
SWCP09	1866758.3	5827633.9	40.36
SWCP10	1866757.5	5827633.2	40.35
SWCP196	1866798.1	5827614.2	41.66
SWCP59	1866775.3	5827573.9	42.61
SWMHA/4	1866923.1	5827672.7	40.88
SWMHA/5	1866880.5	5827623.7	41.72
SWMHA/6	1866836.5	5827574.2	42.40
SWMHA/7	1866788.1	5827602.2	41.64
SWRE196	1866823.4	5827640.5	42.27
SWRE44	1866886.2	5827680.5	42.54

SHEET 1

SHEET 2

LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Stormwater Pipe
- Stormwater House Connection
- Stormwater Manhole
- Double Catchpit
- Catchpit
- Rodding Eye

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	7.19
0	DRAFT AS-BUILT	ER	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	-	Designed	-	-

Coordinate System:NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

STORMWATER AS-BUILT PLAN

OMOKOROA DEVELOPMENT STAGE 2

Original Scales @ A3: 1:1000
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-SW03

Revision: AB

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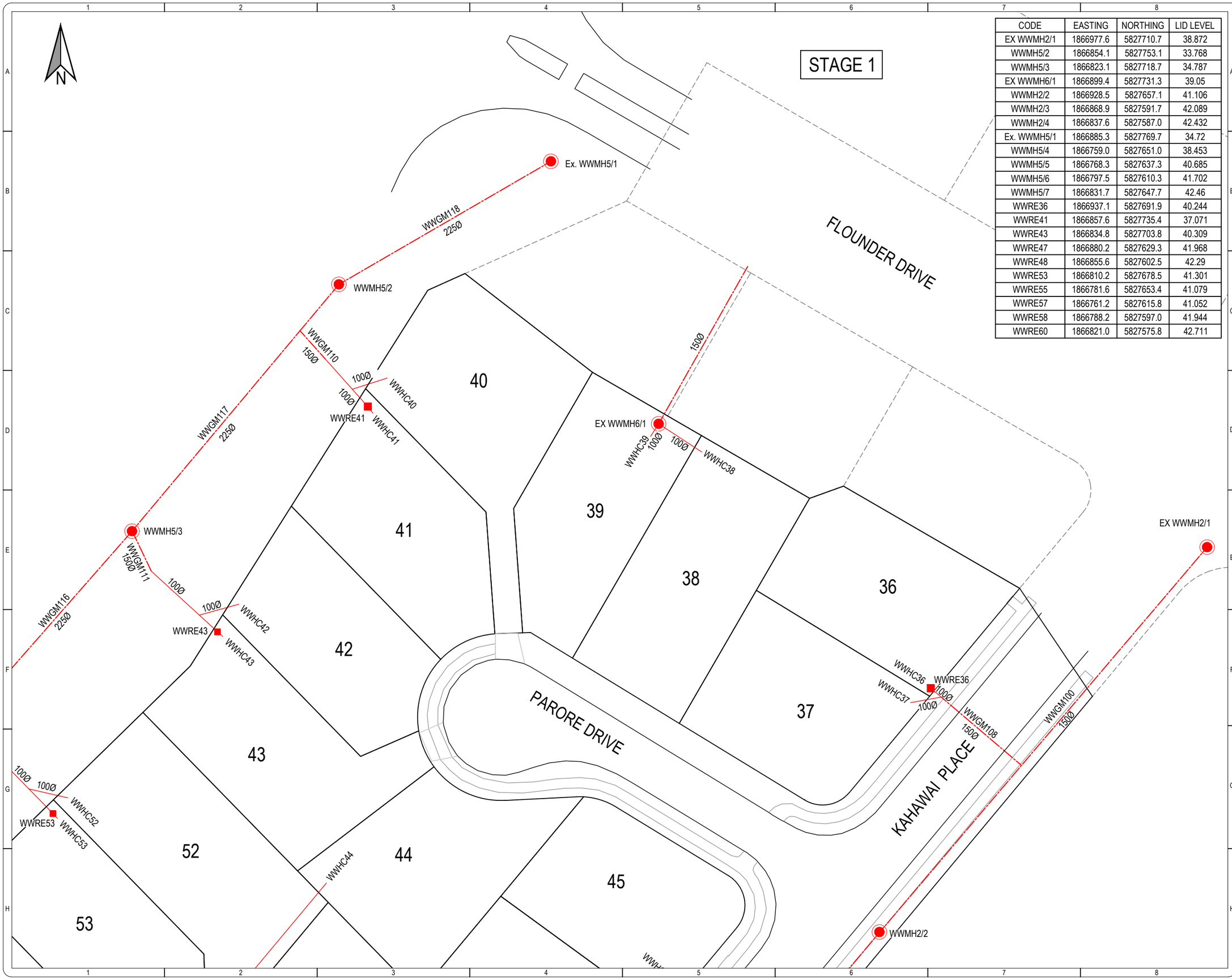

CODE	EASTING	NORTHING	LID LEVEL
EX WWMH2/1	1866977.6	5827710.7	38.872
WWMH5/2	1866854.1	5827753.1	33.768
WWMH5/3	1866823.1	5827718.7	34.787
EX WWMH6/1	1866899.4	5827731.3	39.05
WWMH2/2	1866928.5	5827657.1	41.106
WWMH2/3	1866868.9	5827591.7	42.089
WWMH2/4	1866837.6	5827587.0	42.432
Ex. WWMH5/1	1866885.3	5827769.7	34.72
WWMH5/4	1866759.0	5827651.0	38.453
WWMH5/5	1866768.3	5827637.3	40.685
WWMH5/6	1866797.5	5827610.3	41.702
WWMH5/7	1866831.7	5827647.7	42.46
WWRE36	1866937.1	5827691.9	40.244
WWRE41	1866857.6	5827735.4	37.071
WWRE43	1866834.8	5827703.8	40.309
WWRE47	1866880.2	5827629.3	41.968
WWRE48	1866855.6	5827602.5	42.29
WWRE53	1866810.2	5827678.5	41.301
WWRE55	1866781.6	5827653.4	41.079
WWRE57	1866761.2	5827615.8	41.052
WWRE58	1866788.2	5827597.0	41.944
WWRE60	1866821.0	5827575.8	42.711

Notes:

WWGM - Wastewater Gravity Main
WWMH - Wastewater Manhole
WWHC - Wastewater House Connection

LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Wastewater Pipe
- Wastewater House Connection
- Wastewater Manhole
- Rodding Eye

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	7.19
0	DRAFT AS-BUILT	ER	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	-	Designed	-	-

Coordinate System: NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

WASTEWATER AS-BUILT PLAN

OMOKOROA DEVELOPMENT
STAGE 2

Original Scales @ A3: 1:500
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-WW01

Revision: AB

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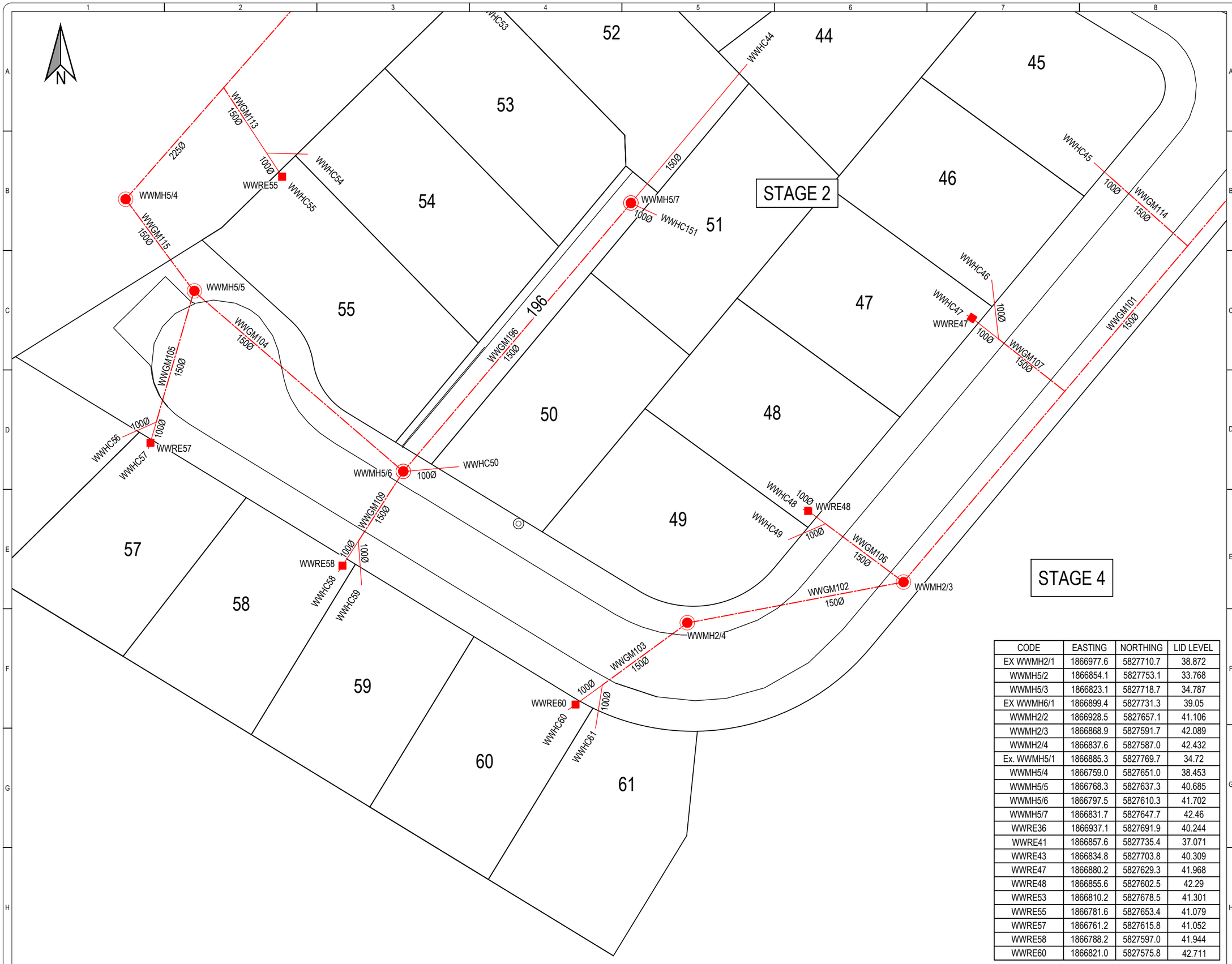

Notes:

WWGM - Wastewater Gravity Main
WWMH - Wastewater Manhole
WWHC - Wastewater House Connection

LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Wastewater Pipe
- Wastewater House Connection
- Wastewater Manhole
- Rodding Eye

CODE	EASTING	NORTHING	LID LEVEL
EX WWMH2/1	1866977.6	5827710.7	38.872
WWMH5/2	1866854.1	5827753.1	33.768
WWMH5/3	1866823.1	5827718.7	34.787
EX WWMH6/1	1866899.4	5827731.3	39.05
WWMH2/2	1866928.5	5827657.1	41.106
WWMH2/3	1866868.9	5827591.7	42.089
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Ex. WWMH5/1	1866885.3	5827769.7	34.72
WWMH5/4	1866759.0	5827651.0	38.453
WWMH5/5	1866768.3	5827637.3	40.685
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WWMH5/7	1866831.7	5827647.7	42.46
WWRE36	1866937.1	5827691.9	40.244
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WWRE47	1866880.2	5827629.3	41.968
WWRE48	1866855.6	5827602.5	42.29
WWRE53	1866810.2	5827678.5	41.301
WWRE55	1866781.6	5827653.4	41.079
WWRE57	1866761.2	5827615.8	41.052
WWRE58	1866788.2	5827597.0	41.944
WWRE60	1866821.0	5827575.8	42.711

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	7.19
0	DRAFT AS-BUILT	ER	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	-	Designed	-	-

Coordinate System: NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

WASTEWATER AS-BUILT PLAN

OMOKOROA DEVELOPMENT
STAGE 2

Original Scales @ A3: 1:500
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-WW02

Revision: AB

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SHEET 1

SHEET 2

CODE	EASTING	NORTHING	LID LEVEL
EX WWMH2/1	1866977.6	5827710.7	38.872
WWMH5/2	1866854.1	5827753.1	33.768
WWMH5/3	1866823.1	5827718.7	34.787
EX WWMH6/1	1866899.4	5827731.3	39.05
WWMH2/2	1866928.5	5827657.1	41.106
WWMH2/3	1866868.9	5827591.7	42.089
WWMH2/4	1866837.6	5827587.0	42.432
Ex. WWMH5/1	1866885.3	5827769.7	34.72
WWMH5/4	1866759.0	5827651.0	38.453
WWMH5/5	1866768.3	5827637.3	40.685
WWMH5/6	1866797.5	5827610.3	41.702
WWMH5/7	1866831.7	5827647.7	42.46
WWRE36	1866937.1	5827691.9	40.244
WWRE41	1866857.6	5827735.4	37.071
WWRE43	1866834.8	5827703.8	40.309
WWRE47	1866880.2	5827629.3	41.968
WWRE48	1866855.6	5827602.5	42.29
WWRE53	1866810.2	5827678.5	41.301
WWRE55	1866781.6	5827653.4	41.079
WWRE57	1866761.2	5827615.8	41.052
WWRE58	1866788.2	5827597.0	41.944
WWRE60	1866821.0	5827575.8	42.711

LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Wastewater Pipe
- Wastewater House Connection
- Wastewater Manhole
- Rodding Eye

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	7.19
0	DRAFT AS-BUILT	ER	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	-	Designed	-	-

Coordinate System:NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

WASTEWATER AS-BUILT PLAN

OMOKOROA DEVELOPMENT
STAGE 2

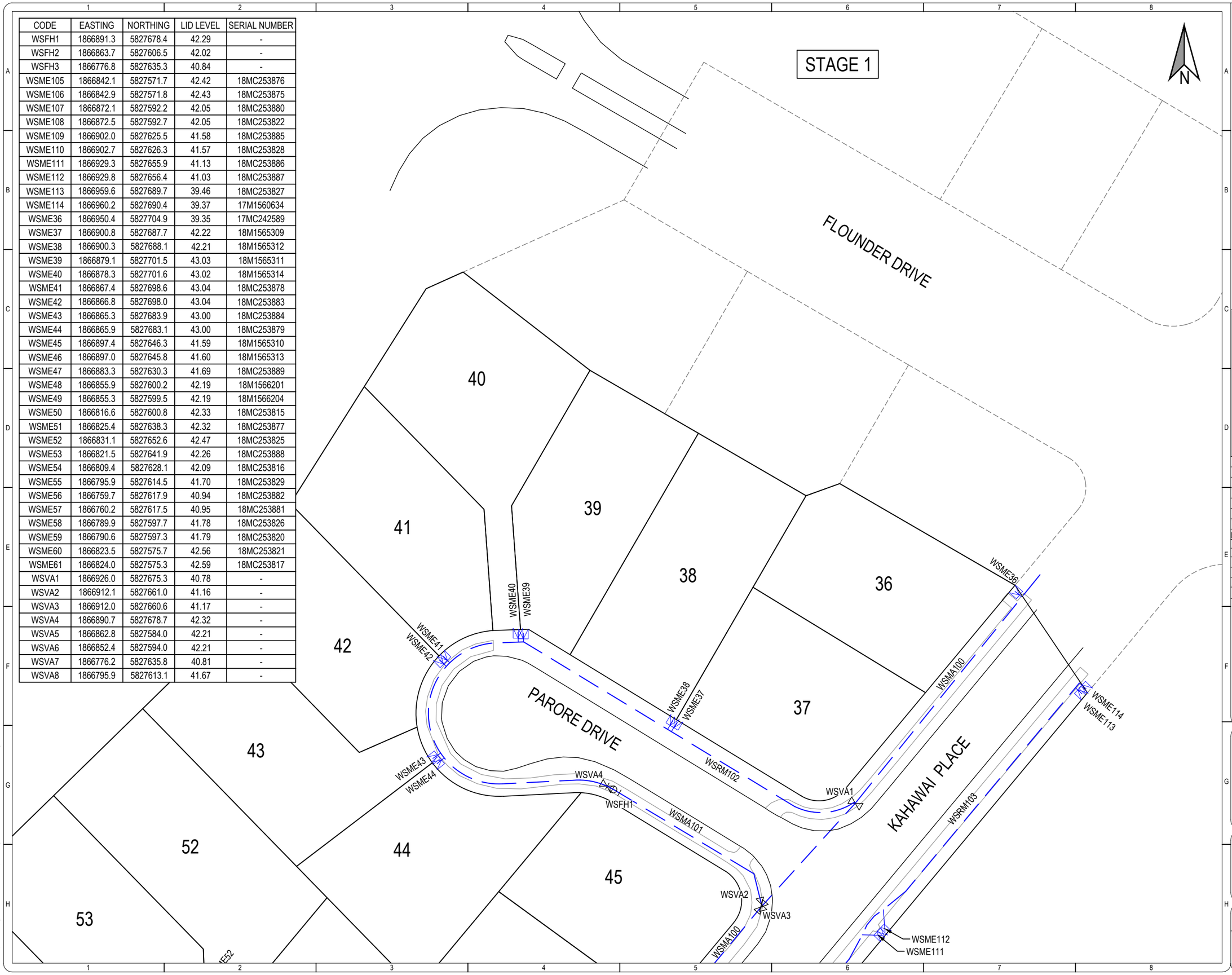
Original Scales @ A3
1:1000
Do Not Scale Dimensions

Status
AS-BUILT

Drawing No
21118-S2-WW03

Revision
AB

CODE	EASTING	NORTHING	LID LEVEL	SERIAL NUMBER
WSFH1	1866891.3	5827678.4	42.29	-
WSFH2	1866863.7	5827606.5	42.02	-
WSFH3	1866776.8	5827635.3	40.84	-
WSME105	1866842.1	5827571.7	42.42	18MC253876
WSME106	1866842.9	5827571.8	42.43	18MC253875
WSME107	1866872.1	5827592.2	42.05	18MC253880
WSME108	1866872.5	5827592.7	42.05	18MC253822
WSME109	1866902.0	5827625.5	41.58	18MC253885
WSME110	1866902.7	5827626.3	41.57	18MC253828
WSME111	1866929.3	5827655.9	41.13	18MC253886
WSME112	1866929.8	5827656.4	41.03	18MC253887
WSME113	1866959.6	5827689.7	39.46	18MC253827
WSME114	1866960.2	5827690.4	39.37	17M1560634
WSME36	1866950.4	5827704.9	39.35	17MC242589
WSME37	1866900.8	5827687.7	42.22	18M1565309
WSME38	1866900.3	5827688.1	42.21	18M1565312
WSME39	1866879.1	5827701.5	43.03	18M1565311
WSME40	1866878.3	5827701.6	43.02	18M1565314
WSME41	1866867.4	5827698.6	43.04	18MC253878
WSME42	1866866.8	5827698.0	43.04	18MC253883
WSME43	1866865.3	5827683.9	43.00	18MC253884
WSME44	1866865.9	5827683.1	43.00	18MC253879
WSME45	1866897.4	5827646.3	41.59	18M1565310
WSME46	1866897.0	5827645.8	41.60	18M1565313
WSME47	1866883.3	5827630.3	41.69	18MC253889
WSME48	1866855.9	5827600.2	42.19	18M1566201
WSME49	1866855.3	5827599.5	42.19	18M1566204
WSME50	1866816.6	5827600.8	42.33	18MC253815
WSME51	1866825.4	5827638.3	42.32	18MC253877
WSME52	1866831.1	5827652.6	42.47	18MC253825
WSME53	1866821.5	5827641.9	42.26	18MC253888
WSME54	1866809.4	5827628.1	42.09	18MC253816
WSME55	1866795.9	5827614.5	41.70	18MC253829
WSME56	1866759.7	5827617.9	40.94	18MC253882
WSME57	1866760.2	5827617.5	40.95	18MC253881
WSME58	1866789.9	5827597.7	41.78	18MC253826
WSME59	1866790.6	5827597.3	41.79	18MC253820
WSME60	1866823.5	5827575.7	42.56	18MC253821
WSME61	1866824.0	5827575.3	42.59	18MC253817
WSVA1	1866926.0	5827675.3	40.78	-
WSVA2	1866912.1	5827661.0	41.16	-
WSVA3	1866912.0	5827660.6	41.17	-
WSVA4	1866890.7	5827678.7	42.32	-
WSVA5	1866862.8	5827584.0	42.21	-
WSVA6	1866852.4	5827594.0	42.21	-
WSVA7	1866776.2	5827635.8	40.81	-
WSVA8	1866795.9	5827613.1	41.67	-



Notes:

WSRM - Rider Main
WSME - Water Meter
WSMA - Water Main

LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Water Line
- Water Meter (WSME)
- Water Valve (WSVA))
- Fire Hydrant

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	07.19
0	DRAFT AS-BUILT	NW	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	-	Designed	-	-

Coordinate System:NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

WATER RETICULATION AS-BUILT PLAN

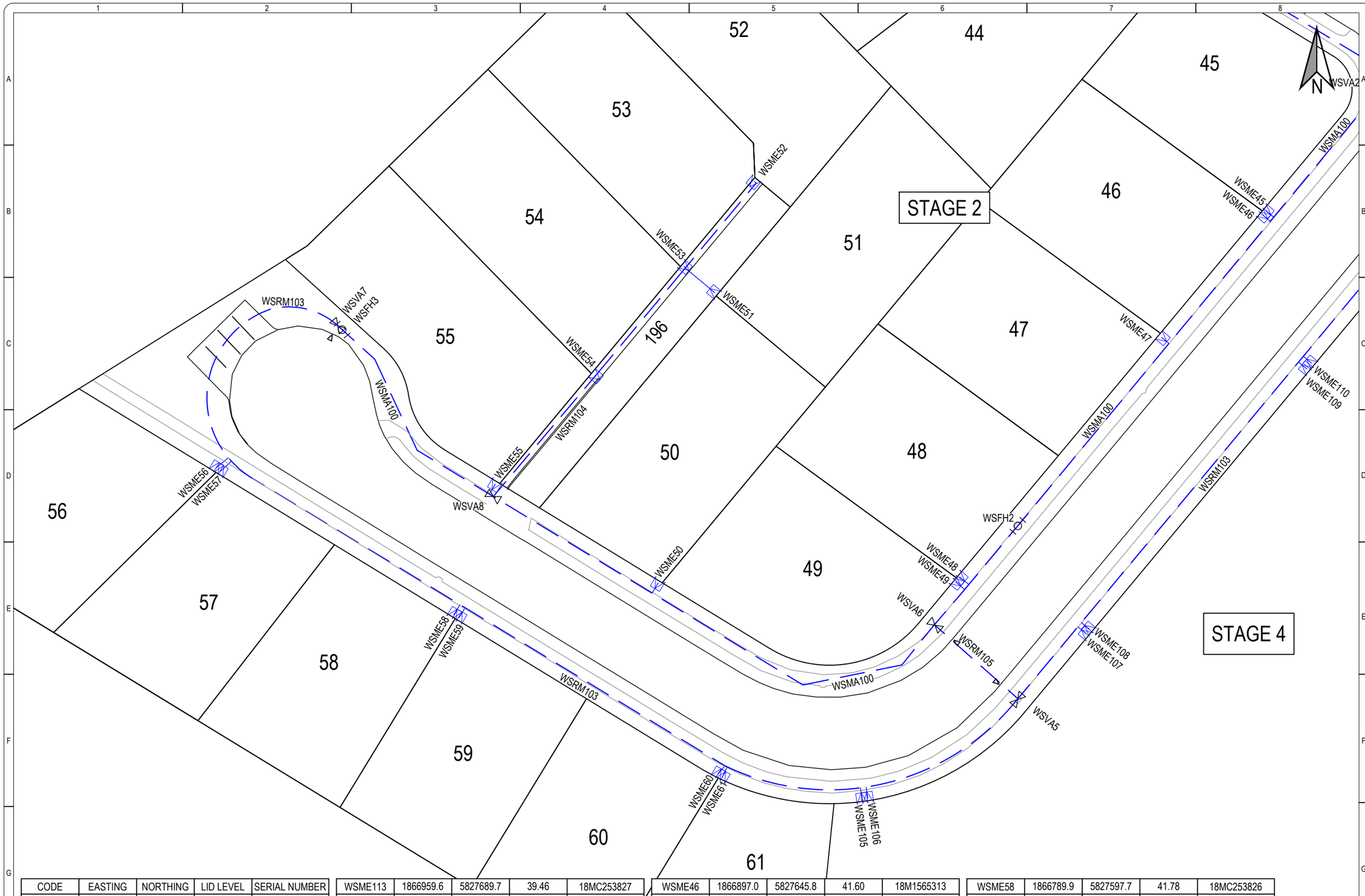
OMOKOROA DEVELOPMENT STAGE 2

Original Scales @ A3: 1:500
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-W01

Revision: AB



CODE	EASTING	NORTHING	LID LEVEL	SERIAL NUMBER
WSFH1	1866891.3	5827678.4	42.29	-
WSFH2	1866863.7	5827606.5	42.02	-
WSFH3	1866776.8	5827635.3	40.84	-
WSME105	1866842.1	5827571.7	42.42	18MC253876
WSME106	1866842.9	5827571.8	42.43	18MC253875
WSME107	1866872.1	5827592.2	42.05	18MC253880
WSME108	1866872.5	5827592.7	42.05	18MC253822
WSME109	1866902.0	5827625.5	41.58	18MC253885
WSME110	1866902.7	5827626.3	41.57	18MC253828
WSME111	1866929.3	5827655.9	41.13	18MC253886
WSME112	1866929.8	5827656.4	41.03	18MC253887

WSME113	1866959.6	5827689.7	39.46	18MC253827
WSME114	1866960.2	5827690.4	39.37	17M1560634
WSME36	1866950.4	5827704.9	39.35	17MC242589
WSME37	1866900.8	5827687.7	42.22	18M1565309
WSME38	1866900.3	5827688.1	42.21	18M1565312
WSME39	1866879.1	5827701.5	43.03	18M1565311
WSME40	1866878.3	5827701.6	43.02	18M1565314
WSME41	1866867.4	5827698.6	43.04	18MC253878
WSME42	1866866.8	5827698.0	43.04	18MC253883
WSME43	1866865.3	5827683.9	43.00	18MC253884
WSME44	1866865.9	5827683.1	43.00	18MC253879
WSME45	1866897.4	5827646.3	41.59	18M1565310

WSME46	1866897.0	5827645.8	41.60	18M1565313
WSME47	1866883.3	5827630.3	41.69	18MC253889
WSME48	1866855.9	5827600.2	42.19	18M1566201
WSME49	1866855.3	5827599.5	42.19	18M1566204
WSME50	1866816.6	5827600.8	42.33	18MC253815
WSME51	1866825.4	5827638.3	42.32	18MC253877
WSME52	1866831.1	5827652.6	42.47	18MC253825
WSME53	1866821.5	5827641.9	42.26	18MC253888
WSME54	1866809.4	5827628.1	42.09	18MC253816
WSME55	1866795.9	5827614.5	41.70	18MC253829
WSME56	1866759.7	5827617.9	40.94	18MC253882
WSME57	1866760.2	5827617.5	40.95	18MC253881

WSME58	1866789.9	5827597.7	41.78	18MC253826
WSME59	1866790.6	5827597.3	41.79	18MC253820
WSME60	1866823.5	5827575.7	42.56	18MC253821
WSME61	1866824.0	5827575.3	42.59	18MC253817
WSVA1	1866926.0	5827675.3	40.78	-
WSVA2	1866912.1	5827661.0	41.16	-
WSVA3	1866912.0	5827660.6	41.17	-
WSVA4	1866890.7	5827678.7	42.32	-
WSVA5	1866862.8	5827584.0	42.21	-
WSVA6	1866852.4	5827594.0	42.21	-
WSVA7	1866776.2	5827635.8	40.81	-
WSVA8	1866795.9	5827613.1	41.67	-

Notes:

WSRM - Rider Main
WSME - Water Meter
WSMA - Water Main

LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Water Line
- Water Meter (WSME)
- Water Valve (WSVA))
- Fire Hydrant

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	07.19
0	DRAFT AS-BUILT	NW	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	07/19	Designed	-	-

Coordinate System:NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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www.sltga.co.nz

Title

WATER RETICULATION AS-BUILT PLAN

OMOKOROA DEVELOPMENT STAGE 2

Original Scales @ A3: 1:500
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-W02

Revision: AB

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CODE	EASTING	NORTHING	LID LEVEL	SERIAL NUMBER
WSFH1	1866891.3	5827678.4	42.29	-
WSFH2	1866863.7	5827606.5	42.02	-
WSFH3	1866776.8	5827635.3	40.84	-
WSME105	1866842.1	5827571.7	42.42	18MC253876
WSME106	1866842.9	5827571.8	42.43	18MC253875
WSME107	1866872.1	5827592.2	42.05	18MC253880
WSME108	1866872.5	5827592.7	42.05	18MC253822
WSME109	1866902.0	5827625.5	41.58	18MC253885
WSME110	1866902.7	5827626.3	41.57	18MC253828
WSME111	1866929.3	5827655.9	41.13	18MC253886
WSME112	1866929.8	5827656.4	41.03	18MC253887
WSME113	1866959.6	5827689.7	39.46	18MC253827
WSME114	1866960.2	5827690.4	39.37	17M1560634
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WSME37	1866900.8	5827687.7	42.22	18M1565309
WSME38	1866900.3	5827688.1	42.21	18M1565312
WSME39	1866879.1	5827701.5	43.03	18M1565311
WSME40	1866878.3	5827701.6	43.02	18M1565314
WSME41	1866867.4	5827698.6	43.04	18MC253878
WSME42	1866866.8	5827698.0	43.04	18MC253883
WSME43	1866865.3	5827683.9	43.00	18MC253884
WSME44	1866865.9	5827683.1	43.00	18MC253879
WSME45	1866897.4	5827646.3	41.59	18M1565310

CODE	EASTING	NORTHING	LID LEVEL	SERIAL NUMBER
WSME46	1866897.0	5827645.8	41.60	18M1565313
WSME47	1866883.3	5827630.3	41.69	18MC253889
WSME48	1866855.9	5827600.2	42.19	18M1566201
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WSME51	1866825.4	5827638.3	42.32	18MC253877
WSME52	1866831.1	5827652.6	42.47	18MC253825
WSME53	1866821.5	5827641.9	42.26	18MC253888
WSME54	1866809.4	5827628.1	42.09	18MC253816
WSME55	1866795.9	5827614.5	41.70	18MC253829
WSME56	1866759.7	5827617.9	40.94	18MC253882
WSME57	1866760.2	5827617.5	40.95	18MC253881
WSME58	1866789.9	5827597.7	41.78	18MC253826
WSME59	1866790.6	5827597.3	41.79	18MC253820
WSME60	1866823.5	5827575.7	42.56	18MC253821
WSME61	1866824.0	5827575.3	42.59	18MC253817
WSVA1	1866926.0	5827675.3	40.78	-
WSVA2	1866912.1	5827661.0	41.16	-
WSVA3	1866912.0	5827660.6	41.17	-
WSVA4	1866890.7	5827678.7	42.32	-
WSVA5	1866862.8	5827584.0	42.21	-
WSVA6	1866852.4	5827594.0	42.21	-
WSVA7	1866776.2	5827635.8	40.81	-
WSVA8	1866795.9	5827613.1	41.67	-

Notes:

WSRM - Rider Main
WSME - Water Meter
WSMA - Water Main

LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Water Line
- Water Meter (WSME)
- Water Valve (WSVA))
- Fire Hydrant

Rev	Description	Drn	Ckd	App	Date
AB	Issued for 223/224	NW	CST	NF	07.19
0	DRAFT AS-BUILT	NW	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	07/19	Designed	-	-

Coordinate System:NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

WATER RETICULATION AS-BUILT PLAN

OMOKOROA DEVELOPMENT
STAGE 2

Original Scales @ A3: 1:1000
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-W03

Revision: AB

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LEGEND:

- Abuttal
- Boundary
- Kerb & Channel
- Major Contour (1m interv.)
- Minor Contour (0.20m interv.)
- Retaining Wall

Rev	Description	Drn	Ckd	App	Date
AB1	Retaining wall added	NW	RPW	NF	08/19
AB	Issued for 223/224	NW	CST	NF	07.19
0	DRAFT AS-BUILT	NW	CST	NF	07.19

	Name	Date		Name	Date
Surveyed	CST	07/19	Designed	-	-

Coordinate System: NZTM
Origin of Coordinates: -
Height Datum: Moturiki
Origin of Height: WBoPDC BM201, RL 38.76

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Title

FINISHED CONTOURS AS-BUILT PLAN

OMOKOROA DEVELOPMENT STAGE 2

Original Scales @ A3: 1:1000
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-S2-TP1

Revision: AB1

Notes:

1. Contours shown are depths of fill.

LEGEND:

- Abuttal
- Boundary
- Contour (major) - 1m interv.
- Contour (minor) - 0.20m interv.
- Fill
- Cut
- Retaining Wall

Rev	Description	Drn	Ckd	App	Date
AB1	Retaining wall added	NW	RPW	NF	08/19
AB	FOR GEOTECH REPORT	NW	CST	NF	07/19
0	INTERNAL ISSUE	NW	CST	NF	07/19

	Name	Date		Name	Date
Surveyed	CST		Designed		

Coordinate System:
Origin of Coordinates:
Height Datum:
Origin of Height:

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Title

EARTHWORKS FILL AREAS

Prepared For

OMOKOROA DEVELOPMENT STAGE 2

Original Scales @ A3: 1:1000
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-STG2-EW1

Revision: AB1

Notes:

1. Contours shown are cut and fill depths.

LEGEND:

- Abuttal
- Boundary
- Contour (major) - 1m interv.
- Contour (minor) - 0.20m interv.
- Fill
- Cut
- Retaining Wall

Rev	Description	Drn	Ckd	App	Date
AB1	Retaining wall added	NW	RPW	NF	08/19
AB	FOR GEOTECH REPORT	NW	CST	NF	07/19
0	INTERNAL ISSUE	NW	CST	NF	07/19

	Name	Date		Name	Date
Surveyed	CST		Designed		

Coordinate System:
Origin of Coordinates:
Height Datum:
Origin of Height:

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Title

EARTHWORKS CUT AND FILL ORIGINAL TO COMPLETE

Prepared For

OMOKOROA DEVELOPMENT STAGE 2

Original Scales @ A3: 1:1000
Do Not Scale Dimensions

Status: AS-BUILT

Drawing No: 21118-STG2-EW2

Revision: AB1

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APPENDIX C:

PRE-DEVELOPMENT INVESTIGATION DATA

SHRIMPTON & LIPINSKI

Borehole 1

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 Of: 2

Job No. 18220 | Date Excavated: TH 30/11/06. | RL 37.5m (APPROX) Moturiki Datum | Logged By: MH

DR 2275
CF = 1.678.

Description of Soil	Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths	Undrained Shear Strength (kPa) 50 100 150
Topsoil						
SILT: clayey. slightly friable. orange. Very stiff. Dry	NATURAL INSITU ASHES	1.0				
Cohesive. Brown orange				2.7	134/50	
		2.0				
CLAY: Silty. cohesive. Pale brown. Very Stiff: (Logged from SPT)		3.0	1, 1, 1	1.8 N=2	111/64	
SILT: Clayey. cohesive. Dark Brown		4.0				
Very clayey. pale grey brown. Very stiff. moist				2.7	134/50	
Yellow orange		5.0	1, 1, 2	N=3		
Slightly friable. bright yellow. Slightly coarse texture	PAHOIA TEPHRA					
Very clayey. slightly friable. orange. Very stiff. moist		6.0				
Very sticky		7.0	1, 1	N=1.5		

EXCAVATION METHOD: ROTARY MACHINE & HOLLOW SPT.

S&L
SKELLERTON & LIPINSKI

Borehole 1

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 2 Of: 2

Job No. 18220 | Date Excavated: TH. 30/11/06. | RL 37.5m (APPROX) Moturiki Datum | Logged By: MH

DR 2275

Description of Soil	Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths	Undrained Shear Strength (kPa) 50 100 150
SILT: Very clayey. orange. stiff moist. sticky	PAHOIA TEPHRA	0			100kPa	
		9.0				
Becomes Sandy. cream grey. still sticky		10.0				
EOB @ 10.5m : TARGET DEPTH.						

NOTES

1) BOREHOLE DRY

EXCAVATION METHOD:

SHRIMPTON & LIPINSKI

Borehole 2

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 Of: 2

Job No. 18220 | Date Excavated: TH. 30/11/06. | RL 33.0m (APPROX) Moturiki Datum | Logged By: MH

DR 2275

Undrained Shear Strength (kPa)

50 100 150

Description of Soil	Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths
TOPSOIL		0.0			
SILT: Clayey. Slightly friable Brown orange. Very stiff Damp	NATURAL INSITU ASHES	1.0		2.8	151/53
		2.0		2.7	134/50
SPT: Very clayey. Brown Orange SILT. Slightly friable. Very Stiff. moist		3.0	1, 2, 3	N=5	
As per SPT		4.0		3.8	92/24
pale orange. Stiff. Sticky Sensitive		5.0		4.7	70/15
Cream. Stiff: moist	PAHOIA TEPHRA	6.0			
SPT: Very clayey. pale Yellow SILT. Slightly friable. Stiff moist. Sticky			0, 1, 1	N=2	
As per SPT		7.0			

EXCAVATION METHOD: MACHINE ROTARY ET RAYMOND (HOLLOW) SPT.

SHRIMPTON & LIPINSKI

Borehole 2

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 2 Of: 2

Job No. 18220 | Date Excavated: TH 30/11/06 | RL 33.0m (APPROX) Moturiki Datum | Logged By: MH

Description of Soil	Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths
CLAY: silty. greasy. pale orange stiff. mast. sticky	PAHOIA TEPHRA	0	1	NK1	50kPa - 75 kPa.
		9.0			
SPT: silty pale yellow CLAY stiff. mast. sticky		10.0	1 1	N=1.5	
EOB @ 10.5m: TARGET DEPTH					
BOREHOLE DRY.					

DR 2275

Undrained Shear Strength (kPa)

50 100 150

EXCAVATION METHOD: MACHINE ROTARY & RAYMOND (HOLLOW) SPT.

S&L SHEMPTON & LIPINSKI

Borehole 3

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 Of: 2

Job No. 18220 | Date Excavated: TH. 30/11/06. | RL 46.0m (APPROX) Moturiki Datum | Logged By: MH

DR 2275

Undrained Shear Strength (kPa)

Description of Soil	Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths (50 / 100 / 150)
TOPSOIL		0.0			
SILT: Clayey. Slightly friable brown yellow. Very stiff slightly moist		0.50			
		1.0			
becoming pale orange		2.0		3.0	150
becomes pale brown. stiff		3.0		2.0	100
CLAY: Silty. Cohesive. Dark orange very stiff	INSITU ASHES	4.0			
SILT: Clayey. Cohesive. Brown orange very stiff. moist	NATURAL	4.17		2.3	160
		5.0			
pale orange					
SPT: clayey. pale orange SILT. cohesive. very stiff. moist		6.0	1 2 2	N=4	
As per SPT					
SPT: yellow CLAY. cohesive. stiff moist. sticky. Sensitive (Logged from SPT)	PAHOIA	7.0	1 1 1	N=2	
As per SPT					

EXCAVATION METHOD: MACHINE ROTARY ET RAYMOND (Hollow) SPT

SHRIMPTON & LUPINSKI

Borehole 3

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 2 Of: 2

Job No. 18220 | Date Excavated: TH 30/12/06 | RL 46.0m (APPROX) Moturiki Datum | Logged By: MH

DR 2275

Undrained Shear Strength (kPa)

50 100 150

Description of Soil	Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths
CLAY: Very Silty. Slightly friable Orange. Stiff. Moist. Sticky Sensitive		8.0			75 kPa - 100 kPa
		9.0			
SPT: Cream Pumiceous SILT Stiff. Moist	x x	10.0			
EOB @ 10.5m: TARGET DEPTH.		10.5			

NOTES

i) STANDPIPE INSTALLED

ii) BOREHOLE DRY

EXCAVATION METHOD:

SHRIMPTON & LIPINSKI

Borehole 4

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 **Of:** 2

Job No. 18220 | Date Excavated: | RL 28.0m (Approx) Moturiki Datum | Logged By: MH

Description of Soil		Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths	DR 2275 Undrained Shear Strength (kPa) 50 100 150
TOPSOIL			0.0				
SILT: Clayey. Slightly friable Dark orange. Very stiff. Damp			1.0		2.6	150/57	
Sandy. pale Brown. Stiff moist	ASHES		2.0				
Clayey. Now Sandy. Cream Brown.	IN SITU		2.8				
Dark orange. Very stiff	NATURAL		3.0		2.4	105/44	
			4.0				
			4.5				
Slightly friable. orange Stiff. moist. sticky. Sensitive			5.0		4.3	85/20	
			6.0		GWL 30/11/06		
PUMICEOUS SILT: Coarse. friable Cream mottled rustic orange Stiff. moist. Sensitive.	PAHOIA TEPHRA		7.0				
			8.0				

EXCAVATION METHOD: MACHINE ROTARY & RAYMOND (Hollow) SPT

SHRIMPTON & LIPINSKI

Borehole 4

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 Of: 2

Job No. 18220 | Date Excavated: W. 30/11/06 | RL 28.0m (APPROX) Moturiki Datum | Logged By: MH

DR 2275

Undrained Shear Strength (kPa)

50 100 150

Description of Soil		Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths
CLAY: Pale Brown. Stiff. Sticky			0			
PUMICEous SILT: friable. Cream Stiff. mást. Very Sensitive	PAHOIA	x x x x	3.0			
EOB @ 3.5m: TARGET DEPTH						

NOTES

1) GROUNDWATER LEVELS MONITORED IN STAND PIPE

DATE	DEPTH	NOTES
TH. 30/11	7.0m	END of DRILLING
W. 20/12	7.5m	+21 DAY

EXCAVATION METHOD: MACHINE ROTARY c/t RAYMOND (HOLLOW) SPT

SHRIMPTON & LIPINSKI

Borehole 5

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 Of: 1

Job No. 18220 | Date Excavated: W. 20/12/00 | RL 40.0m (APPROX) Moturiki Datum | Logged By: MH

DR 2275

Undrained Shear Strength (kPa)

50 100 150

Description of Soil	Soil Symbol	Depth (m)		Sensitivity Ratios	Corrected Shear Strengths
TOPSOIL					
SILT: Sandy. friable. pale brown yellow. stiff. Dry	NATURAL INSITU ASHES	0.5	DRY.	2.9	80/28
Becomes pale yellow		1.0		4.5	90/20
Clayey. Non Sandy. slightly friable. pale Brown yellow very stiff. Damp		1.5		3.3	80/24
pumiceous. pale cream Brown. stiff. moist		2.0		3.5	69/20
Becoming Sandy					
EOB @ 2.0m : TARGET DEPTH					

EXCAVATION METHOD: HANDAUGER

SHRIMPTON & LIPINSKI

Borehole 6

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 Of: 1

Job No. 18220 | Date Excavated: W 20/12/06 | RL 43.0m (APPROX) Moturiki Datum | Logged By: MH

Description of Soil		Soil Symbol	Depth (m)		Sensitivity Ratios	Corrected Shear Strengths	DR 2275 Undrained Shear Strength (kPa) 50 100 150
TOPSOIL		CL	0.00				
RESIDUAL TOPSOIL		CH					
SILT: Sandy. friable. pale Brown yellow. Very stiff - Dry	NATURAL ASHES	X X	0.5	DRY		80/18	
		X X	1.0			100/20	
EOB @ 1.0m: TARGET DEPTH							

EXCAVATION METHOD: HAND AUGER

SHRIMPTON & LIPINSKI

Borehole 7

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 **Of:** 1

Job No. 18220 | Date Excavated: W 20/12/06 | RL 43 m (Approx) Moturiki Datum | Logged By: MH

Description of Soil		Soil Symbol	Depth (m)		Sensitivity Ratios	Corrected Shear Strengths	DR 2275 Undrained Shear Strength (kPa) 50 100 150
Topsoil	FILL						
SILT: Pale Yellow. Very Stiff	ASHES		0.00	DRY		100	
EOBe 1.0m: TARGET DEPTH							

EXCAVATION METHOD: HAND AUGER

SKRIMPTON & LIPINSKI

Borehole 8

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 Of: 1

Job No. 18220 | Date Excavated: W. 20/12/06. | RL 41.5m (APPROX) Moturiki Datum | Logged By: MH

DR 2275

Description of Soil		Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths	Undrained Shear Strength (kPa) 50 100 150
TOPSOIL	FILLING		0.5	Dry			
SILT : Yellow. Very Stiff. Damp (Natural Insitu Ashes)		XX	1.0			>100 kPa	
EOB @ 1.0m : TARGET DEPTH							

EXCAVATION METHOD:

SHRIMPTON & LIPINSKI

Borehole 9

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 Of: 1

Job No. 18220 | Date Excavated: W. 20/12/96 | RL 16.5m (APPROX) Moturiki Datum | Logged By: MH

DR 2275

Undrained Shear Strength (kPa)

50 100 150

Description of Soil		Soil Symbol	Depth (m)	Sensitivity Ratios	Corrected Shear Strengths
Black. Highly (20%-30%) organic, amorphous SILT Soft	UNSUITABLE MATERIALS	W	0.0		
		W	0.5		
		W	1.0		50/10
Spongy Wood		W	1.5		
Sandy cream silt		W			
Black highly organic silt soft		W	2.0		107/33
SILT: Pumiceous. Now organic. Sandy cream. Very stiff	ESTUARY SEDIMENTS	X X	2.5		124/37
		X X	3.0		114/50.
EOB @ 3.0m: TARGET DEPTH					

EXCAVATION METHOD: HAND AUGER

SHRIMPTON & LIPINSKI

Site: Goldstone Block, Omokoroa Tauranga			Borehole 10 / Sheet: 1 Of: 1
Job No. 18220	Date Excavated: W. 20/12/06	RL 15.0m (APPROX) Moturiki Datum	Logged By: MH

DR 2275

Description of Soil		Soil Symbol	Depth (m)	SPT	Sensitivity Ratios	Corrected Shear Strengths	Undrained Shear Strength (kPa) 50 100 150
Black. Highly (>40%) organic amorphous SILT. soft	UNSUITABLES			▽			
			1.0			20	
Non organic Sand. Cream							
Black organic SILT As per 0.0 → 1.2m.			2.0			38	
mostly Spongy Wood			3.0				
			4.0				
Fibrous black SILT							
SILT: Pale yellow. Stiff		x x					
EOB @ 5.0m: TARGET DEPTH			5.0				

EXCAVATION METHOD: HAND AUGER.

SHRIMPTON & LIPINSKI

Borehole 11

Site: Goldstone Block, Omokoroa Tauranga

Sheet: 1 Of: 1

Job No. 18220 | Date Excavated: W. 20/12/06 | RL 12.5m (APPROX) Moturiki Datum | Logged By: MH

DR 2275

Undrained Shear Strength (kPa)

50 100 150

Description of Soil	Soil Symbol	Depth (m)	Sensitivity Ratios	Corrected Shear Strengths
BLACK. HIGHLY (>40%) ORGANIC AMORPHOUS SILT. SOFT	W	0		
	W	1.0		
	W	2.0		
	W	3.0		
	W	4.0		
	W	5.0		
EOB @ 5.0m: TARGET DEPTH				

UNSUITABLES

GROUNDWATER @ SURFACE

< 50 KPa

EXCAVATION METHOD: HAND. AUGER

SHRIMPTON & LIPINSKI

Borehole 12

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 2

Job No. 21118 | Date Excavated: 16/6/2015 | RL 38.20 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
TOPSOIL 250 mm						
SILT; brown; dark brown mottles COLLUVIUM stif; moist; friable						
clayey SILT; orange brown; stiff; moist; slightly cohesive		0.5			88	
becomes very stiff becomes moderately plastic				not found	134	
		1.0			184	
		1.5			137	
sandy (f-m) SILT; yellow orange brown; very stiff; moist; friable		2.0				
silty SAND (f-m); yellow orange; medium dense; moist					105	
		2.5			88	
SAND (f-m); light grey; loose; wet (Rotoehu Ash)						
clayey SILT; with minor sand (f); darkish brown; stiff; wet; low plasticity (Hamilton Ash) becomes dark orange brown; hard; moist; high plasticity end of sand		3.0			utp	>
becomes orange brown becomes very stiff; wet; moderately plastic		3.5			175	
		4.0			178	
		4.5			108	
		4.7				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 12

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 2

Job No. 21118 | Date Excavated: 16/6/2015 | RL 38.20 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
becomes hard		4.8		not found	utp	
EOBH 4.8 m		5.0				
		5.5				
		6.0				
		6.5				
		7.0				
		7.5				
		8.0				
		8.5				
		9.0				
		9.4				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 13

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 2

Job No. 21118 | Date Excavated: 16/6/2015 | RL 57.19 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
TOPSOIL 150 mm						
clayey SILT; orange brown; stiff; moist; slightly cohesive						
becomes very stiff; moderately plastic		0.5			114	
		1.0		not found	160	
SILT; with traces of sand (f); orange brown; stiff; moist; slightly cohesive becomes sandy		1.5			99	
silty SAND (f-m); light yellow; medium dense; moist						
SAND (f-m); light grey; loose; wet (Rotoehu Ash)		2.0			96	
clayey SILT; darkish brown; very stiff; wet; low plasticity (Hamilton Ash) becomes dark orange brown; moist; high plasticity		2.5			196	
becomes orange brown; wet; moderately plastic		3.0			128	
becomes wet; low plasticity		3.5			143	
		4.0			96	
SILT; orange; stiff; wet; low plasticity						
becomes yellow orange; saturated		4.5			64	
		4.7				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 13

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 2

Job No. 21118	Date Excavated: 16/6/2015	RL 57.19 m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
		4.8			58	
EOBH 4.8 m		5.0				
		5.5		not found		
		6.0				
		6.5				
		7.0				
		7.5				
		8.0				
		8.5				
		9.0				
		9.4				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 14

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 2

Job No. 21118 | Date Excavated: 16/6/2015 | RL 42.98 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)
TOPSOIL 150 mm	Colluvium			not found	
SILT; with traces of sand (f); brown; dark brown mottles very stiff; moist; friable COLLUVIUM		0.5			128
becomes with dak brown and light yellow mottles		1.0			163
clayey SILT; with traces of sand (f); mixed brown and light yellow; very stiff; moist; slightly cohesive		1.5			134
silty SAND (f-m) yellow brown; medium dense; wet					
CLAY; black; very stiff; wet; low plasticity		2.0			134
becomes high plasticity					
becomes stiff		2.5			82
becomes dark brown		3.0			178
clayey SILT; orange brown; very stiff; moist; moderately plastic		3.5			140
becomes yellow orange brown		4.0			160
		4.5			160
becomes hard		4.7			utp

Undrained Shear Strength (kPa): 50 100 150

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 14

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 2

Job No. 21118 | Date Excavated: 16/6/2015 | RL 42.98 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
EOBH 4.8 m		4.8		not found	utp	
		5.0				
		5.5				
		6.0				
		6.5				
		7.0				
		7.5				
		8.0				
		8.5				
		9.0				
		9.4				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 15

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 3

Job No. 21118	Date Excavated: 18/6/2015	RL m Moturiki Datum	Logged By: N.I.

Description of Soil	Depth (m)	Undrained Shear Strength (kPa)
TOPSOIL 200 mm		
clayey SILT; with traces of sand (f); brown COLLUVIUM stiff; moist; friable		
clayey SILT; orange brown; very stiff; moist; moderately plastic	0.5	
SILT; with traces of sand (f); orange brown; very stiff; moist; slightly cohesive	1.0	
becomes with some sand (f-m) becomes yellow	1.5	121
sandy (f-m) SILT; yellow brown; stiff; wet; slightly cohesive	2.0	
SAND (f-m); light brown grey; loose; wet (Rotoehu Ash)		
CLAY; black; hard; moist; high plasticity	2.5	
becomes orange brown	3.0	utp
	3.5	
	4.0	
becomes brown		
clayey SILT; yellow brown; stiff; wet; moderately plastic	4.5	82
	4.7	

Groundwater: 6.7 m

Undrained Shear Strength (kPa): 50 100 150

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 15

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 3

Job No. 21118 | Date Excavated: 18/6/2015 | RL m Moturiki Datum | Logged By: N.I.

Description of Soil	Depth (m)	Groundwater	Undrained Shear Strength (kPa)
SILT; creamy light yellow; firm; saturated; sensitive; dilatent; slightly cohesive (Pahoia Ash)	4.8		
	5.0		
	5.5	6.7 m	
becomes creamy light grey; black biotite speckles and mottles	6.0		29
becomes with traces of sand (f)	6.5		
becomes with some sand (f-m)	7.0		
end of sand; continues firm; saturated; sensitive; dilatent; slightly cohesive	7.5		26
becomes with traces of sand (f) becomes mixed light grey and yellow black speckles and mottles	8.0		
becomes moist	8.5		
becomes light yellow; stiff end of sand	9.0		72
	9.4		

Undrained Shear Strength (kPa): 50 100 150

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 15

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 3 Of: 3

Job No. 21118	Date Excavated: 18/6/2015	RL m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
becomes light grey becomes with traces of sand (f) becomes with minor sand (f)	×	9.5 10.0				
EOBH 10.5 m	×	10.5			62	
		11.0 11.5 12.0 12.5 13.0 13.5 14.0				

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 16

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 5

Job No. 21118	Date Excavated: 18/6/2015	RL 30.41 m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
TOPSOIL 250 mm						
clayey SILT; orange brown; very stiff; moist; moderately plastic		0.5		11.2 m		
SILT; with traces of sand (f); orange brown; very stiff; moist; slightly cohesive		1.0				
sandy (f-m) SILT; light yellow brown; firm; wet; slightly cohesive		1.5			49	
SAND (f-m); light brown grey; loose; wet (Rotoehu Ash)		2.0				
clayey SILT; with minor sand (f); dark brown; stiff; wet; low plasticity (Hamilton Ash) becomes dark orange brown; moist; moderately plastic		2.5				
		3.0			98	
		3.5				
SILT; yellow orange; firm; wet; slightly cohesive becomes with dark brown mottles		4.0				
becomes creamy light yellow; sensitive; dilatent (Pahoia Ash)		4.5			39	
		4.7				

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 16

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 5

Job No. 21118	Date Excavated: 18/6/2015	RL 30.41 m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
becomes with black speckles (Biotite)		4.8 5.0				
		5.5		11.2 m		
continues firm		6.0			26	
		6.5				
		7.0				
continues creamy light yellow; firm; sensitive; dilatent; slightly cohesive		7.5			26	
becomes creamy yellow brown; black speckles and mottles		8.0				
		8.5				
continues firm		9.0			46	
becomes dark brown; with traces of sand (f) rare black gravels to 30 mm diameter		9.4				

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 16

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 3 Of: 5

Job No. 21118 | Date Excavated: 18/6/2015 | RL 30.41 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
end of sand and gravels becomes yellow orange; stiff; moist		9.5 10.0		11.2 m		
becomes creamy light yellow; some gravels to 40 mm dia. black speckles; gravels sub-angular		10.5			98	
end of gravels		11.0				
clayey SILT; yellow orange brown; very stiff; moist; moderately plastic		11.5				
shear vane not possible; sample slid up tube		12.0				
SILT; yellow orange; stiff; wet; sensitive; dilatent; low plasticity		12.5				
becomes creamy light yellow grey; black speckles and mottles (Biotite)		13.0				
becomes with traces of sand (f)		13.5			33	
becomes mixed light yellow grey and yellow orange brown becomes with some sand (f-m); black speckles slightly cohesive		14.0				

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 16

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 4 Of: 5

Job No. 21118	Date Excavated: 18/6/2015	RL 30.41 m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
becomes yellow orange		14.2				
becomes with red speckles		14.5				
becomes light brown grey; large black mottles (Biotite) continues sensitive		15.0			43	
becomes mixed light brown grey and yellow orange; black speckles and mottles		15.5				
becomes with minor sand (f-m)		16.0				
continues firm		16.5			29	
		17.0				
		17.5				
sandy (f-m) SILT; light brown; light grey mottles; firm; wet; slightly cohesive		18.0			26	
		18.5				
silty SAND (m-c); light brown grey; green mottles medium dense; wet		18.8				

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LEPINSKI

Borehole 16

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 5 Of: 5

Job No. 21118 | Date Excavated: 18/6/2015 | RL 30.41 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
silty SAND (m-c); light brown; medium dense; wet		18.9 19.0				
EOBH 19.5 m		19.5			utp	>
		20.0				
		20.5				
		21.0				
		21.5				
		22.0				
		22.5				
		23.0				
		23.5				

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 17

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 2

Job No. 21118 | Date Excavated: 16/6/2015 | RL 37.89 m Moturiki Datum | Logged By: N.I.

Description of Soil	Depth (m)	Undrained Shear Strength (kPa)
TOPSOIL 200 mm		
clayey SILT; orange brown; very stiff; moist; slightly cohesive	0.5	183
	1.0	178
SILT; with minor sand (f-m); orange brown; very stiff; moist; slightly cohesive	1.5	
silty SAND (f-m); yellow orange brown; medium dense; moist		108
	2.0	utp
SILT; yellow; stiff; wet; slightly cohesive		
SAND (f-m); light grey; loose; saturated (Rotoehu Ash)	2.5	193
clayey SILT; darkish brown; very stiff; wet; low plasticity (Hamilton Ash) becomes orange brown; moist; high plasticity	3.0	120
	3.5	193
SILT; yellow brown; very stiff; wet; low plasticity	4.0	131
	4.5	128
	4.7	

Groundwater: not found

Undrained Shear Strength (kPa): 50 100 150

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 17

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 2

Job No. 21118	Date Excavated: 16/6/2015	RL 37.89 m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
EOBH 4.8 m	× ×	4.8		not found	141	♦
		5.0				
		5.5				
		6.0				
		6.5				
		7.0				
		7.5				
		8.0				
		8.5				
		9.0				
		9.4				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 18

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 2

Job No. 21118 | Date Excavated: 16/6/2015 | RL 31.04 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
TOPSOIL 300 mm						
clayey SILT; yellow orange brown; very stiff; moist; slightly cohesive		0.5		not found	125	
becomes moderately plastic		1.0			149	
SILT; with minor sand (f); orange brown; hard; moist; slightly cohesive becomes with some sand (f-m)		1.5			200+	>
sandy (f-m) SILT; yellow orange brown; hard; moist; slightly cohesive		2.0			200+	>
silty SAND (f-m); yellow brown; medium dense; moist						
CLAY; dark brown; very stiff; wet; low plasticity		2.5			117	
becomes mixed dark brown and yellow brown		3.0			149	
clayey SILT; yellow orange brown; very stiff; moist; moderately plastic		3.5			105	
becomes wet		4.0			114	
SILT; yellow orange; very stiff; saturated; low plasticity		4.5			169	
		4.7				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 18

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 2

Job No. 21118	Date Excavated: 16/6/2015	RL 31.04 m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
becomes hard	× ×	4.8		not found	200+	>
EOBH 4.8 m		5.0				
		5.5				
		6.0				
		6.5				
		7.0				
		7.5				
		8.0				
		8.5				
		9.0				
		9.4				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 19

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 2

Job No. 21118 | Date Excavated: 17/6/2015 | RL 35.97 m Moturiki Datum

Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)
TOPSOIL 500 mm		0.5			128
clayey SILT; orange brown; very stiff; moist; slightly cohesive becomes moderately plastic		1.0		not found	167
		1.5			101
SILT; with traces of sand (f); yellow orange brown; stiff; moist; slightly cohesive		2.0			75
sandy (f-m) SILT; yellow orange; stiff; wet; slightly cohesive becomes yellow		2.5			59
clayey SILT; with some sand (f-m); dark brown; stiff; saturated; low plasticity (Hamilton Ash) end of sand becomes dark orange brown; moist; high plasticity		3.0			85
		3.5			137
		4.0			124
SILT; with traces of sand (f); orange brown; very stiff; wet; low plasticity		4.5			141
		4.7			

Undrained Shear Strength (kPa)

50 100 150

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 19

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 2

Job No. 21118	Date Excavated: 17/6/2015	RL 35.97 m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
EOBH 4.8 m	× ×	4.8		not found	164	•
		5.0				
		5.5				
		6.0				
		6.5				
		7.0				
		7.5				
		8.0				
		8.5				
		9.0				
		9.4				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 20

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 1

Job No. 21118 | Date Excavated: 17/6/2015 | RL 32.39 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)
TOPSOIL 300 mm					
clayey SILT; orange brown; very stiff; moist; slightly cohesive		0.5			140
becomes hard; moderately plastic		1.0		not found	200+
becomes mixed brown and light yellow		1.5			114
SILT; with traces of sand (f); orange brown; stiff; moist; slightly cohesive becomes with some sand (f) becomes saturated		2.0			131
CLAY; dark brown; very stiff; saturated; low plasticity		2.5			105
becomes moist; high plasticity		3.0			200+
becomes hard		3.5			170
clayey SILT; orange brown; very stiff; moist; moderately plastic		4.0			111
		4.5			137
EOBH 4.5 m		4.7			

Undrained Shear Strength (kPa)

50 100 150

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 21

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 1

Job No. 21118 | Date Excavated: 22/6/2015 | RL 17.20 m Moturiki Datum | Logged By: M.B.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
TOPSOIL 200 mm						
clayey SILT; dark orange brown; black mottles; very stiff; moist; low plasticity COLLUVIUM					118	
clayey SILT; dark orange brown; very stiff; moist; high plasticity		0.5			124	
					134	
				not found	101	
SILT; orange brown; stiff; moist; moderately plastic		1.0			79	
					105	
clayey SILT; mixed orange brown and dark brown; stiff; moist; moderately plastic					82	
SILT; orange brown; stiff; moist; moderately plastic		1.5			118	
					101	
becomes yellow brown; high plasticity		2.0			115	
becomes orange; orange sand (f-m) and light brown mottles					101	
					147	
end of orange mottles		2.5			134	
poor recovery; borehole collapsing					144	
		3.0			121	
					180	
becomes hard		3.5			200+	>
EOBH 3.5 m		4.0				
		4.5				
		4.7				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 22

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 3

Job No. 21118 | Date Excavated: 18/6/2015 | RL 30.01 m Moturiki Datum

Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)
TOPSOIL 200 mm					
clayey SILT; orange brown; very stiff; moist; moderately plastic		0.5		5.10 m	
SILT; with traces of sand (f); orange brown; very stiff; moist; slightly cohesive		1.0			
sandy (f-m) SILT; yellow brown; very stiff; moist; slightly cohesive					
silty SAND (f-m); light brown; loose; moist		1.5			33
clayey SILT; orange brown; very stiff; moist; moderately plastic		2.0			
SILT; with some clay; yellow brown; stiff; wet; low plasticity (Pahoia Tephra)		2.5			
		3.0			79
		3.5			
		4.0			
		4.5			62
		4.7			

Undrained Shear Strength (kPa)

50 100 150

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 22

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 3

Job No. 21118 | Date Excavated: 18/6/2015 | RL 30.01 m Moturiki Datum | Logged By: N.I.

Description of Soil	Depth (m)	Groundwater	Undrained Shear Strength (kPa)
	4.8		
sandy (f-m) SILT; yellow brown; very stiff; saturated; slightly cohesive	5.0	5.10 m	
silty SAND (f-m); orange; black speckles; medium dense; moist	5.5		
	6.0		
SILT; with minor sand (f-m); light grey; black mottles and speckles; stiff; wet; slightly cohesive	6.5		
	7.0		
becomes mixed yellow brown and orange becomes with some sand (f-m)	7.5		131
becomes with minor sand (f-m); black speckles	8.0		
	8.5		
becomes stiff becomes light brown grey; black and orange mottles	9.0		52
	9.4		

Undrained Shear Strength (kPa): 50 100 150

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LEPINSKI

Borehole 22

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 3 Of: 3

Job No. 21118	Date Excavated: 18/6/2015	RL 30.01 m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
becomes firm		9.5				
		10.0				
		10.5			33	
EOBH 10.5 m		11.0				
		11.5				
		12.0				
		12.5				
		13.0				
		13.5				
		14.0				

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 23

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 2

Job No. 21118 | Date Excavated: 17/6/2015 | RL 20.98 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)
TOPSOIL 300 mm					
clayey SILT; orange brown; very stiff; moist; slightly cohesive		0.5			108
becomes moderately plastic		1.0		not found	170
SILT; with traces of sand (f); yellow orange brown; very stiff; moist; slightly cohesive		1.5			141
sandy (f-m) SILT; yellow orange brown; very stiff; moist; slightly cohesive		2.0			121
silty SAND (f-m); yellow; loose; saturated					
SILT; with traces of sand (f); yellow; stiff; saturated		2.5			utp
clayey SILT; dark orange brown; hard; moist; high plasticity (Hamilton Ash)					
becomes brown		3.0			200+
		3.5			utp
becomes stiff		4.0			98
SILT; yellow orange; very stiff; wet; low plasticity		4.5			105
EOBH 4.6 m		4.7			

Undrained Shear Strength (kPa)

50 100 150

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LEPINSKI

Borehole 24

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 1

Job No. 21118 | Date Excavated: 18/6/2015 | RL 6.52 m Moturiki Datum | Logged By: M.B.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)
TOPSOIL 1200 mm		0.5		1.2 m	
becomes wet; poor recovery borehole collapsing		1.0			85
SILT; with minor sand (f-m); light orange brown; stiff; saturated; moderately cohesive		1.5			82
becomes light brown; poor recovery		2.0			69 65 62
		2.5			101 79
silty SAND (m-c); grey; loose; saturated borehole collapsing; unable to further borehole					
EOBH 2.8 m		3.0			
		3.5			
		4.0			
		4.5			
		4.7			

Undrained Shear Strength (kPa)

50 100 150

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 25

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 2

Job No. 21118 | Date Excavated: 17/6/2015 | RL 49.81 m Moturiki Datum | Logged By: N.I.

Description of Soil	Depth (m)	Undrained Shear Strength (kPa)
TOPSOIL 300 mm		
clayey SILT; yellow orange brown; very stiff; moist; friable	0.5	101
SILT; with minor sand (f-m); yellow orange; stiff; moist; slightly cohesive	1.0	82
SAND (f-m); light brown grey; loose; wet (Rotoehu Ash)		
clayey SILT; with minor sand (f); dark brown; stiff; wet; low plasticity	1.5	utp
becomes dark orange brown; hard; moist; high plasticity	2.0	utp
becomes yellow brown		
becomes very stiff	2.5	187
SILT; with traces of sand (f); yellow brown; stiff; wet; slightly cohesive	3.0	95
sandy (f-m) SILT; yellow orange; stiff; wet; slightly cohesive	3.5	124
clayey SILT; yellow orange brown; hard; moist; moderately plastic	4.0	utp
	4.5	utp
	4.7	

Groundwater: not found

Undrained Shear Strength (kPa): 50 100 150

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 25

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 2

Job No. 21118	Date Excavated: 17/6/2015	RL m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
EOBH 4.8 m		4.8		not found	utp	
		5.0				
		5.5				
		6.0				
		6.5				
		7.0				
		7.5				
		8.0				
		8.5				
		9.0				
		9.4				

EXCAVATION METHOD: 150 mm diameter machine open flight auger

SHRIMPTON & LIPINSKI

Borehole 26

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 2 Of: 3

Job No. 21118 | Date Excavated: 19/6/2015 | RL 16.03 m Moturiki Datum | Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
becomes light grey orange mottles		4.8				
becomes with traces of sand (f)		5.0				
becomes soft continues sensitive; dilatent; end of sand; end of mottles		5.5		10.1 m		
silty SAND (f-m); light grey; medium dense; saturated		6.0			18	•
SILT; light grey; soft; saturated; sensitive; dilatent; slightly cohesive		6.5				
becomes coarse silt continues sensetive; dilatent unable to shear vane test		7.0				
		7.5			14	•
		8.0				
		8.5				
		9.0				
		9.4				

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 26

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 3

Job No. 21118 | Date Excavated: 19/6/2015 | RL 16.03 m Moturiki Datum | Logged By: N.I.

Description of Soil	Depth (m)	Groundwater	Undrained Shear Strength (kPa)
TOPSOIL 200 mm			
clayey SILT; orange brown; very stiff; moist; moderately plastic	0.5	10.1 m	
	1.0		
SILT; with traces of sand (f); orange brown; very stiff; moist; slightly cohesive	1.5		110
silty SAND (f-m); yellow orange brown; medium dense; wet	2.0		
SILT; yellow; stiff; wet; slightly cohesive			
SAND (f-m); light brown grey; loose; wet (Rotoehu Ash)			
clayey SILT; dark orange brown; very stiff; moist; high plasticity (Hamilton Ash)	2.5		
becomes hard	3.0		utp
SILT; with some clay; yellow brown; stiff; saturated; low plasticity	3.5		
end of clay becomes creamy light yellow; sensitive; dilatent	4.0		96
becomes light grey			
becomes firm	4.5		46
	4.7		

Undrained Shear Strength (kPa): 50 100 150

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 26

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 3 Of: 3

Job No. 21118	Date Excavated: 19/6/2015	RL 16.03 m Moturiki Datum	Logged By: N.I.

Description of Soil	Soil Symbol	Depth (m)	SPT	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
		9.5				
silty SAND (m-c); light brown grey; medium dense; saturated; some gravels (f) to 5 mm diameter				10.1 m		
SILT; with traces of sand (f); darkish brown; soft; saturated; slightly cohesive		10.0			11	
sandy (f-m) SILT; brown grey; firm; saturated; slightly cohesive; a piece of wood in end of inner tube unable to shear vane test		10.5				
EOBH 10.5 m		11.0				
		11.5				
		12.0				
		12.5				
		13.0				
		13.5				
		14.0				

EXCAVATION METHOD: HQ Coring; Tractor mounted Drill Rig

SHRIMPTON & LIPINSKI

Borehole 27

Site: Neil Construction Ltd; 423 Omokoroa Road, Omokoroa

Sheet: 1 Of: 1

Job No. 21118	Date Excavated: 19/6/2015	RL 11.17 m Moturiki Datum	Logged By: M.B

Description of Soil	Soil Symbol	Depth (m)	Scala blows/100 mm	Groundwater	Undrained Shear Strength (kPa)	Undrained Shear Strength (kPa) 50 100 150
TOPSOIL 300 mm becomes saturated						
PEAT; black; soft; saturated		0.5		0.2 m	65 49 52	
SILT; with minor sand; grey; v. stiff; saturated; non-cohesive becomes white		1.0			115 164	
becomes green becomes greyish green		1.5			196 121	
no recovery		2.0			200+ 193 118	>
EOBH 2.5 m		2.5			115	
		3.0				
		3.5				
		4.0				
		4.5				
		4.7				

EXCAVATION METHOD: 50 mm diameter hand auger

APPENDIX D:

EARTHFILL QUALITY CONTROL DATA

STAGE 1

Bay of Plenty Laboratory

Poplar Lane, Te Puke
Private Bag 12016, Tauranga 3143
Telephone: +64 7 542 9672
Facsimile: +64 7 542 2245
www.fultonhogan.com
0800 LABORATORY

Maximum Dry Density Report

Report No: MDD:BOP17S-00302
Issue No: 1

Client: Gareth Brown
HEB Construction Ltd
PO Box 226

Drury 2247
NZ

Project: 423 Omokoroa Rd

IANZ ACCREDITED LABORATORY

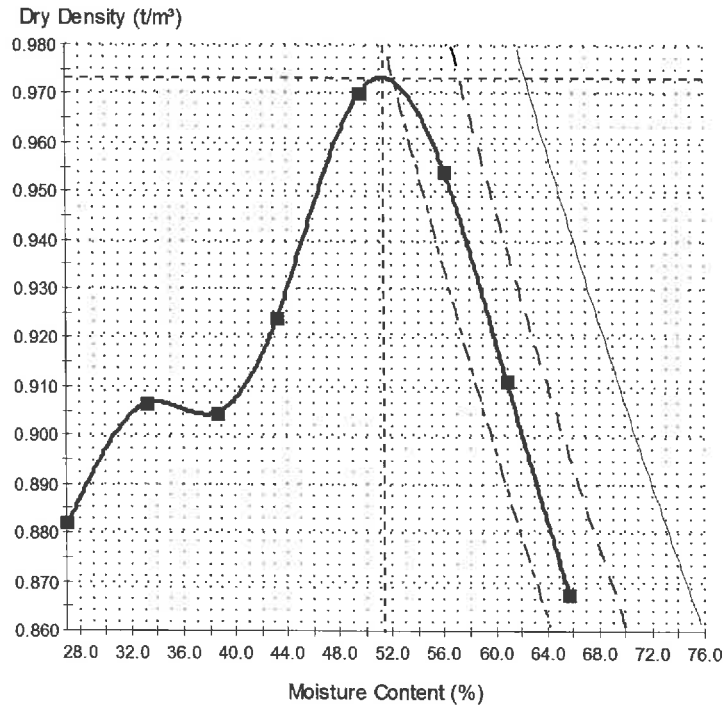
Approved Signatory: Rob Ermens
(Lab Manager)
IANZ Accreditation No:749
Date of Issue: 28/02/2017

Sample Details

Sample ID:	BOP17S-00302	**Client Sample ID:**	
Material:	Ash	**Sample Source:**	Insitu Material
Site/Sampled From:	Bottom of Hill	**Date Sampled:**	15/02/2017
Specification:	No Specification	**Sampled By:**	Barrack Carle
Sampling Method:	Not Applicable - Not Accredited	**Date Tested:**	23/02/2017
Technician:	Barrack Carle	**Sampling Endorsed?:**	No

Dry Density - Moisture Relationship

0% Air Voids — — — 5% Air Voids
— - — - 10% Air Voids



Test Results

NZS 4402:1986 Test 4.1.1 - 1986

Maximum Dry Density (t/m³):	**0.97**
Optimum Moisture Content (%):	**51**
Solid Density (t/m³):	2.480
Oversize Sieve (mm):	19.0
Oversize Material (%):	
Sample History:	<19mm

Comments

Bay of Plenty Laboratory

Poplar Lane, Te Puke
Private Bag 12016, Tauranga 3143
Telephone: +64 7 542 9672
Facsimile: +64 7 542 2245
www.fultonhogan.com
0800 LABORATORY

Material Test Report

Report No: MAT:BOP17S-00302
Issue No: 1

Client: Gareth Brown
HEB Construction Ltd
PO Box 226

Drury 2247
NZ

Project: 423 Omokoroa Rd

The tests reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. Samples are tested as received, in natural condition, unless stated otherwise in the comments. This report may only be reproduced in full.

IANZ ACCREDITED LABORATORY

Approved Signatory: Rob Ermens
(Lab Manager)
IANZ Accreditation No:749
Date of Issue: 28/02/2017

Sample Details

Sample ID: BOP17S-00302
Client Sample ID:
Material: Ash
Sample Source: Insitu Material
Site/Sampled From: Bottom of Hill
Date Sampled: 15/02/2017
Specification: No Specification
Sampled By: Barrack Carle
Sampling Method: Not Applicable - Not Accredited
Date Tested: 23/02/2017
Technician: Barrack Carle
Sampling Endorsed?: No

Test Results

Description	Method	Result	Limits
Solid Particle Density (t/m³)	NZS 4402:1986 Test 2.7.2	2.48	
History		Air Dried	
Test Perfomed on Fraction		Whole	

Comments

N/A

Bay of Plenty Laboratory

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Telephone: +64 7 542 9672
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0800 LABORATORY

Maximum Dry Density Report

Report No: MDD:BOP17S-00304
Issue No: 1

Client: Gareth Brown
HEB Construction Ltd
PO Box 226

Drury 2247
NZ

Project: 423 Omokoroa Rd

IANZ ACCREDITED LABORATORY

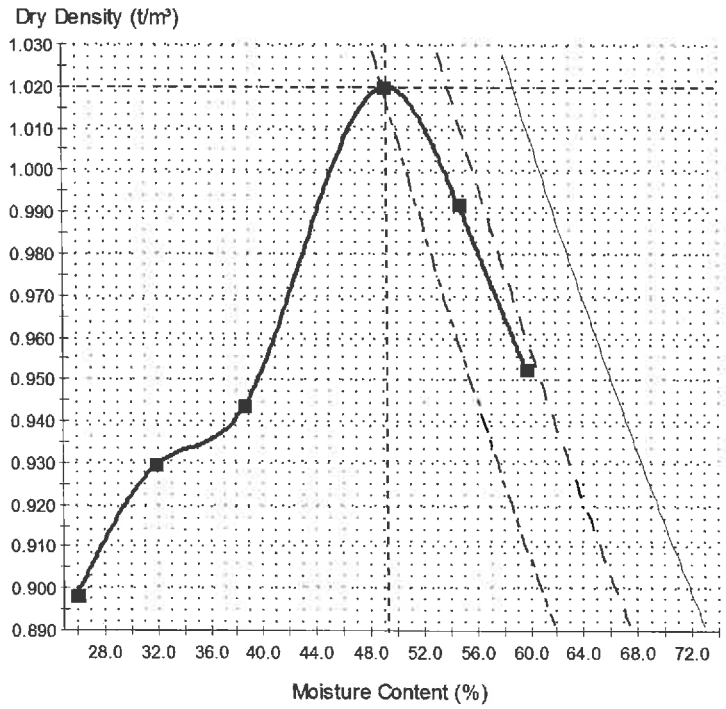
Approved Signatory: Rob Ermens
(Lab Manager)
IANZ Accreditation No:749
Date of Issue: 6/03/2017

Sample Details

Sample ID:	BOP17S-00304	**Client Sample ID:**	
Material:	Ash	**Sample Source:**	Insitu Material
Site/Sampled From:	Top of Hill	**Date Sampled:**	15/02/2017
Specification:	No Specification	**Sampled By:**	Barrack Carle
Sampling Method:	Not Applicable - Not Accredited	**Date Tested:**	02/03/2017
Technician:	Barrack Carle	**Sampling Endorsed?:**	No

Dry Density - Moisture Relationship

0% Air Voids — — — 5% Air Voids
— — — 10% Air Voids



Test Results

NZS 4402:1986 Test 4.1.1 - 1986

Maximum Dry Density (t/m³):	**1.02**
Optimum Moisture Content (%):	**49**
Solid Density (t/m³):	2.550
Oversize Sieve (mm):	19.0
Oversize Material (%):	
Sample History:	<19mm

Comments

Bay of Plenty Laboratory

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0800 LABORATORY

Material Test Report

Report No: MAT:BOP17S-00304
Issue No: 1

Client: Gareth Brown
HEB Construction Ltd
PO Box 226

Drury 2247
NZ

Project: 423 Omokoroa Rd

IANZ ACCREDITED LABORATORY

Approved Signatory: Rob Ermens
(Lab Manager)
IANZ Accreditation No:749
Date of Issue: 6/03/2017

Sample Details

Sample ID:	BOP17S-00304
Client Sample ID:	
Material:	Ash
Sample Source:	Insitu Material
Site/Sampled From:	Top of Hill
Date Sampled:	15/02/2017
Specification:	No Specification
Sampled By:	Barrack Carle
Sampling Method:	Not Applicable - Not Accredited
Date Tested:	02/03/2017
Technician:	Barrack Carle
Sampling Endorsed?:	No

Test Results

Description	Method	Result	Limits
Solid Particle Density (t/m³)	NZS 4402:1986 Test 2.7.2	2.55	
History		Air Dried	
Test Perfomed on Fraction		Whole	

Comments

N/A

EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Greg Cleaver (Opus Laboratory)**
Date tested :	**2 March 2017**
Nuclear densometer no :	**3440-13867**
Solid density (supplied) :	**2.48 t/m³**
Max dry density (supplied) :	**0.97 t/m³**
Optimum water content (supplied) :	**51.0 %**
Shear vane no :	**DR2410**
Shear vane correction :	**1.421**
Material description :	**Bulk Fill (Orange brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG701**
Client Ref No :	**--**

Nuclear Densometer Test Results									
Test Number	1*								
Lot No.	6								
Approximate fill depth	1.0m								
GPS Coordinates (BOP circuit 2000)	N811293.8 E361188.5								
Test Probe Depth (mm)	300								
Wet Density (t/m³)	1.54								
Dry Density (t/m³)	0.93								
Water Content (%)	66.0								
Air Voids (%)	1.6								
% of MDD	95								

Oven Corrected Test Results									
Dry Density (t/m³)	0.92								
Water Content (%)	66.7								
Air Voids (%)	1.4								
% of MDD	**95**								

Shear Vane Test Results									
Shear Vane Reading	53								
Shear Strength (kPa) - Ave. of 3	**75**								

Test Methods		Notes
In-situ Density & Water Content	NZS 4407 : 2015 : Test 4.2	The test position was selected by Steve McPherson of
Water Content	NZS 4402 : 1986 : Test 2.1	McPherson Contractors and is approximate only.
Shear Stress	NZGS 8/2001	UTP = Unable to penetrate.

The maximum dry density and optimum water content values were obtained from Fulton Hogan BOP Laboratory report MDD:BOP17S-00302, dated 28/2/17.

The solid value was obtained from Fulton Hogan BOP Laboratory report MAT:BOP17S-00302, dated 28/2/17.

Date reported : 10 March 2017

Preliminary report ONLY - subject to checking.

Approved

Designation : *Senior Civil Engineering Technician*

Date : 10 March 2017

Opus International Consultants Ltd
Tauranga Laboratory
Quality Management Systems Certified to ISO 9001

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Website www.opus.co.nz

EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Greg Cleaver (Opus Laboratory)**
Date tested :	**7 March 2017**
Nuclear densometer no :	**3440-13867**
Solid Density (supplied) :	**2.48 t/m³**
Max dry density (supplied) :	**0.97 t/m³**
Optimum water content (supplied) :	**51.0 %**
Shear vane no :	**DR2410**
Shear vane correction :	**1.421**
Sample Description:	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG725**
Client Ref No :	**--**

Nuclear Densometer Test Results*								
Test Number	2	3	4	5				
Lot Number	1	1	9	7				
GPS Coordinates (BOP circuit 2000)	N811272.5 E361122.6	N811276.7 E361109.9	N811302.4 E361212.6	N811324.8 E361191.9				
Approximate Depth Below Finished Level	0.3m	1.5m	0.4m	0.4m				
Test Probe Depth (mm)	300	300	300	300				
Wet Density (t/m³)	1.56	1.47	1.61	1.60				
Dry Density (t/m³)	1.03	0.98	1.08	1.07				
Water Content (%)	51.9	50.9	49.0	49.3				
Air Voids (%)	5.1	11.0	3.4	4.1				
% of MDD	106	101	112	110				

Oven Corrected Test Results								
Dry Density (t/m³)	1.00	0.96	1.06	1.06				
Water Content (%)	56.1	53.7	51.8	51.2				
Air Voids (%)	**3.5**	**9.9**	**2.2**	**3.3**				
% of MDD	**103**	**99**	**109**	**109**				

Shear Vane Test Results								
Shear Vane Reading	122	125	UTP	UTP				
Shear Strength (kPa) - Ave. of 4	**173**	**178**	**UTP**	**UTP**				

Test Methods		**Notes**
In-situ Density & Water Content	NZS 4407 : 2015 : Test 4.2	The test positions were selected by McPherson Contractors staff and are approximate only.
Water Content	NZS 4402 : 1986 : Test 2.1	UTP = Unable to penetrate.
Shear Stress	NZGS 8/2001	

The maximum dry density and optimum water content values were obtained from Fulton Hogan BOP Laboratory report MDD:BOP17S-00302, dated 28/2/17.

The solid value was obtained from Fulton Hogan BOP Laboratory report MAT:BOP17S-00302, dated 28/2/17.

Date reported : 10 March 2017

Preliminary report ONLY - subject to checking.

Approved

Designation : *Senior Civil Engineering Technician*

Date : 10 March 2017

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Greg Cleaver & Jacob Steens (Opus Laboratory)**
Date tested :	**20 March 2017**
Nuclear densometer no :	**3440-13867**
Solid density (supplied) :	**2.55 t/m³**
Max dry density (supplied) :	**1.02 t/m³**
Optimum water content (supplied) :	**49 %**
Shear vane no :	**GEO 1025**
Shear vane correction :	**1.505**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG765 Report 2**
Client Ref No :	**–**

Nuclear Densometer Test Results*

Test Number	6	7						
GPS Coordinates	N811447.6	N811458.1						
(BOP circuit 2000)	E361245.0	E361232.7						
Depth of Fill (m)	1.0	0.75						
Test Probe Depth (mm)	300	300						
Wet Density (t/m³)	1.67	1.66						
Dry Density (t/m³)	1.14	1.22						
Water Content (%)	45.6	36.6						
Air Voids (%)	3.0	7.8						
% of MDD	112	119						

Oven Corrected Test Results

Dry Density (t/m³)	1.16	1.17						
Water Content (%)	43.2	41.4						
Air Voids (%)	**4.1**	**5.3**						
% of MDD	**114**	**115**						

Shear Vane Test Results

Shear Vane Reading	UTP	≥132						
Shear Strength (kPa) - Ave. of 4	**UTP**	**≥199**						

Test Methods		Notes
In-situ Density & Water Content	NZS 4407 : 2015 : Test 4.2	The test positions were selected by Steve McPherson of McPherson Contractors and are approximate only.
Water Content	NZS 4402 : 1986 : Test 2.1	UTP = Unable to penetrate.
Shear Stress	NZGS 8/2001	This report replaces report TG765 dated 7/4/17 which stated incorrect maximum dry density, optimum water content and solid density values.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

The maximum dry density and optimum water content values were obtained from Fulton Hogan BOP Laboratory report - MDD:BOP17S-00304, dated 6/3/17.

The solid density value was obtained from Fulton Hogan BOP Laboratory report - MAT:BOP17S-00304, dated 6/3/17.

Date reported : 17 May 2017

IANZ Approved Signatory

IANZ ACCREDITED LABORATORY

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

Designation : *Laboratory Manager*

Date : 17 May 2017

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (Opus Laboratory)**
Date tested :	**22 March 2017**
Nuclear densometer no :	**3440-13867**
Solid density (supplied) :	**2.55 t/m³**
Max dry density (supplied) :	**1.02 t/m³**
Optimum water content (supplied) :	**49 %**
Shear vane no :	**DR 2410**
Shear vane correction :	**1.421**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG779 Report 2**
Client Ref No :	**–**

Nuclear Densometer Test Results*								
Test Number	8	9						
GPS Coordinates (BOP circuit 2000)	N811448.5 E361242.0	N811450.1 E361260.0						
Depth of Fill (approx)	1.5m	1.0m						
Test Probe Depth (mm)	300	300						
Wet Density (t/m³)	1.66	1.67						
Dry Density (t/m³)	1.10	1.11						
Water Content (%)	51.1	50.5						
Air Voids (%)	0.5	0.6						
% of MDD	108	109						

Oven Corrected Test Results								
Dry Density (t/m³)	1.10	1.06						
Water Content (%)	50.6	56.9						
Air Voids (%)	**0.8**	**0.0**						
% of MDD	**108**	**104**						

Shear Vane Test Results								
Shear Vane Reading	113	111						
Shear Strength (kPa) - Ave. of 4	**161**	**158**						

Test Methods		Notes
In-situ Density & Water Content	NZS 4407 : 2015 : Test 4.2	The test positions were selected by Steve McPherson of McPherson Contractors and are approximate only. This report replaces report TG779 dated 10/4/17 which stated incorrect maximum dry density, optimum water content and solid density values.
Water Content	NZS 4402 : 1986 : Test 2.1	
Shear Stress	NZGS 8/2001	

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

The maximum dry density and optimum water content values were obtained from Fulton Hogan BOP Laboratory report - MDD:BOP17S-00304, dated 6/3/17.

The solid density value was obtained from Fulton Hogan BOP Laboratory report - MAT:BOP17S-00304, dated 6/3/17.

Date reported : 17 May 2017

IANZ Approved Signatory

IANZ ACCREDITED LABORATORY

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

Designation : *Laboratory Manager*

Date : 17 May 2017

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (Opus Laboratory)**
Date tested :	**1 April 2017**
Nuclear densometer no :	**3440-13867**
Solid density (supplied) :	**2.55 t/m³**
Max dry density (supplied) :	**1.02 t/m³**
Optimum water content (supplied) :	**49 %**
Shear vane no :	**DR 2410**
Shear vane correction :	**1.421**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG814 Report 2**
Client Ref No :	**–**

Nuclear Densometer Test Results*								
Test Number	10	11	12	13				
GPS Coordinates (BOP circuit 2000)	N811439.2 E361236.4	N811350.5 E361243.6	N811149.7 E361196.1	N811156.2 E361181.8				
Depth of Fill (approx)	2.0m	1.0m	1.2m	0.7m				
Test Probe Depth (mm)	300	300	300	300				
Wet Density (t/m³)	1.66	1.64	1.65	1.53				
Dry Density (t/m³)	1.09	1.12	1.10	0.97				
Water Content (%)	52.5	46.5	50.1	58.3				
Air Voids (%)	0.3	3.9	1.9	5.6				
% of MDD	107	110	108	95				

Oven Corrected Test Results								
Dry Density (t/m³)	1.11	1.13	1.11	0.95				
Water Content (%)	49.1	45.7	48.3	60.8				
Air Voids (%)	**1.9**	**4.2**	**2.7**	**4.7**				
% of MDD	**109**	**111**	**109**	**93**				

Shear Vane Test Results								
Shear Vane Reading	112	UTP	117	117				
Shear Strength (kPa) - Ave. of 4	**159**	**UTP**	**166**	**166**				

Test Methods	
In-situ Density & Water Content	NZS 4407 : 2015 : Test 4.2
Water Content	NZS 4402 : 1986 : Test 2.1
Shear Stress	NZGS 8/2001

Notes

The test positions were selected by Steve McPherson of McPherson Contractors and are approximate only.

UTP = unable to penetrate.

This report replaces report TG814 dated 14/4/17 which stated incorrect maximum dry density, optimum water content and solid density values.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

The maximum dry density and optimum water content values were obtained from Fulton Hogan BOP Laboratory report - MDD:BOP17S-00304, dated 6/3/17.

The solid density value was obtained from Fulton Hogan BOP Laboratory report - MAT:BOP17S-00304, dated 6/3/17.

Date reported : 17 May 2017

IANZ Approved Signatory

IANZ ACCREDITED LABORATORY

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

Designation : *Laboratory Manager*

Date : 17 May 2017

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (Opus Laboratory)**
Date tested :	**24 April 2017**
Nuclear densometer no :	**3440-31344**
Solid density (supplied) :	**2.55 t/m³**
Max dry density (supplied) :	**1.02 t/m³**
Optimum water content (supplied) :	**49 %**
Shear vane no :	**GEO 1025**
Shear vane correction :	**1.505**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG884**
Client Ref No :	**–**

Nuclear Densometer Test Results*								
Test Number	14	15	16					
GPS Coordinates (BOP circuit 2000)	N811441.6 E361247.3	N811444.4 E361268.2	N811467.1 E362123.5					
Depth Below Finished (approx)	1.2m	1.0m	0.5m					
Test Probe Depth (mm)	300	300	300					
Wet Density (t/m³)	1.65	1.63	1.63					
Dry Density (t/m³)	1.12	1.12	1.09					
Water Content (%)	46.9	45.8	49.0					
Air Voids (%)	3.4	5.1	3.7					
% of MDD	110	109	107					

Oven Corrected Test Results								
Dry Density (t/m³)	1.10	1.09	1.10					
Water Content (%)	49.9	49.6	48.1					
Air Voids (%)	**2.1**	**3.3**	**4.1**					
% of MDD	**108**	**107**	**108**					

Shear Vane Test Results								
Shear Vane Reading	107	103	114					
Shear Strength (kPa) - Ave. of 4	**161**	**155**	**172**					

Test Methods		Notes
In-situ Density & Water Content	NZS 4407 : 2015 : Test 4.2	The test positions were selected by Steve McPherson
Water Content	NZS 4402 : 1986 : Test 2.1	of McPherson Contractors and are approximate only.
Shear Stress	NZGS 8/2001	UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

The maximum dry density and optimum water content values were obtained from Fulton Hogan BOP Laboratory report No. MDD:BOP17S-00304, dated 6/3/17.

The solid density value was obtained from Fulton Hogan BOP Laboratory report No. MAT:BOP17S-00304, dated 6/3/17.

Date reported : 16 May 2017

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 16 May 2017

IANZ ACCREDITED LABORATORY

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

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (Opus Laboratory)**
Date tested :	**2 May 2017**
Nuclear densometer no :	**3440-31344**
Solid density (supplied) :	**2.55 t/m³**
Max dry density (supplied) :	**1.02 t/m³**
Optimum water content (supplied) :	**49 %**
Shear vane no :	**GEO 1025**
Shear vane correction :	**1.505**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG916**
Client Ref No :	**--**

Nuclear Densometer Test Results*								
Test Number	17	18						
GPS Coordinates (BOP circuit 2000)	N811438.5 E361271.4	N811431.5 E361216.6						
Approximate Depth Below Finished Level	0.5m	0.5m						
Test Probe Depth (mm)	300	300						
Wet Density (t/m³)	1.63	1.62						
Dry Density (t/m³)	1.09	1.09						
Water Content (%)	49.0	48.3						
Air Voids (%)	3.7	4.2						
% of MDD	107	107						

Oven Corrected Test Results								
Dry Density (t/m³)	1.09	1.11						
Water Content (%)	49.2	46.8						
Air Voids (%)	**3.6**	**4.9**						
% of MDD	**107**	**108**						

Shear Vane Test Results								
Shear Vane Reading	124	132						
Shear Strength (kPa) - Ave. of 4	**187**	**199**						

Test Methods		**Notes**
In-situ Density & Water Content	NZS 4407 : 2015 : Test 4.2	The test positions were selected by Richard McGee of Opus Laboratory and are approximate only.
Water Content	NZS 4402 : 1986 : Test 2.1	
Shear Stress	NZGS 8/2001	

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

The maximum dry density and optimum water content values were obtained from Fulton Hogan BOP Laboratory report No. MDD:BOP17S-00304, dated 6/3/17.

The solid density value was obtained from Fulton Hogan BOP Laboratory report No. MAT:BOP17S-00304, dated 16/3/17.

Date reported : 17 May 2017

IANZ Approved Signatory

IANZ ACCREDITED LABORATORY

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

Designation : *Laboratory Manager*

Date : 17 May 2017

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**423 Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (Opus Laboratory)**
Date tested :	**20 November 2017**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.406**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG1628**
Client Ref No :	**--**

Nuclear Densometer Test Results

Test Number	19	20	21					
Fill Depth	0.5m from finished level	1.0m from finished level	Finished Level					
GPS Co-ordinates (BOP circuit 2000)	N811178 E361412	N811177 E361403	N811369 E361184					
Test Probe Depth (mm)	300	300	300					
Wet Density (t/m³)	1.66	1.64	1.64					
Dry Density (t/m³)	1.12	1.09	1.08					
Water Content (%)	48.2	50.9	51.8					
Air Voids (%)#	3.9	3.5	3.5					
% of MDD	--	--	--					

Oven Corrected Test Results

Dry Density (t/m³)	1.12	1.07	1.08					
Water Content (%)	48.2	53.3	51.2					
Air Voids (%)#	**3.9**	**2.4**	**3.8**					
% of MDD	--	--	--					

Shear Vane Test Results

Shear Vane Reading	105	>144	UTP					
Shear Strength (kPa) - Ave. of 4 Tests	**148**	**>202**	--					

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2	Test positions 19 & 20 were selected by Steve McPherson
Shear Stress : NZGS 8/2001	of McPherson Contractors and test position 21 was selected by
Water Content : NZS 4402 : 1986 : Test 2.1	Sam Waugh of HEB Construction.
	All test positions are approximate only.
	UTP = unable to pentrate.

IANZ accreditation of this report excludes the nuclear densomter and oven corrected results as the wet density values fell outside the nuclear densometer calibration range of 1700 - 2650kg/m3.

#Excluded from IANZ accreditation.

Date reported : 19 December 2017

IANZ ACCREDITED LABORATORY

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

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 19 December 2017

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**423 Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (Opus Laboratory)**
Date tested :	**6 December 2017**
Nuclear densometer no :	**3440-31344**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.406**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG1714**
Client Ref No :	--

Nuclear Densometer Test Results								
Test Number	22	23						
Fill Depth	1.5m below finish level	2.0m below finish level						
GPS Co-ordinates (BOP circuit 2000)	N811172 E361408	N811161 E361397						
Test Probe Depth (mm)	300	300						
Wet Density (t/m³)	1.64	1.63						
Dry Density (t/m³)	1.12	1.09						
Water Content (%)	46.3	49.8						
Air Voids (%)#	5.7	4.8						
% of MDD	--	--						

Oven Corrected Test Results								
Dry Density (t/m³)	1.13	1.04						
Water Content (%)	45.7	55.9						
Air Voids (%)#	**6.0**	**2.2**						
% of MDD	--	--						

Shear Vane Test Results								
Shear Vane Reading	114	114						
Shear Strength (kPa) - Ave. of 4 Tests	**160**	**160**						

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by Steve McPherson of McPherson Contractors and are approximate only.

IANZ accreditation of this report excludes the nuclear densomter and oven corrected results as the wet density values fell outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 19 December 2017

IANZ ACCREDITED LABORATORY

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

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 19 December 2017

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	423 Omokoroa Development
Location :	Omokoroa
Client :	McPherson Contractors Ltd
Contractor :	McPherson Contractors Ltd
Tested by :	Richard McGee (Opus Laboratory)
Date tested :	15 December 2017
Nuclear densometer no :	3440-13867
Solid density (assumed) :	2.65 t/m³
Max dry density (assumed) :	Unknown
Optimum water content (assumed) :	Unknown
Shear vane no :	DR2410
Shear vane correction :	1.406
Material description :	Bulk Fill (Orange-brown silt)

Project No :	255528.00/0TL
Lab Ref No :	TG1741
Client Ref No :	--

Nuclear Densometer Test Results								
Test Number	24*	25	26*	27	28			
Lot Number				4	11			
Fill Depth (Approx.)	1.5m	1.0m	1.0m	Finished Level	Finished Level			
GPS Co-ordinates (BOP circuit 2000)	N811165 E361267	N811180 E361273	N811167 E361254	N811318 E361157	N811353 E361165			
Test Probe Depth (mm)	300	300	300	300	300			
Wet Density (t/m³)	1.60	1.74	1.65	1.70	1.73			
Dry Density (t/m³)	1.09	1.26	1.16	1.22	1.20			
Water Content (%)	47.3	38.2	42.1	39.6	43.4			
Air Voids (%)#	7.6	4.6	7.6	5.8	2.3			
% of MDD	--	--	--	--	--			

Oven Corrected Test Results								
Dry Density (t/m³)	1.11	1.24	1.12	1.25	1.17			
Water Content (%)	43.5	39.6	47.5	35.9	47.4			
Air Voids (%)#	9.4	3.8	4.9	7.8	0.3			
% of MDD	--	--	--	--	--			

Shear Vane Test Results								
Shear Vane Reading	124	UTP	≥139	UTP	UTP			
Shear Strength (kPa)	174	UTP	≥195	UTP	UTP			

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors Staff and are approximate only. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densomter and oven corrected results of tests 24 & 26 as the wet density values fell outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 30 January 2018

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 30 January 2018

IANZ ACCREDITED LABORATORY

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

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PTO

EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**423 Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Greg Cleaver (Opus Laboratory)**
Date tested :	**12 January 2018**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximium dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.406**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG1796**
Client Ref No :	**--**

Nuclear Densometer Test Results

Test Number	29*	30*	31*	32	33	34*	35*	
Lot Number	Pond Area	Pond Area	Pond Area	Pond Area	Pond Area	Pond Area	1	
Fill Depth (Approx.)	3 Metres	3 Metres	3 Metres	3 Metres	3 Metres	3 Metres	Finished level	
GPS Co-ordinates (BOP circuit 2000)	N811168 E361309	N811168 E361291	N811176 E361279	N811175 E361265	N811172 E361259	N811165 E361253	N811289 E361131	
Test Probe Depth (mm)	300	300	300	300	300	300	300	
Wet Density (t/m³)	1.64	1.68	1.66	1.71	1.75	1.69	1.67	
Dry Density (t/m³)	1.11	1.15	1.14	1.20	1.22	1.18	1.16	
Water Content (%)	48.5	45.4	45.7	42.6	43.2	42.8	44.1	
Air Voids (%)#	4.7	4.2	4.7	3.7	1.1	4.9	5.2	
% of MDD	--	--	--	--	--	--	--	

Oven Corrected Test Results

Dry Density (t/m³)	1.12	1.19	1.18	1.21	1.26	1.20	1.17	
Water Content (%)	46.1	40.9	41.5	40.9	39.4	40.8	42.3	
Air Voids (%)#	5.8	6.5	6.8	4.6	3.2	5.9	6.1	
% of MDD	--	--	--	--	--	--	--	

Shear Vane Test Results

Shear Vane Reading	113	≥120	UTP	UTP	≥139	UTP	UTP	
Shear Strength (kPa) Ave. of 4 tests	159	≥169	UTP	UTP	≥202	UTP	UTP	

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2	The test positions were selected by McPherson Contractors Staff and are approximate only.
Shear Stress : NZGS 8/2001	UTP = unable to penetrate.
Water Content : NZS 4402 : 1986 : Test 2.1	

*IANZ accreditation of this report excludes the nuclear densomter and oven corrected results of tests 29, 30, 31, 34 & 35 as the wet density values fell outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 30 January 2018

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 30 January 2018

IANZ ACCREDITED LABORATORY

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

WSP Opus
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Telephone +64 7 578 5425
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Website www.wsp-opus.co.nz

EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	423 Omokoroa Development
Location :	Omokoroa
Client :	McPherson Contractors Ltd
Contractor :	McPherson Contractors Ltd
Tested by :	Greg Cleaver (Opus Laboratory)
Date tested :	16 January 2018
Nuclear densometer no :	3440-64130
Solid density (assumed) :	2.65 t/m³
Maximium dry density :	Unknown
Optimum water content :	Unknown
Shear vane no :	DR2410
Shear vane correction :	1.406
Material description :	Bulk Fill (Orange-brown silt)

Project No :	255528.00/0TL
Lab Ref No :	TG1804
Client Ref No :	--

Nuclear Densometer Test Results								
Test Number	36*	37	38	39				
Lot Number	Pond Area	Pond Area	Pond Area	Pond Area				
Fill Depth	4 Metres	4 Metres	4 Metres	4 Metres				
GPS Co-ordinates (BOP circuit 2000)	N811158 E361264	N811190 E361260	N811164 E361304	N811177 E361301				
Test Probe Depth (mm)	300	300	300	300				
Wet Density (t/m³)	1.61	1.70	1.70	1.70				
Dry Density (t/m³)	1.07	1.18	1.15	1.15				
Water Content (%)	50.7	44.3	47.5	47.1				
Air Voids (%)#	5.6	3.2	1.9	2.2				
% of MDD	--	--	--	--				

Oven Corrected Test Results								
Dry Density (t/m³)	1.13	1.20	1.16	1.17				
Water Content (%)	42.9	42.0	46.1	45.2				
Air Voids (%)#	9.2	4.4	2.6	3.1				
% of MDD	--	--	--	--				

Shear Vane Test Results								
Shear Vane Reading	UTP	114	113	114				
Shear Strength (kPa)	UTP	160	159	160				

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors Staff and are approximate only. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densomter and oven correcteds result of test 36 as the wet density value falls outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 30 January 2018

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 30 January 2018

IANZ ACCREDITED LABORATORY

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**423 Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (Opus Laboratory)**
Date tested :	**22 January 2018**
Nuclear densometer no :	**3440-64130**
Solid density (assumed) :	**2.65 t/m³**
Maximium dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.406**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG1819**
Client Ref No :	**--**

Nuclear Densometer Test Results								
Test Number	40*	41*	42*	43*				
Location	Pond Area	Pond Area	Pond Area	Pond Area				
Fill Depth (Approx.)	4 Metres	5 Metres	5 Metres	3 Metres				
GPS Co-ordinates (BOP circuit 2000)	N811168 E361302	N811173 E361287	N811160 E361265	N811162 E361231				
Test Probe Depth (mm)	300	300	300	300				
Wet Density (t/m³)	1.65	1.66	1.65	1.65				
Dry Density (t/m³)	1.10	1.11	1.11	1.11				
Water Content (%)	51.0	49.4	48.3	48.4				
Air Voids (%)#	2.8	3.1	4.2	4.5				
% of MDD	--	--	--	--				

Oven Corrected Test Results								
Dry Density (t/m³)	1.18	1.16	1.17	1.16				
Water Content (%)	40.6	43.5	40.8	42.1				
Air Voids (%)#	7.8	5.9	7.9	7.6				
% of MDD	--	--	--	--				

Shear Vane Test Results								
Shear Vane Reading	UTP	UTP	UTP	UTP				
Shear Strength (kPa)	**UTP**	**UTP**	**UTP**	**UTP**				

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2	The test positions were selected by Richard McGee of
Shear Stress : NZGS 8/2001	Opus Laboratory and are approximate only.
Water Content : NZS 4402 : 1986 : Test 2.1	UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 2 February 2018

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 2 February 2018

IANZ ACCREDITED LABORATORY

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

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**423 Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (Opus Laboratory)**
Date tested :	**26 January 2018**
Nuclear densometer no :	**3440-64130**
Solid density (assumed) :	**2.65 t/m³**
Maximium dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.406**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG1827**
Client Ref No :	**--**

Nuclear Densometer Test Results								
Test Number	44	45	46					
Location	Pond Area	Pond Area	Pond Area					
Fill Depth (Approx.)	5 Metres	6 Metres	5 Metres					
GPS Co-ordinates (BOP circuit 2000)	N811083 E361268	N811165 E361307	N811176 E361235					
Test Probe Depth (mm)	300	300	300					
Wet Density (t/m³)	1.75	1.75	1.75					
Dry Density (t/m³)	1.19	1.19	1.19					
Water Content (%)	46.6	47.3	46.9					
Air Voids (%)*	0.0	0.0	0.0					
% of MDD	--	--	--					

Oven Corrected Test Results								
Dry Density (t/m³)	1.22	1.23	1.24					
Water Content (%)	42.9	41.8	41.5					
Air Voids (%)*	**1.5**	**2.0**	**1.9**					
% of MDD	--	--	--					

Shear Vane Test Results								
Shear Vane Reading	UTP	116	UTP					
Shear Strength (kPa) Ave. of 4	**UTP**	**163**	**UTP**					

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2	The test positions were selected by McPhersons Contractors staff and are approximate only.
Shear Stress : NZGS 8/2001	UTP = unable to penetrate.
Water Content : NZS 4402 : 1986 : Test 2.1	*Excluded from IANZ accreditation.

Date reported : 2 February 2018

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 2 February 2018

IANZ ACCREDITED LABORATORY

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**423 Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (Opus Laboratory)**
Date tested :	**31 January 2018**
Nuclear densometer no :	**3440-31344**
Solid density (assumed) :	**2.65 t/m³**
Maximium dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.406**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG1836**
Client Ref No :	--

Nuclear Densometer Test Results								
Test Number	47*	48	49*	50				
Location	Pond Area	Pond Area	Pond Area	Pond Area				
Fill Depth (Approx.)	2 Metres	3 Metres	5 Metres	6 Metres				
GPS Co-ordinates (BOP circuit 2000)	N811186 E361298	N811161 E361295	N811157 E361236	N811177 E361224				
Test Probe Depth (mm)	300	300	300	300				
Wet Density (t/m³)	1.69	1.72	1.69	1.75				
Dry Density (t/m³)	1.14	1.17	1.16	1.18				
Water Content (%)	47.8	47.3	45.3	47.9				
Air Voids (%)#	2.1	0.5	3.6	0.0				
% of MDD	--	--	--	--				

Oven Corrected Test Results								
Dry Density (t/m³)	1.18	1.20	1.19	1.25				
Water Content (%)	43.1	43.6	42.1	40.1				
Air Voids (%)#	**4.5**	**2.4**	**5.3**	**2.9**				
% of MDD	--	--	--	--				

Shear Vane Test Results								
Shear Vane Reading	UTP	UTP	UTP	UTP				
Shear Strength (kPa) Ave. of 4	**UTP**	**UTP**	**UTP**	**UTP**				

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results of tests 47 & 49, as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 2 February 2018

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 2 February 2018

IANZ ACCREDITED LABORATORY

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

OPUS

Project :	**423 Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Greg Cleaver (WSP Opus)**
Date tested :	**26 February 2018**
Nuclear densometer no :	**3440-31344**
Solid density (assumed) :	**2.65 t/m³**
Maximium dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.406**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG1914**
Client Ref No :	--

Nuclear Densometer Test Results

Test Number	51	52*	53	54*	55*	56*		
Location	Pond Area	Pond Area	Pond Area	Pond Area	Pond Area	Pond Area		
Fill Depth (Approx.)	6.5 Metres	5.5 Metres	2.5 Metres	3.5 Metres	5.5 Metres	6.5 Metres		
GPS Co-ordinates	N811178	N811182	N811178	N811159	N811159	N811148		
(BOP circuit 2000)	E361233	E361265	E361309	E361295	E361263	E361240		
Test Probe Depth (mm)	300	300	300	300	300	300		
Wet Density (t/m³)	1.70	1.67	1.71	1.69	1.63	1.60		
Dry Density (t/m³)	1.12	1.13	1.15	1.17	1.09	1.07		
Water Content (%)	51.1	47.8	47.9	44.6	49.6	49.1		
Air Voids (%)#	0.2	3.4	1.1	3.8	4.7	6.8		
% of MDD	--	--	--	--	--	--		

Oven Corrected Test Results

Dry Density (t/m³)	1.17	1.16	1.18	1.20	1.09	1.09		
Water Content (%)	45.5	43.8	44.7	40.4	50.5	47.3		
Air Voids (%)#	2.9	5.4	2.7	5.9	4.3	7.6		
% of MDD	--	--	--	--	--	--		

Shear Vane Test Results

Shear Vane Reading	UTP	UTP	UTP	UTP	UTP	UTP		
Shear Strength (kPa)	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**		

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results of tests 52,54, 55 & 56, as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

IANZ ACCREDITED LABORATORY

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

Date reported : 16 April 2018

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 16 April 2018

WSP Opus
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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP OPUS

Project :	**423 Omokoroa Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Greg Cleaver (Opus Laboratory)**
Date tested :	**20 March 2018**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximium dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.406**
Material description :	**Bulk Fill (Orange-brown silt)**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2004**
Client Ref No :	--

Nuclear Densometer Test Results

Test Number	57	58	59	60	61	62	63	64
Location	Pond Area	Pond Area	Pond Area	Pond Area	Pond Area	Pond Area	Stage 2	Stage 2
Reduced Level (m)	24.3	25.0	22.2	20.1	23.5	24.1	41.2	40.9
GPS Co-ordinates	N811181	N811173	N811194	N811161	N811166	N811153	N811132	N811122
(BOP circuit 2000)	E361230	E361225	E361271	E361291	E361246	E361230	E361054	E361060
Test Probe Depth (mm)	300	300	300	300	300	300	300	300
Wet Density (t/m³)	1.71	1.66	1.67	1.71	1.67	1.71	1.67	1.63
Dry Density (t/m³)	1.16	1.13	1.13	1.18	1.14	1.19	1.04	1.04
Water Content (%)	46.7	46.3	48.2	45.6	46.5	43.7	60.5	57.1
Air Voids (%)	1.6	4.9	2.9	2.0	4.0	3.1	0.0	1.6
% of MDD	--	--	--	--	--	--	--	--

Oven Corrected Test Results

Dry Density (t/m³)	1.22	1.16	1.16	1.20	1.18	1.21	1.11	1.10
Water Content (%)	39.9	43.2	43.7	42.8	41.4	41.1	50.5	48.7
Air Voids (%)	**5.2**	**6.5**	**5.1**	**3.4**	**6.5**	**4.5**	**2.0**	**5.3**
% of MDD	--	--	--	--	--	--	--	--

Shear Vane Test Results

Shear Vane Reading	UTP	UTP	UTP	UTP	UTP	UTP	UTP	UTP
Shear Strength (kPa)	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. UTP = unable to penetrate.

Date reported : 28 March 2018

Approved

Designation : *Senior Civil Engineering Technician*

Date : 28 March 2018

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Stage 1b

Stage 1a

RD 8 Oyster Place

RD1 Flounder Drive

RD2

RD3

Parore Pl RD5

KAHAWAI PLACE

FLOUNDER DRIVE

Note: Tests NDA, B, C & D Taken on the Natural Undisturbed Surface Soil

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Title

Subdivision at 423 Omokoroa Road Omokoroa Earthwork Soil Tests

Key:

- BH Borehole March 2018
- ND Opus Tests 2017/2018
- BH Borehole June 2015

CKD BY	Rev No.	DESCRIPTION	DATE

	NAME	DATE	SIGNED
Surveyed			
Designed			
Drawn	NP	10/18	
Checked			
Approved			

References

Original Scales @ A3: 1:1500 Do Not Scale Dimensions

Date: 10/18

Drawing No: 21118 - ECT

Revision: 1

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**R McGee & M Cook (WSP Opus)**
Date tested :	**17 December 2018**
Nuclear densometer no :	**3440-64130**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2796**
Client Ref No :	**--**

Nuclear Densometer Test Results								
Test Number	11	12	13	14	15*	16*		
Reduced Level (m)	18.33	17.29	25.90	29.85	28.89	24.77		
GPS Coordinates (BOP circuit 2000)	N811186 E361329	N811186 E361325	N811187 E361284	N811176 E361227	N811157 E361222	N811156 E361265		
Test Probe Depth (mm)	300	300	300	300	300	300		
Wet Density (t/m³)	1.77	1.72	1.81	1.77	1.69	1.69		
Dry Density (t/m³)	1.21	1.15	1.22	1.23	1.12	1.14		
Water Content (%)	46.7	50.3	48.1	43.9	50.9	48.4		
Air Voids (%)#	0.0	0.0	0.0	0.0	0.5	2.2		
% of MDD	--	--	--	--	--	--		

Oven Corrected Test Results								
Dry Density (t/m³)	1.24	1.18	1.28	1.25	1.25	1.21		
Water Content (%)	43.6	45.8	41.4	41.8	35.5	39.2		
Air Voids (%)#	**0.0**	**1.3**	**0.0**	**0.9**	**8.4**	**6.9**		
% of MDD	--	--	--	--	--	--		

Shear Vane Test Results								
Shear Vane Reading	UTP	UTP	UTP	UTP	UTP	UTP		
Shear Strength (kPa) Average of 4.	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**		

Test Methods	**Notes**
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2	The test positions were selected by McPherson Contractors staff and are approximate only.
Shear Stress : NZGS 8/2001	RL information supplied by McPherson Contractors staff.
Water Content : NZS 4402 : 1986 : Test 2.1	UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results of tests 15 & 16 as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 9 January 2019

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 9 January 2019

IANZ ACCREDITED LABORATORY

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

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**G Cleaver (WSP Opus)**
Date tested :	**8 January 2019**
Nuclear densometer no :	**3440-31344**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2818**
Client Ref No :	--

Nuclear Densometer Test Results								
Test Number	17	18	19	20	21	22	23	24*
Reduced Level (m)	29.88	27.40	18.76	19.79	18.58	19.34	29.21	30.08
GPS Coordinates (BOP circuit 2000)	N811152 E361227	N811161 E361258	N811147 E361307	N811150 E361308	N811199 E361326	N811200 E361328	N811182 E361243	N811181 E361239
Test Probe Depth (mm)	300	300	300	300	300	300	300	300
Wet Density (t/m³)	1.78	1.75	1.75	1.75	1.75	1.75	1.76	1.67
Dry Density (t/m³)	1.18	1.18	1.22	1.22	1.16	1.19	1.15	1.04
Water Content (%)	50.4	47.7	43.5	43.3	50.3	46.5	52.6	60.7
Air Voids (%)#	0.0	0.0	0.9	1.0	0.0	0.0	0.0	0.0
% of MDD	--	--	--	--	--	--	--	--

Oven Corrected Test Results								
Dry Density (t/m³)	1.27	1.24	1.26	1.28	1.25	1.27	1.27	1.02
Water Content (%)	40.7	40.7	39.4	36.8	40.4	38.1	38.5	63.0
Air Voids (%)#	**0.8**	**2.4**	**3.2**	**4.7**	**2.6**	**3.9**	**3.1**	**0.0**
% of MDD	--	--	--	--	--	--	--	--

Shear Vane Test Results								
Shear Vane Reading	UTP	UTP	UTP	UTP	UTP	UTP	UTP	UTP
Shear Strength (kPa) Average of 4.	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. GPS & RL information supplied by McPherson Contractors staff. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results test 24 as the wet density value fell outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 25 February 2019

IANZ ACCREDITED LABORATORY

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

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 25 February 2019

WSP Opus
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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Richard McGee (WSP Opus)**
Date tested :	**18 January 2019**
Nuclear densometer no :	**3440-64130**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2848**
Client Ref No :	**--**

Nuclear Densometer Test Results

Test Number	25	26*	27*	28*	29*			
Reduced Level (m)	32.52	30.70	27.65	28.43	30.58			
GPS Coordinates (BOP circuit 2000)	N811185 E361208	N811196 E361247	N811195 E361277	N811173 E361261	N811150 E361232			
Test Probe Depth (mm)	300	300	300	300	300			
Wet Density (t/m³)	1.70	1.64	1.67	1.64	1.67			
Dry Density (t/m³)	1.13	1.09	1.12	1.10	1.13			
Water Content (%)	49.9	51.1	50.0	49.1	48.4			
Air Voids (%)#	0.7	3.6	2.1	4.7	3.1			
% of MDD	--	--	--	--	--			

Oven Corrected Test Results

Dry Density (t/m³)	1.18	1.09	1.14	1.16	1.16			
Water Content (%)	44.4	50.4	47.0	41.1	44.5			
Air Voids (%)#	**3.4**	**3.9**	**3.6**	**8.6**	**5.0**			
% of MDD	--	--	--	--	--			

Shear Vane Test Results

Shear Vane Reading	121	>140	UTP	UTP	UTP			
Shear Strength (kPa) Average of 4.	**170**	**>196**	**UTP**	**UTP**	**UTP**			

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. GPS & RL information supplied by McPherson Contractors staff. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results of tests 26 - 29 as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 25 February 2019

IANZ Approved Signatory

IANZ ACCREDITED LABORATORY

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

Designation : *Senior Civil Engineering Technician*

Date : 25 February 2019

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**G Cleaver & M Cook (WSP Opus)**
Date tested :	**31 January 2019**
Nuclear densometer no :	**3440-31344**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2890**
Client Ref No :	--

Nuclear Densometer Test Results

Test Number	30	31*	32	33*	34*	35*		
Reduced Level (m)	23.13	23.34	28.83	31.35	34.01	31.55		
GPS Coordinates	N811195	N811187	N811179	N811176	N811191	N811202		
(BOP circuit 2000)	E361308	E361305	E361271	E361236	E361208	E361255		
Test Probe Depth (mm)	300	300	300	300	300	300		
Wet Density (t/m³)	1.72	1.68	1.70	1.66	1.56	1.69		
Dry Density (t/m³)	1.20	1.07	1.19	1.16	0.99	1.09		
Water Content (%)	43.8	57.2	42.8	42.5	57.2	55.2		
Air Voids (%)#	2.5	0.0	4.1	6.5	5.8	0.0		
% of MDD	--	--	--	--	--	--		

Oven Corrected Test Results

Dry Density (t/m³)	1.21	1.16	1.17	1.13	1.04	1.18		
Water Content (%)	41.8	44.9	45.0	46.9	50.3	43.3		
Air Voids (%)#	**3.5**	**4.2**	**3.0**	**4.4**	**8.6**	**4.4**		
% of MDD	--	--	--	--	--	--		

Shear Vane Test Results

Shear Vane Reading	UTP	UTP	UTP	UTP	UTP	UTP		
Shear Strength (kPa) Average of 4.	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**	**UTP**		

Test Methods	**Notes**
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2	The test positions were selected by McPherson Contractors staff
Shear Stress : NZGS 8/2001	and are approximate only.
Water Content : NZS 4402 : 1986 : Test 2.1	GPS & RL information supplied by McPherson Contractors staff.
	UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results tests 31, 33, 34 & 35 as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 25 February 2019

IANZ ACCREDITED LABORATORY

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IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 25 February 2019

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**G Cleaver & C Harrison (WSP Opus)**
Date tested :	**13 February 2019**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2922**
Client Ref No :	--

Nuclear Densometer Test Results

Test Number	40*	41	42*	43*	44*			
Reduced Level (m)	40.50	36.30	36.00	35.20	22.30			
GPS Coordinates (BOP circuit 2000)	N811184 E361155	N811257 E361107	N811254 E361113	N811188 E361196	N811202 E361330			
Test Probe Depth (mm)	300	300	300	300	300			
Wet Density (t/m³)	1.58	1.70	1.66	1.55	1.64			
Dry Density (t/m³)	1.07	1.09	1.12	0.97	1.00			
Water Content (%)	48.1	55.2	48.4	59.8	63.6			
Air Voids (%)#	8.2	0.0	3.9	5.6	0.0			
% of MDD	--	--	--	--	--			

Oven Corrected Test Results

Dry Density (t/m³)	1.07	1.16	1.16	1.04	0.98			
Water Content (%)	48.6	46.6	43.1	48.0	67.0			
Air Voids (%)#	**8.0**	**2.3**	**6.5**	**10.4**	**0.0**			
% of MDD	--	--	--	--	--			

Shear Vane Test Results

Shear Vane Reading	UTP	112	UTP	UTP	UTP			
Shear Strength (kPa) Average of 4.	**UTP**	**157**	**UTP**	**UTP**	**UTP**			

Test Methods	**Notes**
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. GPS & RL information supplied by McPherson Contractors staff. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results of tests 40, 42, 43 & 44 as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 19 March 2019

IANZ ACCREDITED LABORATORY

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

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 19 March 2019

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**G Cleaver (WSP Opus)**
Date tested :	**14 February 2019**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2927**
Client Ref No :	**--**

Nuclear Densometer Test Results								
Test Number	45*	46*						
Reduced Level (m)	37.53	37.75						
GPS Coordinates (BOP circuit 2000)	N811252 E361116	N811247 E361104						
Test Probe Depth (mm)	300	300						
Wet Density (t/m³)	1.66	1.64						
Dry Density (t/m³)	1.08	1.12						
Water Content (%)	53.0	46.6						
Air Voids (%)#	1.7	5.5						
% of MDD	--	--						

Oven Corrected Test Results								
Dry Density (t/m³)	1.16	1.16						
Water Content (%)	43.5	41.9						
Air Voids (%)#	**6.1**	**7.8**						
% of MDD	--	--						

Shear Vane Test Results								
Shear Vane Reading	UTP	UTP						
Shear Strength (kPa) Average of 4.	**UTP**	**UTP**						

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. GPS & RL information supplied by McPherson Contractors staff. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 19 March 2019

IANZ ACCREDITED LABORATORY

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Designation : *Senior Civil Engineering Technician*

Date : 19 March 2019

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**R McGee (WSP Opus)**
Date tested :	**15 February 2019**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2934**
Client Ref No :	**--**

Nuclear Densometer Test Results									
Test Number	47*								
Reduced Level (m)	39.15								
GPS Coordinates (BOP circuit 2000)	N811246 E361114								
Test Probe Depth (mm)	300								
Wet Density (t/m³)	1.65								
Dry Density (t/m³)	1.10								
Water Content (%)	50.1								
Air Voids (%)#	3.4								
% of MDD	--								

Oven Corrected Test Results									
Dry Density (t/m³)	1.18								
Water Content (%)	40.0								
Air Voids (%)#	**8.4**								
% of MDD	--								

Shear Vane Test Results									
Shear Vane Reading	UTP								
Shear Strength (kPa) Average of 4.	**UTP**								

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2	The test positions were selected by McPherson Contractors staff
Shear Stress : NZGS 8/2001	and are approximate only.
Water Content : NZS 4402 : 1986 : Test 2.1	GPS & RL information supplied by McPherson Contractors staff.
	UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 19 March 2019

IANZ ACCREDITED LABORATORY

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

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 19 March 2019

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**G Cleaver (WSP Opus)**
Date tested :	**19 February 2019**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2951**
Client Ref No :	**--**

Nuclear Densometer Test Results								
Test Number	48*	49*						
Reduced Level (m)	38.4	39.1						
GPS Coordinates (BOP circuit 2000)	N811250 E361117	N811252 E361115						
Test Probe Depth (mm)	300	300						
Wet Density (t/m³)	1.58	1.59						
Dry Density (t/m³)	1.05	0.99						
Water Content (%)	50.8	59.9						
Air Voids (%)#	7.2	3.1						
% of MDD	--	--						

Oven Corrected Test Results								
Dry Density (t/m³)	1.06	1.02						
Water Content (%)	49.5	55.3						
Air Voids (%)#	7.7	4.9						
% of MDD	--	--						

Shear Vane Test Results								
Shear Vane Reading	UTP	UTP						
Shear Strength (kPa) Average of 4.	**UTP**	**UTP**						

Test Methods	**Notes**
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2	The test positions were selected by McPherson Contractors staff
Shear Stress : NZGS 8/2001	and are approximate only.
Water Content : NZS 4402 : 1986 : Test 2.1	GPS & RL information supplied by McPherson Contractors staff.
	UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 19 March 2019

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 19 March 2019

IANZ ACCREDITED LABORATORY

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**G Cleaver (WSP Opus)**
Date tested :	**21 February 2019**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2955**
Client Ref No :	**--**

Nuclear Densometer Test Results								
Test Number	50*	51*						
Reduced Level (m)	40.37	39.08						
GPS Coordinates (BOP circuit 2000)	N811247 E361111	N811257 E361114						
Test Probe Depth (mm)	300	300						
Wet Density (t/m³)	1.59	1.67						
Dry Density (t/m³)	1.03	1.14						
Water Content (%)	54.0	46.4						
Air Voids (%)#	5.4	4.3						
% of MDD	--	--						

Oven Corrected Test Results								
Dry Density (t/m³)	1.03	1.17						
Water Content (%)	54.9	42.7						
Air Voids (%)#	**5.0**	**6.1**						
% of MDD	--	--						

Shear Vane Test Results								
Shear Vane Reading	UTP	UTP						
Shear Strength (kPa) Average of 4.	**UTP**	**UTP**						

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2	The test positions were selected by McPherson Contractors staff and are approximate only.
Shear Stress : NZGS 8/2001	GPS & RL information supplied by McPherson Contractors staff.
Water Content : NZS 4402 : 1986 : Test 2.1	UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 19 March 2019

IANZ ACCREDITED LABORATORY

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IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 19 March 2019

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**G Cleaver (WSP Opus)**
Date tested :	**1 March 2019**
Nuclear densometer no :	**3440-64130**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG2983**
Client Ref No :	--

Nuclear Densometer Test Results								
Test Number	52*	53*	54	55*	56*	57*		
Reduced Level (m)	37.6	36.3	22.5	23.9	26.9	26.2		
GPS Coordinates (BOP circuit 2000)	N811185 E361183	N811186 E361185	N811204 E361323	N811204 E361320	N811023 E361394	N811232 E361391		
Test Probe Depth (mm)	300	300	300	300	300	300		
Wet Density (t/m³)	1.68	1.66	1.71	1.64	1.65	1.67		
Dry Density (t/m³)	1.15	1.16	1.18	1.10	1.16	1.08		
Water Content (%)	45.8	44.6	44.8	48.7	42.5	54.2		
Air Voids (%)#	3.9	4.9	2.7	4.6	7.3	0.6		
% of MDD	--	--	--	--	--	--		

Oven Corrected Test Results								
Dry Density (t/m³)	1.14	1.12	1.22	1.13	1.13	1.13		
Water Content (%)	47.5	47.9	40.3	45.6	46.2	47.7		
Air Voids (%)#	**3.0**	**4.0**	**5.1**	**6.1**	**5.5**	**3.4**		
% of MDD	--	--	--	--	--	--		

Shear Vane Test Results								
Shear Vane Reading	UTP	UTP	UTP	UTP	114	UTP		
Shear Strength (kPa) Average of 4.	**UTP**	**UTP**	**UTP**	**UTP**	**160**	**UTP**		

Test Methods	**Notes**
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. GPS & RL information supplied by McPherson Contractors staff. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 1 April 2019

IANZ ACCREDITED LABORATORY

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

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 1 April 2019

WSP Opus
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Telephone +64 7 578 5425
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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**R McGee (WSP Opus)**
Date tested :	**19 March 2019**
Nuclear densometer no :	**3440-64130**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG3039**
Client Ref No :	--

Nuclear Densometer Test Results								
Test Number	62	63	64*	65*				
Reduced Level (m)	32.4	27.2	27.1	27.8				
GPS Coordinates (BOP circuit 2000)	N811203 E361266	N811215 E361318	N811210 E361316	N811208 E361315				
Test Probe Depth (mm)	300	300	300	300				
Wet Density (t/m³)	1.71	1.74	1.66	1.65				
Dry Density (t/m³)	1.19	1.18	1.10	1.10				
Water Content (%)	43.2	47.9	50.5	49.7				
Air Voids (%)#	3.4	0.0	3.2	4.1				
% of MDD	--	--	--	--				

Oven Corrected Test Results								
Dry Density (t/m³)	1.24	1.16	1.15	1.11				
Water Content (%)	37.5	50.0	44.7	48.0				
Air Voids (%)#	**6.5**	**0.0**	**5.4**	**4.4**				
% of MDD	--	--	--	--				

Shear Vane Test Results								
Shear Vane Reading	UTP	UTP	UTP	UTP				
Shear Strength (kPa) Average of 4.	**UTP**	**UTP**	**UTP**	**UTP**				

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. GPS & RL information supplied by McPherson Contractors staff. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 1 April 2019

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 1 April 2019

IANZ ACCREDITED LABORATORY

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

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**R McGee (WSP Opus)**
Date tested :	**7 February 2019**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG3040**
Client Ref No :	--

Nuclear Densometer Test Results

Test Number	36*	37*	38*	39*				
Reduced Level (m)	34.50	34.10	32.40	22.20				
GPS Coordinates (BOP circuit 2000)	N811181 E361195	N811194 E361216	N811207 E361252	N811203 E361325				
Test Probe Depth (mm)	300	300	300	300				
Wet Density (t/m³)	1.62	1.66	1.55	1.68				
Dry Density (t/m³)	1.07	1.14	1.01	1.13				
Water Content (%)	52.1	46.2	52.9	49.0				
Air Voids (%)#	4.3	4.7	8.1	2.2				
% of MDD	--	--	--	--				

Oven Corrected Test Results

Dry Density (t/m³)	1.08	1.17	1.01	1.17				
Water Content (%)	49.6	42.1	52.9	43.7				
Air Voids (%)#	**5.4**	**6.7**	**8.1**	**4.8**				
% of MDD	--	--	--	--				

Shear Vane Test Results

Shear Vane Reading	UTP	UTP	UTP	UTP				
Shear Strength (kPa) Average of 4.	**UTP**	**UTP**	**UTP**	**UTP**				

Test Methods	**Notes**
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. GPS & RL information supplied by McPherson Contractors staff. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 19 March 2019

IANZ ACCREDITED LABORATORY

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

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 19 March 2019

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**G Cleaver & C Harrison (WSP Opus)**
Date tested :	**6 March 2019**
Nuclear densometer no :	**3440-31344**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG3054**
Client Ref No :	**--**

Nuclear Densometer Test Results

Test Number	58*	59*	60*	61				
Reduced Level (m)	37.86	24.67	27.14	26.83				
GPS Coordinates (BOP circuit 2000)	N811185 E361185	N811213 E361321	N811239 E361395	N811244 E361412				
Test Probe Depth (mm)	300	300	300	300				
Wet Density (t/m³)	1.60	1.69	1.65	1.73				
Dry Density (t/m³)	1.04	1.16	1.10	1.19				
Water Content (%)	53.0	45.0	50.3	46.0				
Air Voids (%)#	5.4	3.9	3.2	0.5				
% of MDD	--	--	--	--				

Oven Corrected Test Results

Dry Density (t/m³)	1.05	1.15	1.13	1.15				
Water Content (%)	51.4	46.9	46.3	51.1				
Air Voids (%)#	**6.1**	**2.9**	**5.1**	**0.0**				
% of MDD	--	--	--	--				

Shear Vane Test Results

Shear Vane Reading	UTP	UTP	UTP	UTP				
Shear Strength (kPa). Average of 4.	**UTP**	**UTP**	**UTP**	**UTP**				

Test Methods	**Notes**
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. GPS & RL information supplied by McPherson Contractors staff. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results of tests 58, 59, & 60, as the wet density values fall outside the nuclear densometer calibration range of 1700 - 2650kg/m³.

#Excluded from IANZ accreditation.

Date reported : 12 March 2019

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 12 March 2019

IANZ ACCREDITED LABORATORY

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

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EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP OPUS

Project :	**NCL 423 Omokoroa Road Development**
Location :	**Omokoroa**
Client :	**McPherson Contractors Ltd**
Contractor :	**McPherson Contractors Ltd**
Tested by :	**Martin Cook (WSP Opus)**
Date tested :	**11 April 2019**
Nuclear densometer no :	**3440-13867**
Solid density (assumed) :	**2.65 t/m³**
Maximum dry density :	**Unknown**
Optimum water content :	**Unknown**
Shear vane no :	**DR2410**
Shear vane correction :	**1.401**
Material description :	**Bulk Fill**

Project No :	**255528.00/0TL**
Lab Ref No :	**TG3154**
Client Ref No :	--

Nuclear Densometer Test Results								
Test Number	72	73*						
Reduced Level (m)	32.47	31.06						
GPS Coordinates (BOP circuit 2000)	N811227 E361298	N811257 E361388						
Test Probe Depth (mm)	300	300						
Wet Density (t/m³)	1.71	1.63						
Dry Density (t/m³)	1.18	1.07						
Water Content (%)	45.0	52.1						
Air Voids (%)#	2.5	3.8						
% of MDD	--	--						

Oven Corrected Test Results								
Dry Density (t/m³)	1.18	1.05						
Water Content (%)	45.0	54.7						
Air Voids (%)#	**2.5**	**2.7**						
% of MDD	--	--						

Shear Vane Test Results								
Shear Vane Reading	UTP	126						
Shear Strength (kPa). Average of 4.	**UTP**	**177**						

Test Methods	Notes
In-situ Density & Water Content : NZS 4407 : 2015 : Test 4.2 Shear Stress : NZGS 8/2001 Water Content : NZS 4402 : 1986 : Test 2.1	The test positions were selected by McPherson Contractors staff and are approximate only. GPS & RL information supplied by McPherson Contractors staff. UTP = unable to penetrate.

*IANZ accreditation of this report excludes the nuclear densometer and oven corrected results of test 73 as the wet density value fell outside the nuclear densometer calibration range of 1700 - 2650kg/m^3.

#Excluded from IANZ accreditation.

IANZ ACCREDITED LABORATORY

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

Date reported : 9 May 2019

IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*

Date : 9 May 2019

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APPENDIX E:

POST CONSTRUCTION HAND AUGER BOREHOLE LOGS

BOREHOLE LOG - PCHA 36

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 10/04/2019
Borehole Location: Lot 36

CMW Geosciences

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = UTP				ML: Clayey SILT: light orange-brown, mottled orange. Low plasticity. (Matua Subgroup)						
		0.6	Peak = UTP				... at 0.50m, becoming white, mottled orange.						
		0.9	Peak = UTP		1			M to W	H		HA		
		1.2	Peak = UTP										
		1.6	Peak = UTP										
		2.0	Peak = UTP		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 37

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 10/04/2019
Borehole Location: Lot 37

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = >193kPa		0		ML: Silty CLAY: light orange, banded white. Low plasticity. (Matua Subgroup)					5 10 15	Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks
		0.6	Peak = >193kPa				*... at 0.30m, becoming light pinkish brown with thin white and red banding, speckled black.*						
		0.9	Peak = >193kPa										
		1.2	Peak = >193kPa		1			M	VSt to H		HA		
		1.6	Peak = UTP										
		2.0	Peak = >193kPa		2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 38

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 10/04/2019
Borehole Location: Lot 38

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = >193kPa		0		ML: Clayey SILT with trace sand: light orange-brown, mottled brown. Low plasticity; sand, fine to medium. (Younger Ash)	M	H			3	
							ML: Clayey SILT with trace sand: light orange-brown, streaked black. Low plasticity; sand, fine to coarse. (Younger Ash)					3	
							SM: Silty fine to coarse SAND: light orange. Well-graded. (Younger Ash)	M to W	L			1	
					1		SM: Silty fine SAND: light yellow. Poorly graded; pumiceous. (Younger Ash)				HA	2	
							SP: Fine SAND: grey. Poorly graded. (Rotoehu Ash)					3	
							ML: Clayey SILT: dark brown. Low plasticity, sensitive. (Hamilton Ash)					2	
		1.6	Peak = 138kPa Residual = 34kPa				ML: Silty CLAY: Dark reddish brown. High plasticity, moderately sensitive. (Matua Subgroup)	M	VSt			2	
		2.0	Peak = 169kPa Residual = 66kPa		2		Borehole terminated at 2.0 m					3	
					3								

5 10 15

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 39

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 09/04/2019
Borehole Location: Lot 39

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = >193kPa				OL: Organic SILT: brownish black. Non-plastic. (Topsoil)					5 10 15	Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks
		0.6	Peak = 133kPa Residual = 59kPa				ML: Clayey SILT with trace sand: orange, streaked black. Low plasticity, moderately sensitive to sensitive; sand, fine to coarse. (Matua Subgroup)						
		0.9	Peak = >193kPa										
					1		*... at 1.00m, sand absent.*	M	VSt to H		HA		
		1.2	Peak = >193kPa										
		1.6	Peak = UTP				*... from 1.80m to 1.85m, contains some fine to medium sand.*						
		2.0	Peak = 189kPa Residual = 76kPa		2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 40

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 09/04/2019
Borehole Location: Lot 40

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: DP | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
							OL: Organic SILT: brown. Low plasticity. (Topsoil)	D					
		0.3	Peak = >191kPa				ML: Silty CLAY: light orange-brown. Low plasticity, moderately sensitive to sensitive. (Matua Subgroup)						
		0.6	Peak = 177kPa Residual = 33kPa										
		0.9	Peak = >191kPa										
					1			D to M	VSt to H		HA		
		1.2	Peak = 156kPa Residual = 61kPa										
		1.6	Peak = >191kPa										
		2.0	Peak = UTP		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 41

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 10/04/2019
Borehole Location: Lot 41

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = 108kPa Residual = 48kPa				ML: Organic SILT: dark brown. Non-plastic. (Topsoil)						
		0.6	Peak = UTP				ML: Clayey SILT: light orange-brown. Low plasticity, moderately sensitive. (Matua Subgroup)		VSt to H				
		0.9	Peak = UTP				*... at 0.90m, becoming mottled light brown.*						
					1			M			HA		
		1.2	Peak = UTP				ML: Clayey SILT with trace sand: dark orange-brown. Low plasticity; sand, fine to coarse. (Matua Subgroup)						
		1.6	Peak = UTP						H				
		2.0	Peak = >193kPa		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 42

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 10/04/2019
Borehole Location: Lot 42

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = >193kPa				OL: Organic SILT: Dark brown. Non-plastic. (Topsoil)					5 10 15	Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks
		0.6	Peak = 193kPa Residual = 42kPa				ML: Clayey SILT: brown, mottled light brown and orange. Low plasticity. (Fill)		VSt to H				
		0.9	Peak = 193kPa Residual = 34kPa				ML: Clayey SILT: pink, mottled orange and white. Low plasticity, sensitive. (Fill)						
		1.2	Peak = 180kPa Residual = 34kPa		1		ML: SILT with some clay: orange. Low plasticity, sensitive. (Younger Ash)	M	H		HA		
		1.6	Peak = 108kPa Residual = 37kPa				SM: Sandy SILT: light orange. Low plasticity, moderately sensitive. (Younger Ash)						
		2.0	Peak = 110kPa Residual = 42kPa		2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 43

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 10/04/2019
Borehole Location: Lot 43

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = >193kPa				OL: Organic SILT: dark brown. Non-plastic. (Topsoil)						
		0.6	Peak = 193kPa Residual = 42kPa				ML: Clayey SILT: light brown. Low plasticity, sensitive. (Younger Ash)	M	VSt to H				
		0.9	Peak = 193kPa Residual = 34kPa		1		ML: Clayey SILT: orange. Low plasticity, sensitive. (Younger Ash)				HA		
		1.2	Peak = 180kPa Residual = 34kPa				SM: Sandy SILT: light orange-brown. Low plasticity, sensitive. (Younger Ash)	M to W	VSt				
							SP: Fine SAND: yellow, mottled grey. Poorly graded. (Rotoehu Ash)						
		1.6	Peak = 108kPa Residual = 37kPa				ML: Clayey SILT: dark brown. Low plasticity, moderately sensitive. (Hamilton Ash)						
							ML: Silty CLAY: dark orange-brown. High plasticity, moderately sensitive. (Matua Subgroup)	M	H				
		2.0	Peak = 110kPa Residual = 42kPa		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 44

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 10/04/2019
Borehole Location: Lot 44

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
							OL: Organic SILT: dark brown. Non-plastic. (Topsoil)						
		0.3	Peak = >193kPa				ML: Silty CLAY: light orange. Low plasticity. (Matua Subgroup)						
		0.6	Peak = >193kPa										
		0.9	Peak = >193kPa										
					1			M	VSt to H		HA		
		1.2	Peak = UTP										
		1.6	Peak = >193kPa										
		2.0	Peak = >193kPa		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 45

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 11/04/2019
Borehole Location: Lot 45

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
							OL: Organic SILT: black. Non-plastic. (Topsoil)	D					
		0.3	Peak = 141kPa Residual = 24kPa				ML: Clayey SILT: light yellowish-orange. Low-medium plasticity, sensitive. (Matua Subgroup)		St to VSt				
		0.6	Peak = 96kPa Residual = 23kPa					M to W					
							... at 0.70m, becoming light orange, mottled black.						
		0.9	Peak = 162kPa Residual = 21kPa				ML: Clayey SILT with trace sand: orange mottled black. Low plasticity; sand, fine to medium. (Matua Subgroup)						
					1						HA		
		1.2	Peak = >201kPa					W	H				
		1.6	Peak = UTP				ML: Silty CLAY: light brown. Moderate-high plasticity, moderately sensitive. (Matua Subgroup)						
							... at 1.70m, becoming reddish orange.	M to W	VSt				
		2.0	Peak = 164kPa Residual = 52kPa		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 46

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 13/06/2019
Borehole Location: Lot 46

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
							OL: Organic SILT: dark brown. Non-plastic. (Topsoil)	M					
		0.3	Peak = 130kPa Residual = 7kPa				ML: Clayey SILT with trace sand: light yellowish brown. Low plasticity, sensitive to quick; sand, fine to medium. (Matua Subgroup)	W	VSt				
		0.6	Peak = 182kPa Residual = 39kPa										
		0.9	Peak = >202kPa		1		ML: Clayey SILT: brownish grey. Low plasticity, sensitive. (Matua Subgroup)	M to W	VSt to H		HA		
		1.2	Peak = 174kPa Residual = 39kPa										
		1.6	Peak = 148kPa Residual = 20kPa				ML: Clayey SILT: orange. Low plasticity, sensitive. (Matua Subgroup)	W	VSt				
		2.0	Peak = 151kPa Residual = 27kPa		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 1912.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 47

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 04/11/2019
Borehole Location: Lot 47

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm) 5 10 15	Structure & Other Observations
							OL: Organic SILT: dark brown. Non plastic. (Topsoil)	M					
		0.3	Peak = 117kPa Residual = 55kPa				ML: Clayey SILT: light orange. Low plasticity, sensitive. (Matua Subgroup)		St to VSt				
		0.6	Peak = 96kPa Residual = 14kPa					M to W					
		0.9	Peak = 169kPa Residual = 23kPa										
					1		*... at 1.00m, becoming yellowish orange.*				HA		
		1.2	Peak = 126kPa Residual = 20kPa										
								W	VSt to H				
		1.6	Peak = >200kPa Residual = 23kPa										
		2.0	Peak = >201kPa		2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2017

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 48

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 04/11/2019
Borehole Location: Lot 48

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
							OL: Organic SILT: black. Non-plastic. (Topsoil)	M					
		0.3	Peak = 156kPa Residual = 37kPa				ML: SILT with some clay: brown. Low plasticity, sensitive. (Matua Subgroup)						
		0.6	Peak = 141kPa Residual = 29kPa						VSt				
		0.9	Peak = 129kPa Residual = 29kPa										
					1			M to W			HA		
		1.2	Peak = >201kPa				ML: Sandy SILT: orange, mottled black. Low plasticity, sensitive. (Matua Subgroup)						
							ML: SILT: brownish orange. Low plasticity, sensitive. (Matua Subgroup)						
		1.6	Peak = 172kPa Residual = 43kPa						VSt to H				
							SW: Fine to coarse SAND with minor silt: orange-yellow. Well graded. (Matua Subgroup)	W					
		2.0	Peak = 144kPa Residual = 26kPa		2		ML: Clayey SILT with some sand: orange-yellow. Low plasticity, sensitive; sand, fine to coarse. (Matua Subgroup)						
							Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2017.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 49

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 04/11/2019
Borehole Location: Lot 49

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
							OL: Organic SILT: dark brown. Non-plastic. (Topsoil)						
		0.3	Peak = >201kPa				ML: Clayey SILT: orange, speckled black, mottled light brown. Non-plastic. (Matua Subgroup)		H				
		0.6	Peak = >201kPa										
		0.9	Peak = 184kPa Residual = 52kPa				ML: Clayey SILT: brown. Low plasticity, moderately sensitive. (Matua Subgroup)						
					1			M			HA		
		1.2	Peak = 190kPa Residual = 49kPa				ML: SILT with some clay: orange-brown. Low plasticity, sensitive. (Matua Subgroup)		VSt				
		1.6	Peak = 172kPa Residual = 38kPa										
		2.0	Peak = 146kPa Residual = 30kPa		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2017.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 50

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 04/11/2019
Borehole Location: Lot 50

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm) 5 10 15	Structure & Other Observations
		0.3	Peak = >201kPa				OL: Organic SILT: dark brown. Low plasticity. (Topsoil)						
		0.6	Peak = >201kPa				ML: Clayey SILT: orange-brown, mottled light brown. Low plasticity. (Matua Subgroup)		H				
		0.9	Peak = 187kPa Residual = 40kPa		1		ML: Clayey SILT: orange-brown. Low plasticity, sensitive. (Matua Subgroup)	M			HA		
		1.2	Peak = 172kPa Residual = 32kPa						VSt to H				
		1.6	Peak = 158kPa Residual = 30kPa										
		2.0	Peak = 145kPa Residual = 29kPa		2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater encountered. Shear vane no. 2017.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 51

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 03/05/2019
Borehole Location: Lot 51

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = 163kPa Residual = 38kPa				OL: Organic SILT: dark brown. Low plasticity. (Topsoil)					5 10 15	
		0.6	Peak = >191kPa				ML: Clayey SILT: light orange, banded blackish brown. Low plasticity, sensitive. (Matua Subgroup)	M					
		0.9	Peak = 185kPa Residual = 64kPa		1		ML: Silty CLAY: light greyish brown, mottled black and reddish brown. Low plasticity, moderately sensitive. (Matua Subgroup) *... at 1.00m, becoming brownish red.*		VSt to H		HA		
		1.2	Peak = >191kPa				ML: Clayey SILT with trace sand: light orange-brown, banded red. Low plasticity; sand, fine. (Matua Subgroup)	W					
		1.6	Peak = >191kPa				ML: Silty CLAY: light brown. Low plasticity, moderately sensitive. (Matua Subgroup)	M					
		2.0	Peak = 114kPa Residual = 39kPa		2			W					
							Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 52

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 04/10/2019
Borehole Location: Lot 52

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = UTP				OL: Organic SILT: dark brown. Non-plastic. (Topsoil)					5 10 15	Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks
		0.6	Peak = >193kPa				ML: Clayey SILT: light orange-brown mottled brown. Low plasticity, moderately sensitive. (Matua Subgroup)	M	VSt to H				
		0.9	Peak = 166kPa Residual = 64kPa				... *at 0.60m, becoming light orange.*						
		1.2	Peak = 83kPa Residual = 25kPa		1		ML: Clayey SILT: light yellowish orange. Low plasticity, moderately sensitive. (Matua Subgroup)	W	St		HA		
		1.6	Peak = 87kPa Residual = 23kPa										
		2.0	Peak = 94kPa Residual = 31kPa		2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 53

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 10/04/2019
Borehole Location: Lot 53

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = 190kPa Residual = 50kPa				OL: Organic SILT: dark brown. Non-plastic. (Topsoil)	M				5 10 15	Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks
		0.6	Peak = 166kPa Residual = 52kPa				ML: Clayey SILT: orange-brown. Low plasticity, moderately sensitive. (Younger Ash)		VSt				
		0.9	Peak = 147kPa Residual = 78kPa				SP: Fine SAND: yellow mottled grey. Poorly graded. (Rotoehu Ash)						
		1.2	Peak = UTP		1		ML: Clayey SILT: brown. Low plasticity, moderately sensitive. (Hamilton Ash)				HA		
		1.6	Peak = 174kPa Residual = 52kPa				ML: Silty CLAY: light orange. High plasticity, moderately sensitive. (Matua Subgroup)	M to W					
		2.0	Peak = UTP		2		*... at 1.20m, becoming sandy silt.*		VSt to H				
							Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2323.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 54

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 03/05/2019
Borehole Location: Lot 54

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = >191kPa		0		OL: Organic SILT: dark brown. Non-plastic. (Topsoil)						
		0.6	Peak = 156kPa Residual = 28kPa				ML: Clayey SILT with trace sand: orange. Low plasticity, moderately sensitive to sensitive; sand, fine. (Younger Ash)						
		0.9	Peak = 118kPa Residual = 27kPa					M	VSt to H		HA		
		1.2	Peak = 189kPa Residual = 49kPa		1								
		1.6	Peak = >191kPa										
							SW: Fine to coarse SAND: light orange. Well-graded. (Younger Ash)	M to W	L to MD			4 4	
					2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 55

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 03/05/2019
Borehole Location: Lot 55

CMW Geosciences

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm) 5 10 15	Structure & Other Observations
		0.3	Peak = 163kPa Residual = 34kPa		1		ML: Clayey SILT: orange-brown. Low plasticity, sensitive. (Younger Ash)	M	VSt		HA		
		0.6	Peak = 121kPa Residual = 27kPa										
		0.9	Peak = 122kPa Residual = 41kPa										
		1.2	Peak = 123kPa Residual = 54kPa				SW: Fine to coarse SAND: light yellow. Well-graded. (Younger Ash)	M to W					
		1.6	Peak = 150kPa Residual = 60kPa				ML: SILT: light yellow. Low plasticity, moderately sensitive. (Younger Ash)		VSt				
							SP: Fine SAND: grey. Poorly graded. (Rotoehu Ash)						
		2.0	Peak = 163kPa Residual = 41kPa		2		ML: Clayey SILT: dark brown. Low plasticity, moderately sensitive. (Hamilton Ash)		VSt				
					3		Borehole terminated at 2.0 m						

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 56

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 03/05/2019
Borehole Location: Lot 56

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Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = UTP		0		OL: Organic SILT: dark brown. Low plasticity. (Topsoil)					5 10 15	Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks
		0.6	Peak = >191kPa				ML: Clayey SILT: orange, mottled red and black. Low plasticity. (Fill)		H				
		0.9	Peak = >191kPa				ML: SILT: orange-brown. Low plasticity. (Matua Subgroup)	M			HA		
		1.2	Peak = >191kPa		1								
		1.6	Peak = 189kPa Residual = 41kPa				ML: Clayey SILT with trace sand: light orange-brown. Low plasticity, sensitive; sand, fine to medium. (Matua Subgroup)		VSt				
		2.0	Peak = 178kPa Residual = 38kPa		2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 57

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 03/05/2019
Borehole Location: Lot 57

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
							OL: Organic SILT: dark brown. Non-plastic. (Topsoil)						
		0.3	Peak = >191kPa				ML: Clayey SILT: light orange. Low plasticity. (Matua Subgroup)						
		0.6	Peak = >191kPa										
		0.9	Peak = >191kPa						H				
					1			M			HA		
		1.2	Peak = >191kPa										
		1.6	Peak = >191kPa										
							ML: Clayey SILT: orange-brown. Low plasticity, sensitive. (Matua Subgroup)		VSt				
		2.0	Peak = 177kPa Residual = 39kPa		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 58

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 03/05/2019
Borehole Location: Lot 58

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = >191kPa				OL: Organic SILT: Dark brown. Low plasticity. (Topsoil)					5 10 15	Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks
		0.6	Peak = >191kPa				ML: Clayey SILT: light orange. Low plasticity. (Matua Subgroup)						
		0.9	Peak = >191kPa		1			M	H		HA		
		1.2	Peak = >191kPa										
		1.6	Peak = >191kPa										
		2.0	Peak = >191kPa		2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 59

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 03/05/2019
Borehole Location: Lot 59

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
							OL: Organic SILT: dark brown. Non-plastic. (Topsoil)	M					
		0.3	Peak = >191kPa				ML: Clayey SILT: light orange, speckled black, streaked orange. Low plasticity. (Matua Subgroup)						
		0.6	Peak = >191kPa					M to W	H				
		0.9	Peak = >191kPa										
					1						HA		
		1.2	Peak = >191kPa										
							ML: Clayey SILT: light orange-brown, speckled black. Low plasticity, moderately sensitive. (Matua Subgroup) *... from 1.40m to 1.70m, becoming mottled grey.*	M	VSt to H				
		1.6	Peak = 177kPa Residual = 76kPa										
								M to W					
		2.0	Peak = >191kPa		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 60

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 03/05/2019
Borehole Location: Lot 60

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
							OL: Organic SILT: dark brown. Low plasticity. (Topsoil)	D to M					
		0.3	Peak = >191kPa				ML: Clayey SILT: light orange-brown, speckled black. Low plasticity. (Matua Subgroup)						
		0.6	Peak = >191kPa						H				
		0.9	Peak = >191kPa										
					1						HA		
								M					
		1.2	Peak = >191kPa				ML: Clayey SILT: light brown, speckled black. Low plasticity, sensitive. (Matua Subgroup)						
		1.6	Peak = >191kPa						VSt to H				
		2.0	Peak = 177kPa Residual = 31kPa		2		Borehole terminated at 2.0 m						
					3								

Dynamic Cone Penetrometer (Blows/100mm): 5 10 15

Structure & Other Observations: Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

BOREHOLE LOG - PCHA 61

Client: Neil Group
Project: Te Awanui Waters
Site Location: 423 Omokoroa Road
Project No.: TGA2018-0199
Date: 03/05/2019
Borehole Location: Lot 61

CMW Geosciences

1:15 Sheet 1 of 1

Logged by: AZ | Position: | Elevation: | Hole Diameter: 50mm
Checked by: GS | Survey Source: Hand Held GPS | Datum: Moturiki | Angle from horizontal: 90°

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Recovery	Drilling Method/ Support	Dynamic Cone Penetrometer (Blows/100mm)	Structure & Other Observations
		0.3	Peak = >191kPa				OL: Organic SILT: dark brown. Low plasticity. (Topsoil)	M				5 10 15	Discontinuities: Depth; Defect Number; Defect Type; Dip; Defect Shape; Roughness; Aperture; Infill; Seepage; Spacing; Block Size; Block Shape; Remarks
		0.6	Peak = >191kPa				ML: Clayey SILT: pinkish orange. Low plasticity, sensitive. (Matua Subgroup)						
		0.9	Peak = >191kPa				... at 0.60m, becoming mottled white.						
		1.2	Peak = 191kPa Residual = 41kPa		1		... at 0.80m, becoming pink, mottled orange and white.	M to W	VSt to H		HA		
		1.6	Peak = >191kPa				... at 1.20m, becoming white with orange-red banding.						
		2.0	Peak = 163kPa Residual = 38kPa		2		Borehole terminated at 2.0 m						
					3								

Termination reason: Target Depth Reached

Remarks: Groundwater not encountered. Shear vane no. 2562.

This report is based on the attached field description for soil and rock, CMW Geosciences - Field Logging Guide, Revision 3 - April 2018.

Western Bay of Plenty District Council

Consent Notice Pursuant to Section 221 Resource Management Act 1991

File Ref: S/B/11976

IN THE MATTER OF: Deposited Plan 537960

A N D

IN THE MATTER OF: Subdivision Consent pursuant to Sections 108, 220 and 221 of the Resource Management Act 1991.

I, CHRIS WATT, Authorised Officer of the Western Bay of Plenty District Council, hereby certify that by way of resolution passed under delegated authority on 13 December 2016, the following condition was imposed on the subdivision consent formerly know as (Lot 2 DP 312635 & Lot 1 DP 488385) Lot 301 Deposited Plan 524760.

THAT pursuant to section 221 of the Resource Management Act 1991 consent notices are registered against the titles of Lot(s) 36-61 such that:

THAT all development must be in accordance with the Geotechnical report by CMW Geosciences, dated 6 august 2019, reference TGA2018-0199AB – Rev.0

Dated at Tauranga this 17th day of September 2019

Authorised Officer

Head Office: 1484 Cameron Road, Greerton, Tauranga 3143
Private Bag 12803, Tauranga Mail Centre, Tauranga 3143
Telephone: 07 571 8008. **F:** 07 577 9820
Email: customerservice@westernbay.govt.nz
Offices at: Waihi Beach, Katikati, Omokoroa and Te Puke

TAX INVOICE

REGISTRATION NO. 52-544-300

ADAMS, GARTH DEAN
19 KAHAWAI PLACE
OMOKOROA 3114

Invoice No: 410452

Date: 13 Nov 2025

Customer No: 202391

Your Reference: **LIM25803**

DETAILS	GST	Excl	Amount
LIM APPLICATION AND DELIVERY FEES LIM Address: 25 KAHAWAI PLACE CENTRAL			
LIM FEE	48.26	321.74	370.00
LESS DEPOSIT FEE ALREADY PAID (RECEIPT NO: 2026 98698)	48.26cr	321.74cr	370.00cr
Standard 10 working day service			

Please pay on this invoice. No statement will be issued.

EXCL	0.00
GST	0.00
TOTAL	**$0.00**
Less already paid	
TOTAL NOW DUE	**$**

REMITTANCE ADVICE: Online payments can be made by credit card at www.westernbay.govt.nz/invoice-payment or deposit to: **ANZ Tauranga 010434 0180600 00**, please enter **SI410452** in your payment reference. If paying by post, please detach and return with your payment to Private Bag 12803, Tauranga 3143.

CUSTOMER:	ADAMS, GARTH DEAN
INVOICE NO:	410452
TOTAL DUE:	$
PAYMENT MADE:	$