Assessment of Environmental Effects

One dwelling

25 Wihongi Street, Kaikohe

Executive Summary

The following report has been prepared to support an application for resource consent for the development of one dwelling, pursuant to Schedule 4 of the Resource Management Act 1991 ('the Act'). This report contains an Assessment of Environmental Effects which addresses all matters relevant to the proposal and is informed by specialist input and reports where required.

Resource consent is required for the proposal for stormwater management related to impervious surfaces under the Residential zone and exceeding the permitted volume of earthworks under Chapter 12. For the reasons set out in the subsequent assessment, it is considered that the application may be granted on a non-notified basis subject to appropriate conditions of consent.

Version No. 1

Report prepared by:

Luke Paanakker

Planner, Babbage Consultants

14/06/2024

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Appendices

1.0 Applicant and Site Details

Applicant	Kāinga Ora – Homes and Communities ('Kāinga Ora')
Site Owner	Housing New Zealand Limited
Address for Service	Babbage Consultants Ltd PO Box 2027 Shortland Street Auckland CBD 1010 Attention: Luke Paanakker Email: luke.paanakker@babbage.co.nz
Location	25 Wihongi Street, Kaikohe
Legal Description	Lot 58 DP 36638
Site Area	900 m^2
Operative Plan(s)	Far North District Plan
Proposed Plan(s)	Far North proposed District Plan
Operative Zone	Residential
Proposed Zone	General Residential
Operative Overlays	N/A
Proposed Overlays	N/A
Other Notations	N/A

2.0 The Site and Surrounding Environment

2.1 Description of Site

The application site comprises one existing title area, located on the south-western side of Wihongi Street (refer **Figure 1**). The site is regular in shape and covers an area of 900m^2 with relatively flat topography. The site has a total frontage of 20m to Wihongi Street.

Figure 1: Aerial map of application (outlined in yellow). Source: GRIP Mapping

Wihongi Street is a local road which has a legal width of approximately 20 m, with both sides of the street lined with grass berms and pedestrian footpaths. There are no street trees located within the road reserve adjoining the site.

The site is currently occupied by 1 unit in single storey, standalone formation. At present 1 vehicle crossing serves the site on the southernmost boundary, with a stacked parking arrangement provided in front of the dwelling. The site boundaries are defined by fencing of varying heights, and the front yard is provided with lower level fencing.

In terms of services, the site is currently served by reticulated wastewater and water supply. In terms of stormwater, the closest public network to the site is a stormwater catchpit in the location of the existing vehicle crossing at 27 Wihongi Street. An existing kerb outlet can be seen at the site frontage and is assumed to be discharging roof runoff from the existing dwelling on site.

The Records of Title for the site (attached as **Appendix 1**) are subject to a number of interests. None of these are anticipated to affect the resource consent application as discussed in **Table 1** below:

Table 1: Record of Title interests

Interest	Comment
Fencing Agreement in Transfer 280591-28.9.1950.	Kāinga Ora is obliged to meet the requirements of the fencing agreement.

2.2 Description of Surrounding Environment

The development site is located in the residential area of Kaikohe, approximately 200m to the north of the Kaikohe Town Centre. The site is surrounded by residential land uses, predominantly being single storey detached dwellings. The lot sizes in the surrounding area comprise a range between 500m^2 to 1000m^2.

In terms of the wider environment, Kaikohe East School and Kaikohe Christian School are located to the south east. The Kaikohe Town Centre provides for a number of commercial activities, including a New World supermarket. Lindvart Park is also located to the south.

3.0 The Proposal

A summary of the key elements of the proposal is set out below. More detailed descriptions on particular aspects of the proposal are set out in the specialist reports and plans accompanying the application.

3.1 Overview

It is proposed to construct one, five-bedroom single storey dwelling. The site layout is shown in **Figure 2** below.

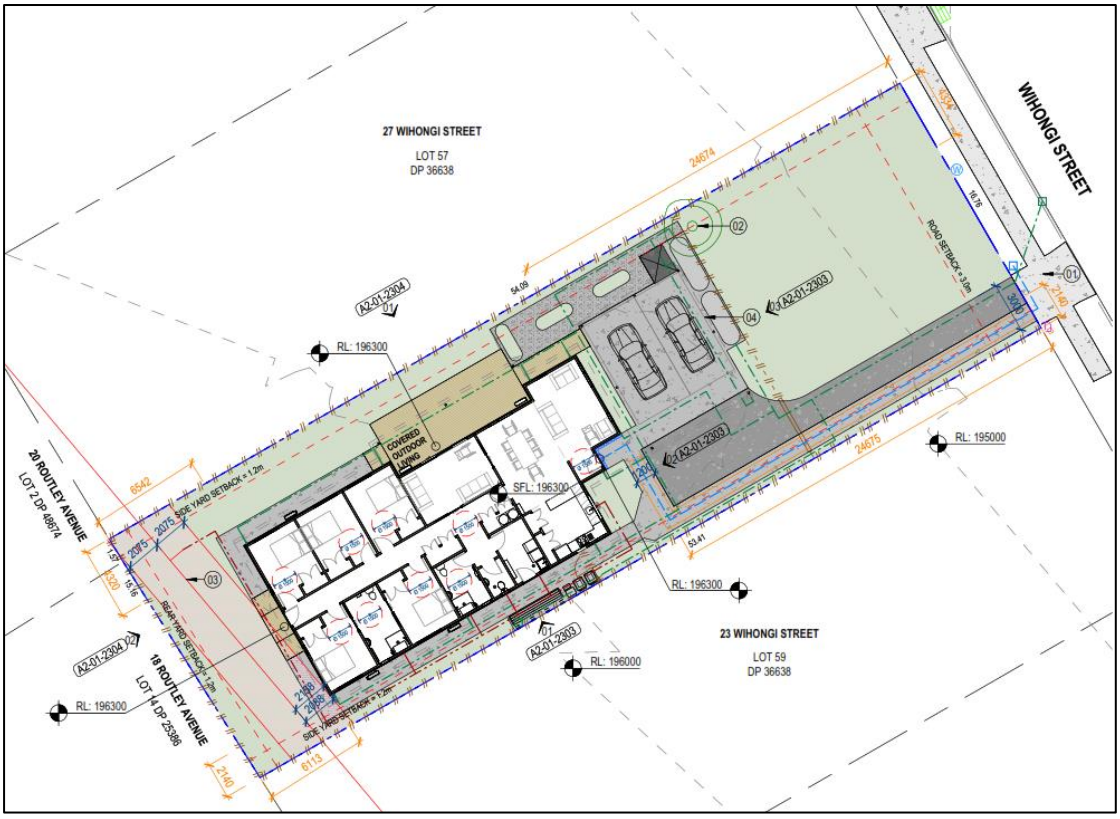


Figure 2: Site plan. Source: Appendix 2: Architectural Drawings.

3.2 Access and parking

The site will be accessed via one vehicle crossing from Wihongi Street. Two car parks will be provided in front of the proposed dwelling, with sufficient manoeuvring space to the rear to accommodate for cars exiting the site in a forward direction.

3.3 Infrastructure and servicing

The servicing strategy for the proposed development is set out in the report and accompanying drawings by Civix, included as **Appendix 3**. In summary, it is concluded that all dwellings can be appropriately serviced in terms of stormwater, wastewater, water supply, power and telecommunications.

In terms of stormwater, the proposed design is to replace the existing kerb discharge outlet and install a new outlet connected to the 150 mm outlet pipe from the property. As kerb

discharge is proposed, and the impervious area is more than the existing scenario, detention tanks to mitigate stormwater flows are required. 2 x 130 L detention tanks are proposed with a total volume of 10,260 L. This will reduce the flows to 80 % of pre-development and provide detention for both 2-year and 5- year events.

In terms of wastewater, the proposal will involve the reuse of the 100 mm wastewater connection. As concluded in the infrastructure report, the downstream network will have sufficient capacity to accommodate the future development.

3.4 Site works

3.4.1 Earthworks

The existing dwellings, hard surfaces and vegetation on the site will be removed to accommodate the redevelopment. Earthworks of approximately 42.5m^3 of cut, 153.8m^3 of fill and 252.1 m^2 topsoil strip across an area of 748m^2 is required to establish suitable levels for foundations, civil works and accessways, and to carry out landscaping. The maximum depth of the cut will be 0.6m and the maximum depth of the fill will be 0.8m. Table 1 below provides a summary of the earthworks proposed. The Geotechnical Assessment in Appendix 8 was prepared to support the proposed earthworks and sets out measures to maintain stability within the site and on adjacent land. Refer to Table 1 below outlining earthworks to be undertaken on site.

EW ID	UNITS	EW001	TOTAL
AREA	m^2	748	748
CUT	m^3	42.5	42.5
BULK TOT. CUT	m^3	42.5	42.5
MAX. CUT DEPTH	m	0.6	0.6
BULK FILL	m^3	153.8	153.8
FILL +15% BF.	m^3	176.9	176.9
BULK TOT. FILL	m^3	153.8	153.8
BULK CUT OFFSITE	m^3	-	0.0
BULK CUT TO FILL	m^3	-	42.5
BULK FILL IMPORT	m^3	-	134.4
BULK TOT. VOL.	m^3	196.3	196.3
MAX. FILL HEIGHT	m	0.8	0.8
BULK TRUCKS	Trucks	-	23
TOPSOIL CLEAN STRIP	m^3	187.0	187.0
TOPSOIL TOT. STRIP	m^3	187.0	187.0
TOPSOIL TOT. PLACE	m^3	65.1	65.1
TOPSOIL TOT. VOL.	m^3	252.1	252.1
TOPSOIL TRUCKS	Trucks	-	43
EW TOT. VOL.	m^3	448.4	448.4
EW TOT. TRUCKS	Trucks	-	66

Table 1: *Earthworks to be undertaken on the application site.*

3.4.2 Contamination

The Detailed Site Investigation (DSI) in Appendix 5 includes an assessment against the relevant statutory documents which control contaminated land. The findings of the DSI are set out below:

- As the piece of land covered by this report does not meet the criteria outlined in regulation 5(7) (a) through to (c) and that it is more likely than not that a HAIL activity has not taken place on the piece of land, the NESCS does not apply to the site.
- Consents will be required from Regional Council from a contamination perspective. Specifically, a controlled activity consent for contaminated land remediation in accordance with the Proposed Regional Plan of Northland
- There are no specific rules with respect to contaminated land under the Far North District Council Fully Operative District Plan.

3.5 Landscaping

Landscaping is proposed throughout the site as illustrated on the plans prepared by Resilio Studio, included as Appendix 4. The landscaping plans include planting, surface treatments and fencing. Specimen plants and shrubbery are to be planted adjacent to the common boundaries to break up the impervious areas along with a landscaping strip adjacent to the access.

4.0 Reasons for Consent

The proposal requires resource consent for the following activities, as required by the operative Far North District Plan. A detailed assessment of compliance with relevant rules and standards is attached as **Appendix 7**.

4.1 Far North District Plan

Operative Far North District Plan

Chapter 7- Urban environment

Stormwater Management

- Development involving more than 50% but less than 60% of site cover from buildings and other impermeable surfaces is a **Controlled Activity** under Rule 7.6.5.2. The proposed coverage of buildings and other impermeable surfaces is 51.8%.

Chapter 12- Natural and Physical Resources

Section 3- Soils and Minerals

- Excavation and/or filling on a site in the Residential Zone that exceeds 200m^3 but is less than 500m^3 in any 12 month period per site is a Restricted Discretionary Activity under rule 12.3.6.2.2. The proposed earthworks volume for the development is 448.4m^3.

Proposed Far North District Plan

Earthworks

It is recognised that the following rules and standards from the Proposed Far North District Plan have immediate legal effect and must be complied with and where compliance cannot be achieved, resource consent must be applied for:

- EW-R12
- EW- R13
- EW-S3
- EW-S5

The proposed development will comply with proposed rules and standards that have immediate legal effect related to earthworks. For a full assessment of compliance refer to the rules compliance table included as **Appendix 7**.

4.2 Additional Consents Required

Northland Regional Council

Kāinga Ora is in the process of undertaking a regional consent for **controlled activity** relating to contaminated land under the Proposed Regional Plan for Northland. The consent approvals from Northland Regional Council will be discrete to the approvals sought from Far North District Council.

A Detailed Site Investigation was undertaken on the site, and a subsequent remedial Action Plan (RAP) has been prepared. Both the DSI and RAP have been included in this application as

Appendix 5 and Appendix 6 for transparency and land management purposes for Far North District Council, and do not relevance for this application.

5.0 Consultation and Engagement

As set out in Clause 6(3) of Schedule 4 and additionally in s36A of the Act, an applicant is not obliged to consult any person on an application, nor are there any grounds for expecting that the applicant will consult any person.

Notwithstanding the above, the details below set out the consultation and engagement that has been carried out in relation to the proposal.

5.1 Consultation with Council

A pre-application meeting was held with Far North District Council on Wednesday 5th June. Table 2 below summarises the matters discussed at the meeting and the measures taken to address the matters raised.

Item	Description	Measures Taken
1	Provide an assessment of the transport and manoeuvring space requirements.	This has been provided and attached as Appendix 9.
2	Locate and mark existing wastewater line before fence construction starts.	This has been provided and attached as Appendix 3.

Table 2: Pre-application matters discussed.

6.0 Assessment of Environmental Effects

Pursuant to Schedule 4 of the Act, an application for resource consent must include an assessment of actual and potential effects of the activity on the environment, identification of any persons affected by the activity, and a description of any mitigation measures proposed to help prevent or reduce an effect where appropriate.

Any assessment must: (a) include the information required by Schedule 6, (b) address the matters specified in Clause 7, and (c) include such detail as corresponds with the scale and significance of the effects the activity may have on the environment. Such assessment is subject to the provisions of any relevant policy statements and plans.

6.1 Relevant Considerations

6.1.1 The Receiving Environment

The surrounding environment as it exists today is described in Section 3.2.

Importantly however, the receiving environment beyond the subject site comprises not only those activities which have been lawfully established previously (as per Section 3.2), but also those activities which can occur as of right under relevant plans, and those activities enabled by unimplemented resource consents that are likely to be implemented.

At the time of preparing this resource consent application, we are unaware of any unimplemented resource consents on adjacent sites.

Any assessment of adverse effects of the proposal should be considered within this context, as framed by the receiving environment.

6.1.2 The Permitted Baseline

In deciding whether an activity will have or is likely to have adverse effects on persons and on the wider environment, and in accordance with s95D, 95E, and 104(1)(a), a consent authority may disregard an adverse effect if a rule or national environmental standard permits an activity with that effect.

With regards to the activities forming the basis of this resource consent application, and as described below, it is considered that the permitted baseline is of little relevance in this case.

In this case, the following may be undertaken as a permitted activity on the site:

- The maximum proportion of the gross site area covered by buildings and other impermeable surfaces shall be no more than 50%.
- Excavation and/or filling on any site in the Residential Zone is a permitted activity provided that:
    - It does not exceed 200m^3 in any 12 month period per site; and
    - it does not involve a cut or filled face exceeding 1.5m in height i.e. the maximum permitted cut and fill height may be 3m.

6.1.3 Activity Status

In accordance with Schedule 4, any requirement to include information or to address a matter within an assessment of environmental effects is subject to the provisions of any policy statement or plan.

Overall, the application is for a restricted discretionary activity.

As a restricted discretionary activity, only those matters over which Council has restricted its discretion to may be considered in deciding the application and in imposing conditions of consent. These matters are outlined below:

The relevant matters of control are:

- The extent to which building site coverage and impermeable surfaces contribute to total catchment impermeability and the provisions of any catchment or drainage plan for that catchment;
- The extent to which Low Impact Design principles have been used to reduce site impermeability;
- Any cumulative effects on total catchment impermeability;
- The extent to which building site coverage and impermeable surfaces will alter the natural contour or drainage patterns of the site or disturb the ground and alter its ability to absorb water;
- The physical qualities of the soil type;
- The availability of land for the disposal of effluent and stormwater on the site without adverse effects on the water quantity and water quality of water bodies (including groundwater and aquifers) or on adjacent sites;
- The extent to which paved, impermeable surfaces are necessary for the proposed activity;
- The extent to which landscaping and vegetation may reduce adverse effects of run-off;
- The means and effectiveness of mitigating stormwater runoff to that expected by permitted activity threshold.

The relevant matters of discretion are:

- The effects of the area and volume of soils and other materials to be excavated; and
- The effects of height and slope of the cut or filled faces; and
- The time of the year when the earthworks will be carried out and the duration of the activity; and
- The degree to which the activity may cause or exacerbate erosion and/or other natural hazards on the site or in the vicinity of the site, particularly lakes, rivers, wetlands and the coastline; and
- The extent to which the activity may adversely impact on visual and amenity values; and
- The extent to which the activity may adversely affect cultural and spiritual values; and
- The number, trip pattern and type of vehicles associated with the activity; and
- The location, adequacy and safety of vehicular access and egress; and
- The means by which any adverse environmental effects of the activity will be avoided, remedied or mitigated.

6.2 Actual and Potential Effects on the Environment

The following assessment addresses those matters required by Clauses 6 and 7 of Schedule 4, and is subject to those considerations outlined in **Sections 6.1.1** to **6.1.3**. For the avoidance of doubt, and subject to Part 2 and s77M, the below also addresses those matters which Council must have regard to for the purpose of s104(a) and (ab).

6.2.1 Neighbourhood Character and Amenity

As described in **Section 2.2** above, the surrounding locality is residential in nature, situated in Kaikohe's residential area, 200m north of the town centre, surrounded by single-storey detached dwellings with lot sizes ranging from 500m^2 to 1000m^2. It is considered that the proposal is consistent with the built character of the wider environment.

The stormwater management system is designed to prevent any impact of stormwater on the surrounding environment's amenity beyond the project site. This will ensure that the existing neighbourhood character and amenity are maintained, and there will be no adverse effects on them.

6.2.2 Stormwater Management

The provision of infrastructure to service the development has been considered in the Infrastructure Report prepared by Civix (refer **Appendix 3**). Their report and drawings confirm that the site can be adequately serviced along with managing the additional stormwater runoff generated by the proposal.

As outlined in **Section 4.1** above, the proposal will exceed the maximum proportion of the gross site area covered by buildings and other impermeable surfaces of 50%, however, based on the following conclusions, it is considered that stormwater runoff from the site can be appropriately mitigated and will not result in any adverse effects to the surrounding environment. In particular:

- 2 x 5 130 L detention tanks have been proposed to mitigate flows for the 2- and 5-year storm events and have been proposed to 80 % of pre-development flows. The specific tank details have been outlined in the Infrastructure Report attached as **Appendix 3**.

Having regard to the above, it is considered that the proposed development can be adequately serviced, and low impact design measures utilised will ensure that any potential adverse effects specifically in regard to stormwater runoff are less than minor and acceptable on the receiving environment.

6.2.3 Earthworks

During construction, it is proposed to install temporary sediments and erosion control measures to mitigate any potential adverse effects as a result of the proposed excavation and filling. Any adverse effects on the environment are considered to be less than minor as:

- The maximum depth of excavation will be 0.6m and the maximum height of fill will be 0.8m which is below the permitted the permitted cut or fill face of 1.5m;
- The site is not subject to any known natural hazards that could be exacerbated by the proposed earthworks;

- Earthworks will be carried out during standard construction hours (daytime), such that any adverse lighting effects on the wider environment are not anticipated;
- There is sufficient space on the subject site and within the surrounding road network to provide parking for construction vehicles. It is considered that any adverse construction traffic effects will be temporary and able to be appropriately managed;
- The proposed works are being carried out to create level building platforms, vehicle access, car parking and outdoor living spaces. The development includes landscaping once earthworks are completed to enhance amenity and provide a variety of planting; and
- There are no waterways or significant indigenous vegetation that could be disturbed by the proposed earthworks.

6.2.4 Positive Effects

It is considered that the proposal will result in positive effects including:

- The development of a new dwelling of a size and layout that will provide a good level of amenity for future occupants;
- A development that enables residential activities at a density that is anticipated within the planned built environment of the Residential Zone;
- A site layout that will well considered and positively address both the public and private realm; and
- A development which has an attractive interface to the street and will contribute positively to the amenity of the area.

6.2.5 Environmental Effects Summary

Overall, it is considered that when taking into account the positive effects, any actual and potential adverse effects on the environment of allowing the activity are acceptable.

7.0 Statutory Planning Documents (section 104(1)(b))

The following addresses requirements under Clause 2 of Schedule 4 of the Act, requiring an applicant to undertaken assessment of the activity against any relevant provisions of a document referred to in s104(1)(b).

7.1 Far North District Plan

7.1.1 Operative Far North District Plan

Urban Environment

The objectives and policies for the Urban Environment chapter are contained in sections 7.3 and 7.4 of the Operative Far North District Plan. The primary focus of the objectives is to prevent any negative impact on the natural and physical landscape caused by urban activities. The objectives also aim to ensure that any potential effects of urban activities do not have an adverse impact on the character and amenity within the district.

The policies aim to support these objectives and ensure that stormwater systems for urban development are designed in a way that minimises any negative impact on the environment. Additionally, the policies aim to ensure that the permissible level of effects created or received in residential areas is appropriate for residential activities.

The proposal is considered to accord with these objectives and policies, as follows:

- The proposed development is single storey and is generally compliant with the zone bulk and location controls and is therefore considered to be in keeping with the nature of the built form sought for the zone.
- A detailed assessment of effects relating to stormwater management on adjacent properties has been carried out in section 8.3 below, and it is considered that any adverse effects will be less than minor.
- The attached Infrastructure Report (Appendix 3) details how the development has been designed to manage effects of stormwater to minimise adverse effects on the environment.
- The attached Infrastructure Report confirms that the development can be appropriately serviced.
- The building and impervious area coverage only exceeds the permitted standard by 1.8% which is considered minimal.

Soils and Minerals

The objectives and policies for the Soils and Minerals section of the Natural and Physical Resources Chapter are contained in section 12.3.3 and 12.3.4. The objectives seek to achieve an integrated approach between the district and regional councils and maintain the like supporting capacity of soils in the district. Objective 12.3.3.4 specifically seeks to avoid, remedy or mitigate adverse effects associated with soil excavation and filling. These objectives are supported by the policies which also aim for soil excavation and filling to be designed, constructed and operated to avoid, remedy or mitigate adverse effects on people and the environment.

The proposal is considered to accord with these objectives and policies, as follows:

- An erosion and sediment control plan has been prepared for the proposed development to mitigate potential effects during construction.
- Once earthworks are complete the site will be landscaped to mitigate potential adverse amenity effects.
- The proposed development requires only the necessary amount of earthworks, with efforts made to conserve soil and avoid any unnecessary disturbance.
- Earthworks has been proposed to mitigate and address any adverse impacts on people and the environment and is therefore considered acceptable.

7.1.2 Proposed Far North District Plan

General Residential Zone

The objectives and policies relating to the proposal are contained in sections GRZ-0 and GRZ-P of the Proposed Far North District Plan, and aim to encourage on-site water storage for sustainable water usage, consider low impact design principles and site's ability to manage stormwater and soakage, and ensure infrastructure can accommodate development.

The dwelling and landscaping proposed have been designed to minimise adverse effects relating to stormwater management as outlined in the Infrastructure Report attached as Appendix 3. The proposal will not increase the hazards and risk on site and adjoining sites relating to adverse stormwater environmental effects. Overall, it is considered the proposal is in accordance with the objectives and policies of the Proposed Far North District Plan.

Earthworks

The objectives and policies relating to earthworks are contained in sections EW-O and EW-P of the proposed Far North District Plan. Objective EW-O1 seeks that earthworks are enabled where they are required to facilitate the efficient subdivision and development of land, while managing adverse effects. Objective EW-O2 seeks that earthworks are appropriately designed, located and managed to protect historical, cultural, natural and environmental values, preserving amenity and safeguarding the life-supporting capacity of soils. EW-O3 outlines that earthworks are to be undertaken in a manner that does not compromise stability of land, infrastructure and public safety. These objectives are supported by Policies EW-P1-P8 which aim to enable earthworks for social, economic and cultural wellbeing, ensure earthworks are managed with regard to natural hazards, ensure earthworks are located and designed appropriately to manage effects, require that all earthworks are designed to ensure stability and manage the scale and volume of the activity.

The proposed earthworks will be undertaken with the erosion and sediment control methods required in the proposed district plan to mitigate potential effects during construction. The development site is not subject to natural hazards and the cut and fill depths are not to an extent that could potentially compromise land stability within the site or on adjacent sites. For these reasons, it is considered that the proposed development accords with the objectives and policies of the proposed Far North District Plan.

8.0 Notification Tests

8.1 Public Notification (Section 95A)

In accordance with s95A of the Act, a consent authority must follow the below steps in determining whether to publicly notify a resource consent application:

Step 1: Mandatory public notification in certain circumstances

Public notification is not required under Step 1, as the applicant has not requested that the application is notified and the application has not been made jointly within an application to exchange recreation reserved land under section 15AA of the Reserves Act 1977.

Step 2: If not required by step 1, public notification precluded in certain circumstances

Public notification of the application is not precluded under Step 2, as the applicable rules do not preclude public notification, and the proposal is not a controlled activity or boundary activity. Therefore, public notification is not precluded.

Step 3: If not precluded by step 2, public notification required in certain circumstances

Public notification of the land use consent application is not required under Step 3, as an assessment has been carried out in **Sections 6.2.1** to **6.2.3** and it is concluded that effects on the wider environment will or are likely to be less than minor.

Importantly, for the purposes of Step 3, positive effects and any effects on persons owning or occupying the subject site and any adjacent land must be excluded from consideration. The land which must be excluded is shown in **Figure 3** below.

Figure 3: Adjacent properties to be excluded from s95A consideration (outlined yellow) in relation to the application site.

Step 4: Public notification in special circumstances

Public notification is not required under Step 4, as the proposal is for a residential activity on a residentially zoned site that is provided for under the Far North District Plan as a restricted discretionary activity. As such, it is considered that there is nothing special or note worthy about the proposal.

Further, as discussed in the report above, it is considered that the development fits within the character of the area (including the consented and future permitted built form and that any adverse effects will be less than minor. There is not considered to be anything about the proposed intensity of the development nor its scale, form and appearance that is considered to give rise to special circumstances). It is considered that there is nothing noteworthy about the proposal. It is therefore concluded that the application cannot be described as being out of the ordinary or giving rise to special circumstances.

8.2 Limited Notification (Section 95B)

In accordance with s95B of the Act, a consent authority must follow the below steps in determining whether to limited notify a resource consent application:

Step 1: Certain affected groups and affected persons must be notified

Limited notification is not required under Step 1, as the proposal is not considered to affect protected customary rights grounds or customary marine title, and the site is not subject to or adjacent to a statutory acknowledgement.

Step 2: If not required by step 1, limited notification precluded in certain circumstances

Limited notification of the application is not precluded under Step 2, as the applicable rules do not preclude public notification, and the proposal is not a controlled activity or boundary activity. Therefore, public notification is not precluded.

Step 3: If not precluded by step 2, certain other affected persons must be notified

Assessment of whether there are any affected persons is included below in **Section 8.3**, and considers effects on persons subject to those considerations outlined in **Section 6.1**.

Limited notification of the application is not required under Step 3, as an assessment has been carried out and is included below in **Sections 8.5.3** to **8.5.6** which concludes that effects on persons will be less than minor.

Step 4: Further notification in special circumstances

Limited notification is not required under Step 4, for the reasons set out in **section 8.1** above.

8.3 Identification of Affected Persons

In accordance with s95E, a person is an affected person if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (but are not less than minor).

Importantly, a consent authority must disregard an adverse effect on a person who has given and not withdrawn their written approval for the proposal. In relation to the application, no written approvals were obtained.

In the following assessment, particular regard was had to those owners and occupiers of land identified in **Figure 4** below.

Figure 4: Adjacent properties to be considered in the s95E (outlined in yellow) in relation to the application site.

The following comments apply to persons at all adjacent properties:

- The proposal involves landscaping throughout the site which will assist in softening views of the development and allowing the dwelling to blend into the suburban character intended for the zone;
- It is considered that no persons will be adversely affected by the proposed earthworks for the reasons identified in section 6.2.3 above. The effects on adjacent properties during construction will be temporary and less than minor;
- In terms of the exceedance of 50% impermeable area under Rule 7.6.5.1.6, a Civil Engineering Report has been prepared and attached as **Appendix 3**. This concludes that detention tanks have been proposed to mitigate flows for the 2 and 5-year storm event proposing 80% of pre-development flows. As outlined in the report, 2 x 5,130 L tanks have been proposed. Based on the above, any adverse effects to the adjacent neighbours as a result of stormwater management will be appropriately mitigated and will have less than minor adverse effects.

8.4 Notification Conclusion

In accordance with the above statutory tests, it is considered that the application may be processed without public notification.

In accordance with the above statutory tests, it is considered that the application may be processed without limited notification.

9.0 Part 2 of the Act

As set out in s104, a consent authority must have regard to Part 2 of the Act when considering and making a decision on a resource consent application. Part 2 comprises the 'Purpose and Principles' of the Act, with a focus on (paraphrased):

- The sustainable management of natural and physical resources, so as to safeguard their life-supporting capacity for future generations, and avoid, remedy, or mitigate adverse effects on the environment (s5);
- The recognition and protection of matters of national importance (s6);
- The recognition that other significant resource management matters should be given sufficient regard (s7); and
- The incorporation of the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) into the decision making process.

Notwithstanding the above, the Court of Appeal in *RJ Davidson Family Trust v Marlborough District Council* [2018] found that reference to Part 2 need not be necessary if a plan has been competently prepared having sufficient regard to Part 2.

In this case, it is considered that the Auckland Unitary Plan (Operative in Part) has a coherent and consistent set of provisions which collectively will achieve clear environmental outcomes, thereby addressing the purpose and principles of the Act. Assessment of the proposal against relevant Objectives and Policies has been undertaken in earlier sections of this report, and it is considered that no further Part 2 assessment is required in this instance.

10.0 Conclusion

As described in the above report, and in relation to the proposal which involves one new dwellings and subdivision at 25 Wihongi Street, Kaikohe it is concluded that:

- Public notification is not required as adverse effects are considered to be less than minor.
- Limited notification is not required as no persons at adjacent properties are considered to be adversely affected by the proposal;
- The proposal accords with the relevant Far north district plan objectives and policies; and
- The proposal is considered to be consistent with Part 2 of the Act.

It is therefore concluded that the proposal satisfies all matters the consent authority is required to assess, and that it can be granted on a non-notified basis.

Ngā mihi,

Luke Paanakker

Planner

Babbage Consultants Limited

14/06/2024

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Guaranteed Search Copy issued under Section 60 of the Land Transfer Act 2017

R.W. Muir
Registrar-General
of Land

Identifier **NA977/266**

Land Registration District **North Auckland**

Date Issued 28 September 1950

Prior References
NA952/224

Estate Fee Simple

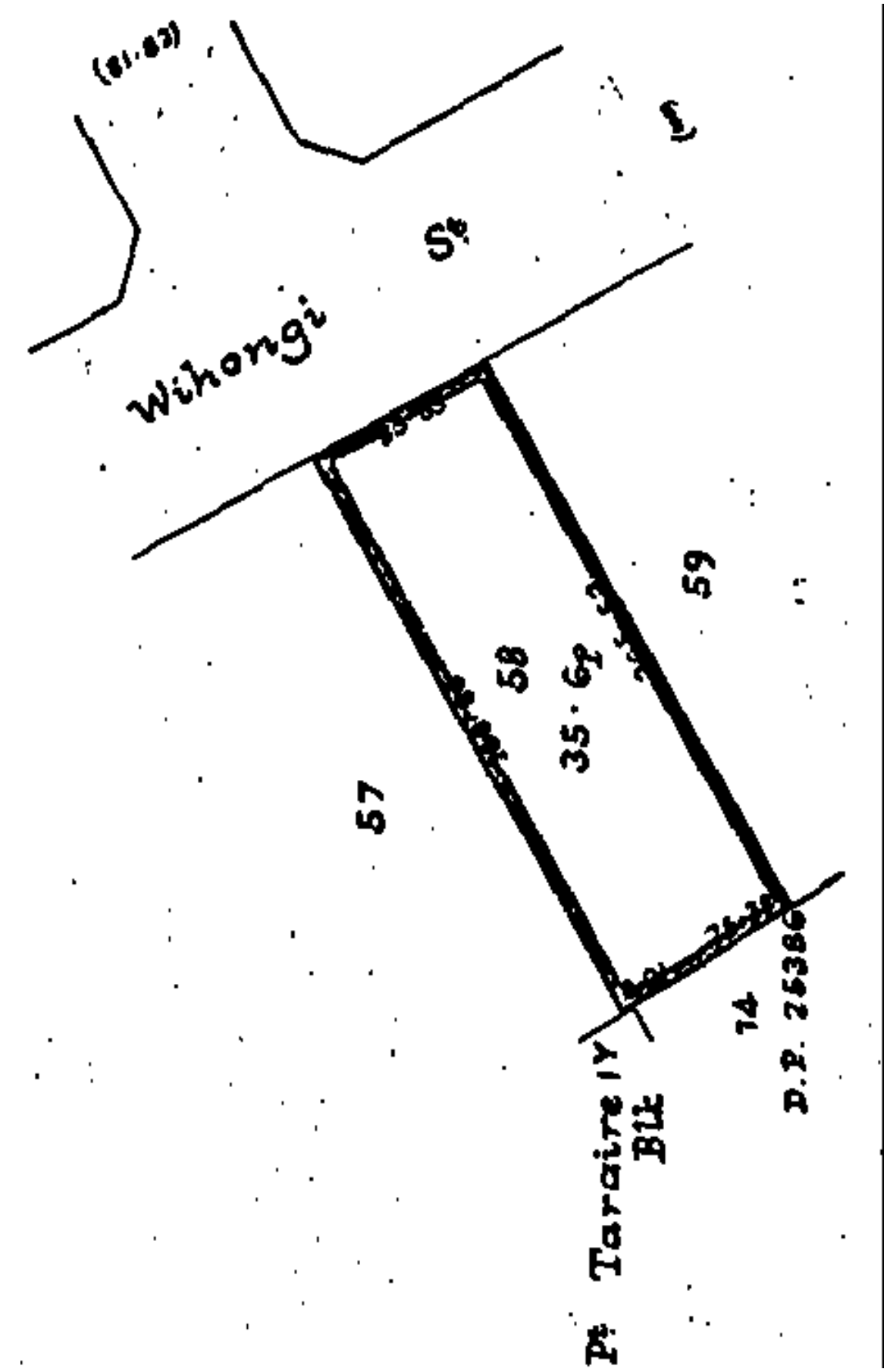
Area 900 square metres more or less

Legal Description Lot 58 Deposited Plan 36638

Registered Owners
Housing New Zealand Limited

Interests

Fencing Agreement in Transfer 480593 - 28.9.1950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TRAFFIC PLANNING CONSULTANTS LTD

PROPOSED RESIDENTIAL DEVELOPMENT
TRANSPORT ASSESSMENT

25 WIHONGI STREET
KAIKOHE

Project Information:

Client	Kāinga Ora – Homes and Communities
Job Number	240236
Title	Proposed Residential Development, 25 Wihongi Street, Kaikohe
Prepared By	Peter Kelly
Date	June 2024
Report Status	Final

Auckland Office:
PO Box 60-255, Titirangi, Auckland 0642
Level 1, 400 Titirangi Road, Titirangi Village
Tel: (09) 817 2500
Fax: (09) 817 2504
www.trafficplanning.co.nz

1.0 INTRODUCTION

The proposal consists of constructing one × five-bedroom dwelling with two parking spaces, accessing onto Wihongi Street. The site is zoned as General Residential under the Far North District Council (FNDC) Operative District Plan. **Figure 1** displays the subject site location and proposed access point.

Figure 1: Site Location
Image Source: Google Maps

2.0 EXISTING TRANSPORT ENVIRONMENT

2.1 Road Network

Wihongi Street is a local road which forms an intersection with Broadway (State Highway 12) at its southern end and terminates in the north some 140 metres beyond Shaw Street. Near the subject site Wihongi Street has a carriageway width of some 12.5 metres providing one traffic lane in each direction. On-street parking is permitted on both sides of the carriageway. Footpath measuring some 1.5 metres wide are provided along both sides of the road. It has a posted speed limit of 50 km/h.

No traffic data was available for Wihongi Street and the scale of the proposal does not warrant detailed data to be collected. Using Information from Mobil Road[1] and applying engineering judgement to determine the traffic volumes suggests that Wihongi Street carries some 1,700 vehicles per day and 170 vehicles during peak hours.

2.2 Crash History

Information from the New Zealand Transport Agency's "Crash Analysis System" for the five+ year period from January 2019 to present (2024 data subject to reporting delays) midblock along Wihongi Street within 200 metres from the site indicates that a total of nine crashes were reported which are summarised as follows:

- Intersection of Wihongi Street and De Merie Street:
  - 3 × Driver failed to stop at stop sign and hit approaching vehicle with right-of-way. Two crashes resulted in minor injuries were reported.
  - 1 × Driver lost control under acceleration and left road, hitting fence/building.
  - 1 × Driver lost control due to speed, hit fence and then fled scene.
- Intersection of Wihongi Street and Sydney Street:
  - 1 × Driver failed to give-way to approaching motorcyclist, and the two collided.
- Midblock Wihongi Street:
  - 1 × Driver too far left hit vehicle parked on street and then fled scene.
  - 1 × Driver intentionally tried to hit pedestrian and as a result hit fencing (no pedestrian hit).
  - 1 × Pedestrian ran out into the carriageway heedless of traffic during evening conditions, resulting in a minor injury.

Reviewing the crash data, there was commonality in crashes with drivers failing to obey priority control devices. When the intersection types were reviewed, the available sightlines at the intersections appear to be appropriate and as such drivers do not seems to be exercising due care, as the intersection is considered highly visible.

[1] Mobil Road - https://mobileroad.org/

3.0 THE PROPOSAL

The proposal consists of constructing one × five-bedroom dwelling with two parking spaces, accessing onto Wihongi Street. The plan used for the basis of this assessment is shown in **Figure 2**.

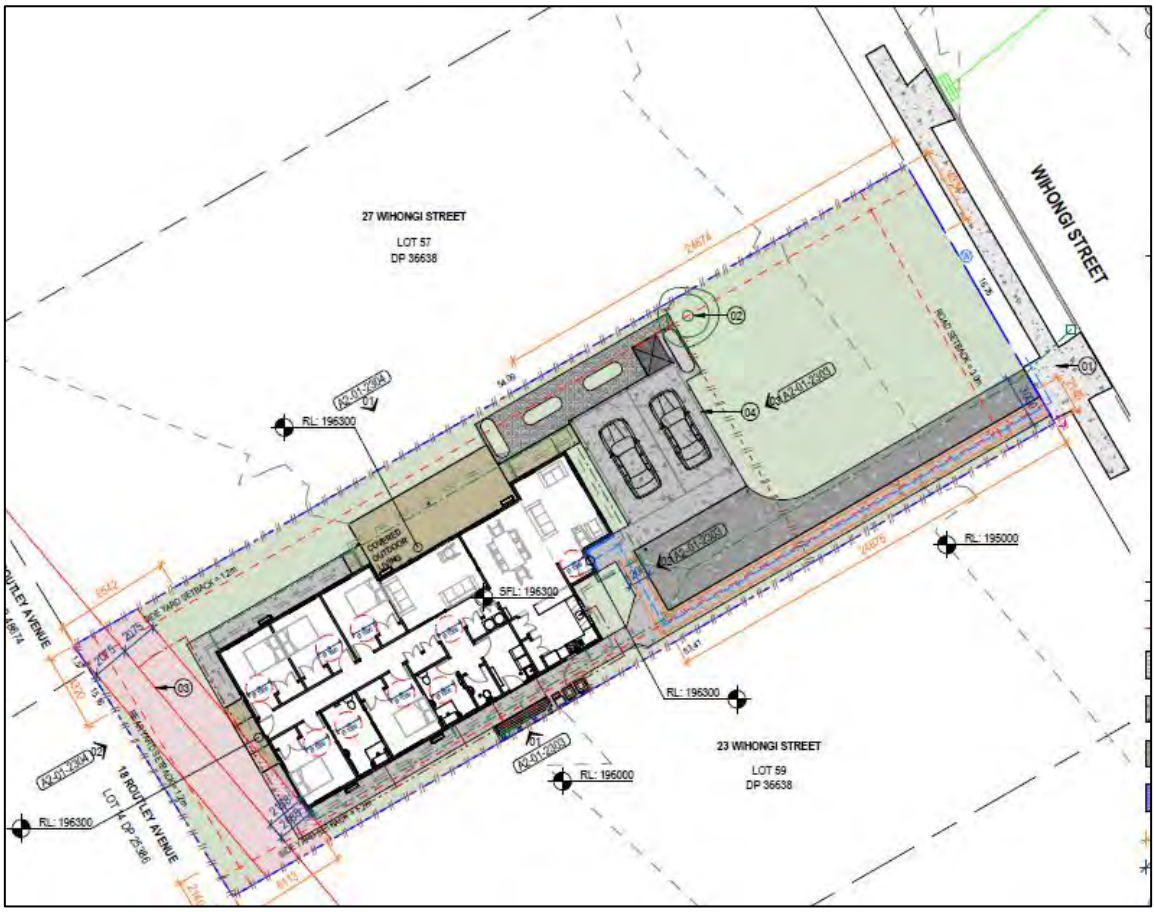

Figure 2: Proposed Site Plan
Image Source: Young + Richards

4.0 FAR NORTH DISTRICT PLAN STANDARDS

Chapter 15 – Transportation, Section 1 – Traffic, Parking and Access of the Far North District Council – Operative Plan (FNDP) sets out the objectives, policies, and rules relating to transportation within the context of this development. The transportation objectives of the FNDP are:

- 15.1.3.1: To minimise the adverse effects of traffic on the natural and physical environment.
- 15.1.3.2: To provide sufficient parking spaces to meet seasonal demand in tourist destinations.
- 15.1.3.3: To ensure that appropriate provision is made for on-site car parking for all activities, while considering safe cycling and pedestrian access and use of the site.
- 15.1.3.4: To ensure that appropriate and efficient provision is made for loading and access for activities.
- 15.1.3.5: To promote safe and efficient movement and circulation of vehicular, cycle and pedestrian traffic, including for those with disabilities.

The transportation policies of the FNDP are:

- 15.1.4.1: That the traffic effects of activities be evaluated in making decisions on resource consent applications.
- 15.1.4.2: That the need to protect features of the natural and built environment be recognised in the provision of parking spaces.
- 15.1.4.3: That parking spaces be provided at a location and scale which enables the efficient use of parking spaces and handling of traffic generation by the adjacent roading network.
- 15.1.4.4: That existing parking spaces are retained or replaced with equal or better capacity where appropriate, so as to ensure the orderly movement and control of traffic.
- 15.1.4.5: That appropriate loading spaces be provided for commercial and industrial activities to assist with the pick-up and delivery of goods.
- 15.1.4.6: That the number, size, gradient and placement of vehicle access points be regulated to assist traffic safety and control, taking into consideration the requirements of both the New Zealand Transport Agency and the Far North District Council.
- 15.1.4.7: That the needs and effects of cycle and pedestrian traffic be taken into account in assessing development proposals.
- 15.1.4.8: That alternative options be considered to meeting parking requirements where this is deemed appropriate by the Far North District Council.

Table 1 lists the relevant standards that apply to this development and comments on compliance. Where there is non-compliance, further assessment has been undertaken against the criteria set out in the FNDP.

Table 1: Transport Development Standards

Development Standard	Requirement/Details	Comment
15.1.6A Traffic	Sets the threshold for when activities are classified as permitted (P), controlled (C), Restricted Discretionary (RC), or Discretionary (D), and the associated assessment criteria.	The site activity is estimated to have a trip generation of 9 vehicle movements, within a residential zone (TIF of 10) – **complies**
15.1.6B.1.1 On-Site Car Parking Spaces	Defines the number of parking spaces required for new developments.	The site will provide two parking spaces for the dwelling – **complies**
15.1.6B.1.4 Accessible Car Parking Spaces	Defines the number and dimensions of accessible parking spaces required for new developments.	The site will be residential in nature and does not require accessible parking to be provided – **does not apply**
15.1.6B.1.5 Car Parking Space Standards	Defines the size and layout requirements for new parking spaces.	Parking within the site will be within sealed areas – **complies** 90-degree spaces are 3.0 or 3.5 metres wide, 6.6 metres deep and have at least 6.4 metres of manoeuvring depth – **complies**
15.1.6B.1.6 Loading Spaces	Defines the number and dimensions of loading spaces required for new developments.	The site is located within a residential zone, where loading spaces are not required – **does not apply**
15.1.6C.1.1.a Private Access Widths	Defines the minimum access widths.	The access will serve one dwelling and will be provided with a formed width of 3.0 metres – **complies**
15.1.6C.1.1.b Private Access Gradients	Defines the minimum access gradients.	The gradients within the accessway will be no steeper than 1 in 20 (5%) within a residential zone **- complies**
15.1.6C.1.1.c Number of Sites by Private Access	Defines the number of sites permitted to be served by a private access.	The access will serve one dwelling, where a maximum of eight are permitted to be served via a private access – **complies**
15.1.6C.1.1.e Private Accessway Location	Defines the suitable locations for private access.	The access is located onto Wihongi Streer – **complies** The access location is within 10 metres of the intersection of Wihongi Street and Heke Street, where both roads are local roads **– complies**
15.1.6C.1.3 Passing Bays on Private Accessways	Defines the requirements for passing bay dimensions and spacing.	The access does not require a passing bay – **does not apply**
15.1.6C.1.4 Access Over Footpaths	Defines the number of and width of vehicle crossings, where formed across a footpath.	One, 3.0 metres wide vehicle crossing is proposed for the site where there is a public footpath present along the site frontage – **complies**

Development Standard	Requirement/Details	Comment
15.1.6C.1.6 Vehicle Crossing Standards in Urban Zones	Defines the structural and surfacing requirements for vehicle crossings.	The vehicle crossing will be sealed from the carriageway edge to the site boundary – **complies** The vehicle crossing will be 3.0 metres wide at the boundary, facilitating one-way vehicle movement, where serving one dwelling – **complies** The vehicle crossing will be formed in accordance with FNDC Engineering Standards – **complies**
15.1.6C.1.7 General Access Standards	Defines access requirements with respect to vehicle circulation and on-site manoeuvring.	Vehicles will enter and exit the site in a forward direction as illustrated in **Attachment 1** – **complies**
15.1.6C.1.8 Frontage to Existing Roads	Defines the requirements for public road improvements as a result of site development.	The site will be provided access via Wihongi Street only – **complies**
15.1.6C.1.11 Road Designations	Defines the requirements for a site where the frontage road is subject to a road designation.	Wihongi Street and the subject site are not subject to any designations, as per Zone Map 103 – **does not apply**

5.0 CONCLUSION

Based on the assessment described in this report, the following conclusions can be made in respect of the proposal to establish one residential dwelling at 25 Wihongi Street, Kaikohe:

- A review of the transport standards has identified no items which require consent under the FNDP, where pertaining to transport matters.
- Vehicle and pedestrian access to the site are designed to a suitable standard such that the proposal will have less than minor effects on the surrounding road network.

Overall, it is considered that the traffic engineering effects of the proposal can be accommodated on the road network without compromising its function, capacity, or safety.

Prepared by,

Peter Kelly
Senior Transportation Engineer

ATTACHMENT 1:

VEHICLE TRACKING DIAGRAMS

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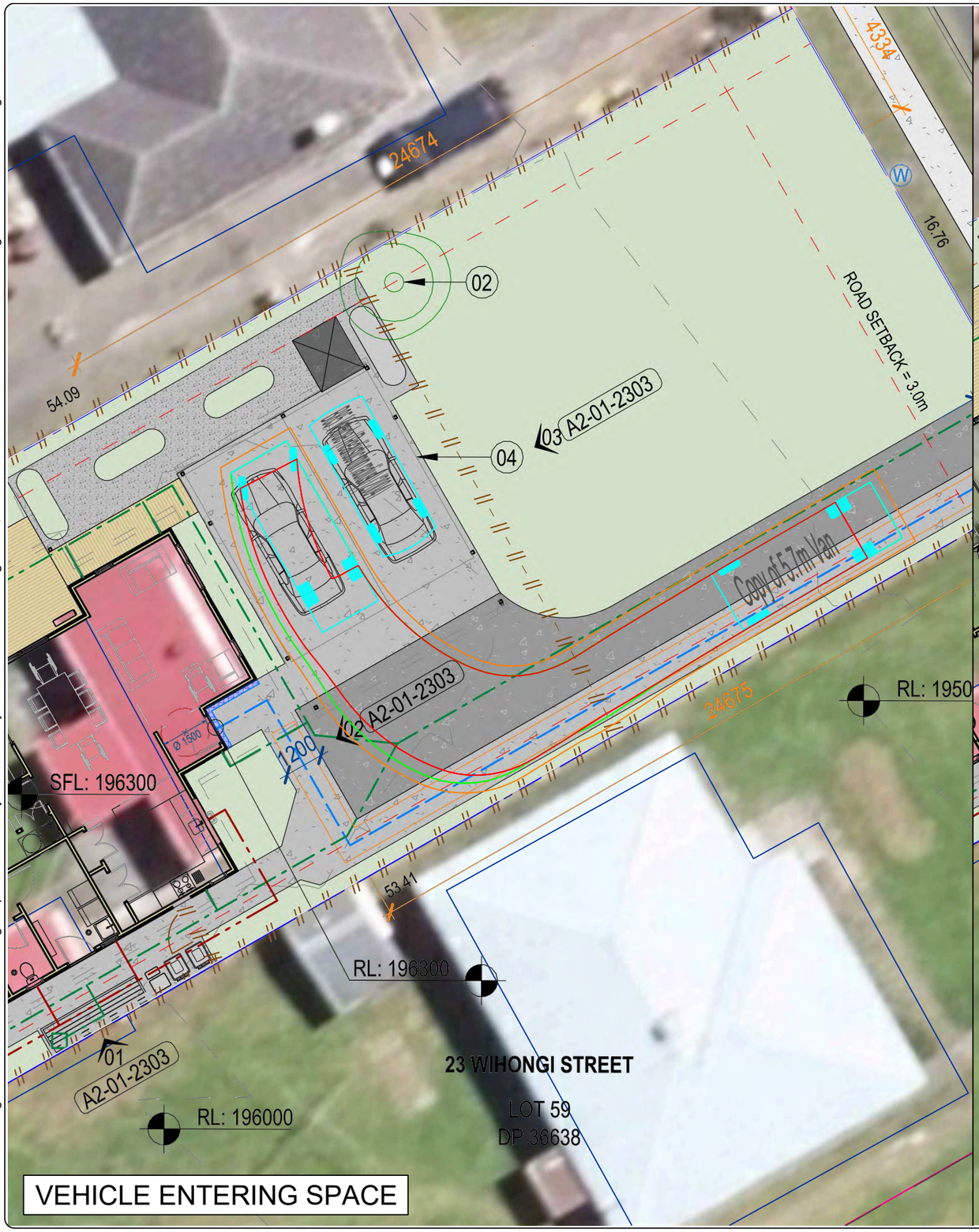

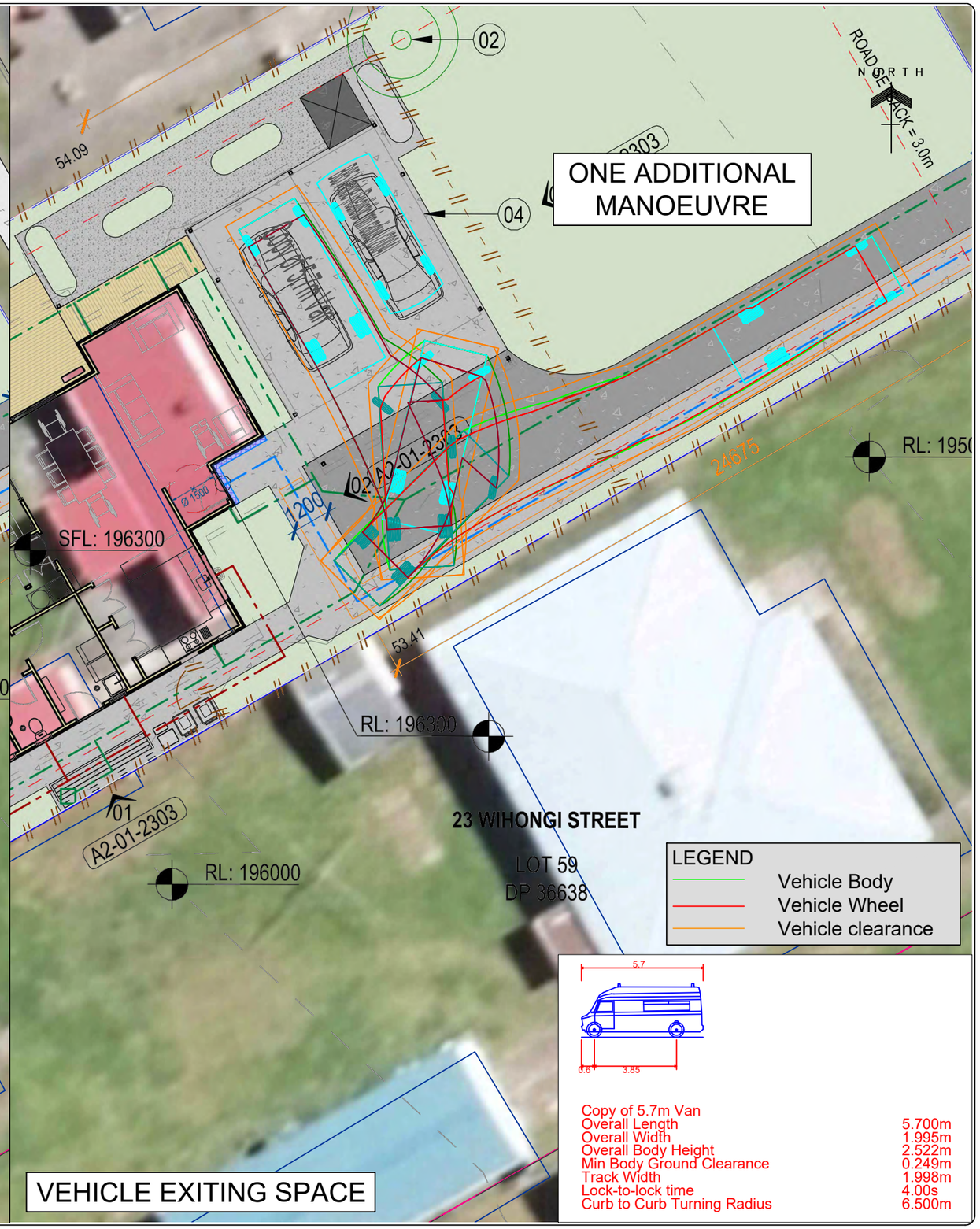

Rev	Revisions	By	Date

TPC TRAFFIC PLANNING CONSULTANTS LTD
Level 1, 400 Titirangi Rd, Titirangi, P.O Box 60-255, Auckland 0604
Phone: 09 817-2500 www.trafficplanning.co.nz

Project Title: Proposed Development
25 Wihongi Street, Kaitaia

Sheet Title: Vehicle Tracking - 5.7m Van

Designed	IY	Drawn	IY	Project No - (Sheet No)	Scales 1:150 (A3)
Checked	PK	Approved	PK	240236 VTD - (1)	Date 10.06.24

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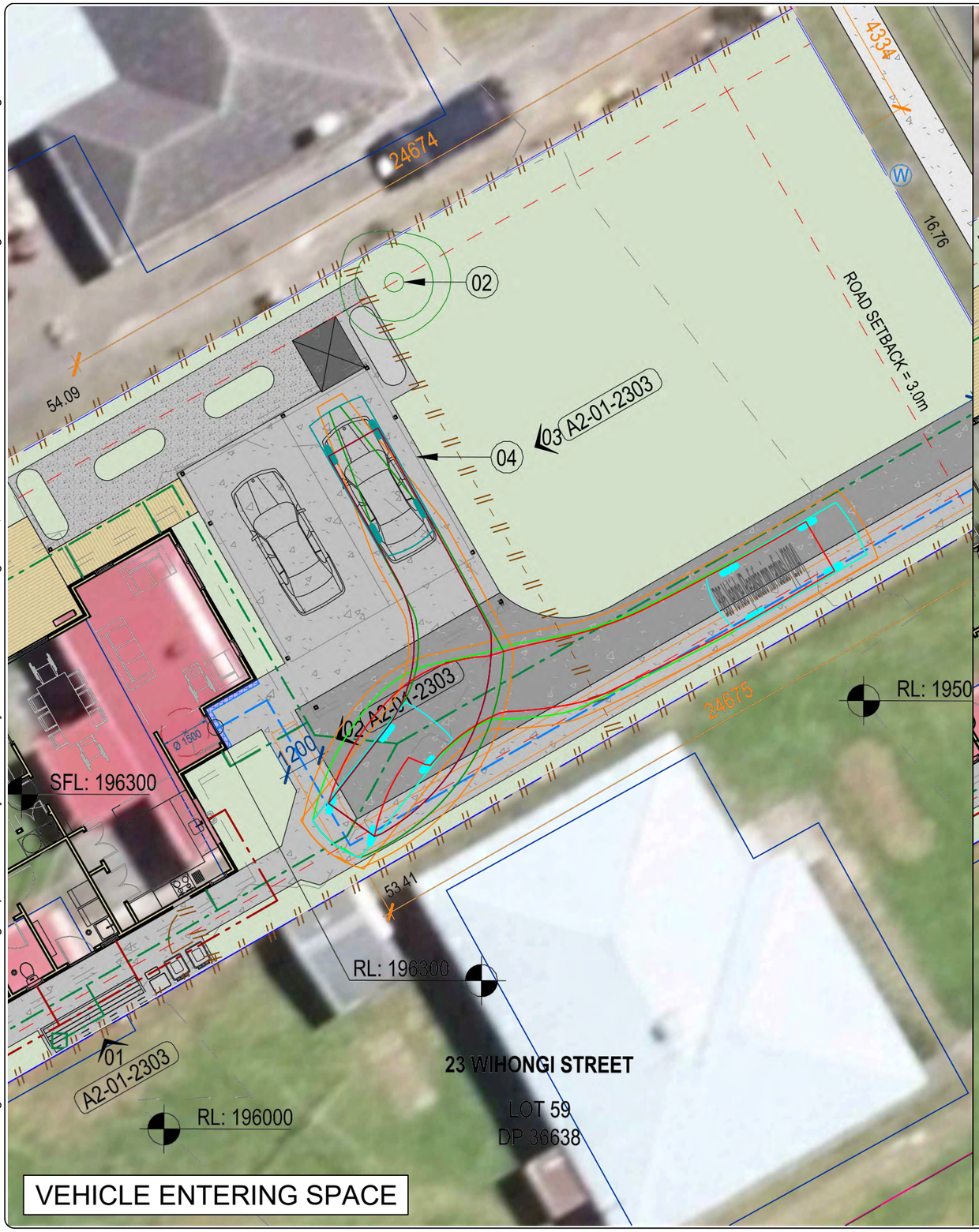
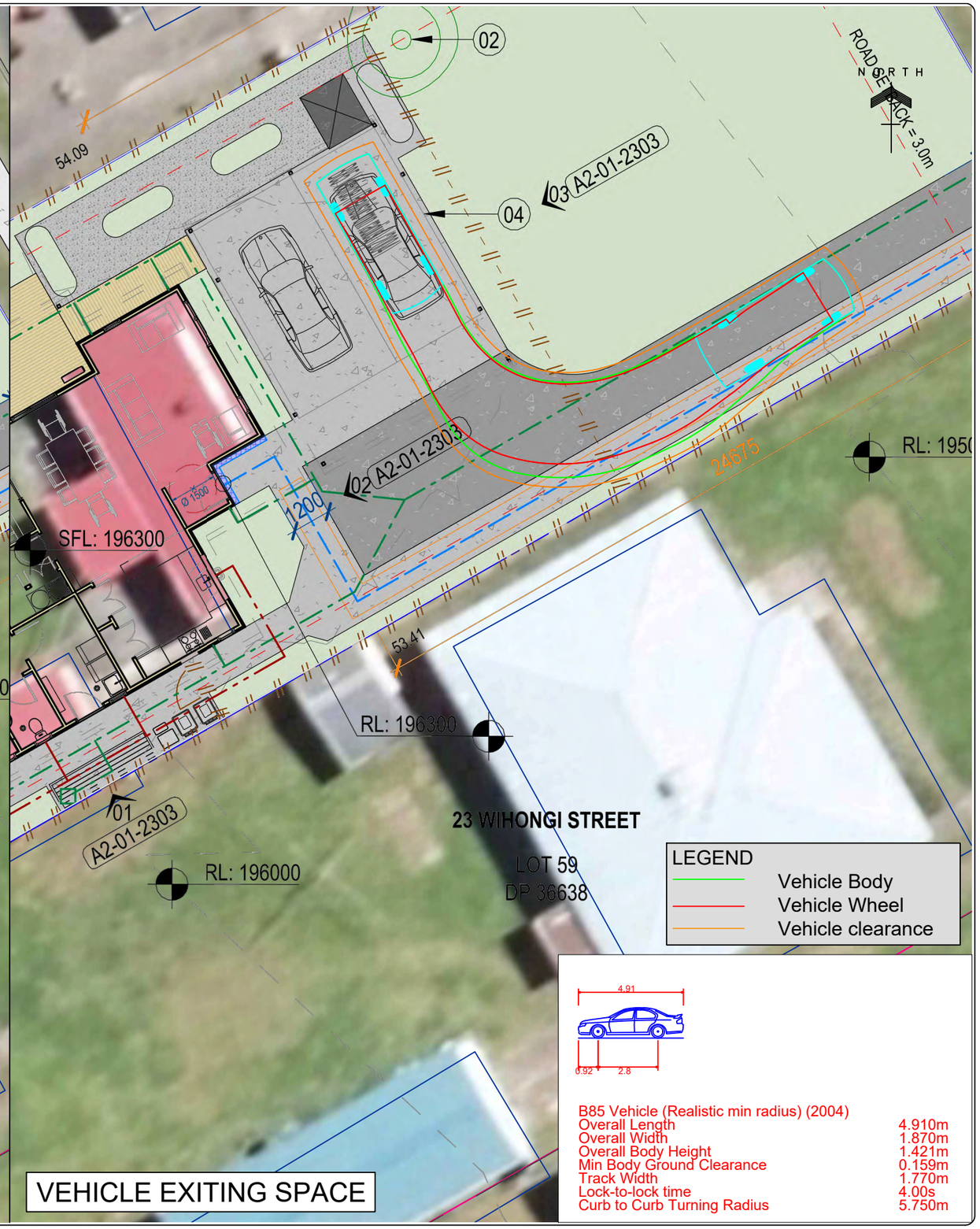




Rev	Revisions	By	Date

TPC TRAFFIC PLANNING CONSULTANTS LTD
Level 1, 400 Titirangi Rd, Titirangi, P.O Box 60-255, Auckland 0604
Phone: 09 817-2500 www.trafficplanning.co.nz

Project Title: Proposed Development
25 Wihongi Street, Kaitaia

Sheet Title: Vehicle Tracking - B85 Vehicle

Designed	IY	Drawn	IY	Project No - (Sheet No)	Scales 1:150 (A3)
Checked	PK	Approved	PK	240236 VTD - (2)	Date 10.06.24

Geotechnical Report

25 Wihongi Street, Kaikohe

Prepared for Kāinga Ora
Prepared by Beca Limited

25 April 2024

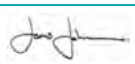
Contents

Appendices

Revision History

Revision Nº	Prepared By	Description	Date
01	Olivia Mark	For Resource Consent	25.04.24

Document Acceptance

Action	Name	Signed	Date
Prepared by	Olivia Mark		25.04.24
Reviewed by	James Johnson		25.04.24
Approved by	James Johnson		25.04.24
on behalf of	Beca Limited		

Executive Summary

Ground Investigations Conducted	
3x Cone Penetrometer Tests (CPTs)	
3x Hand Augers (HAs)	
1x Shrink Swell Tests	
2x Liquid Limit	
2x Linear Shrinkage	
2x Moisture Content	
Ground Conditions	
The site investigations revealed a soil profile consisting of 1.00-2.00m of Kerikeri Volcanic Group soils overlying Kerikeri Volcanic Group Basalt.	
Seismic Assessment	
NZS1170.5 Site Subsoil Class for Structural Design	Site Class C
Predicted maximum SLS free field liquefaction settlements	Negligible
Predicted SLS free field lateral displacements	Negligible
Predicted maximum ULS free field liquefaction settlements	Negligible
Predicted ULS free field lateral displacements	Negligible
Design and Foundation Recommendations	
Measured depth to groundwater at time of investigations	Not encountered up to 2.00mbgl
Measured topsoil thickness	0.30 m
Recommended foundation type	Shallow Foundation – Waffle Slab
Recommended ultimate bearing capacity	300 kPa (shallow foundations)
Predicted long term static settlement	<20 mm. Less than 20mm over 6m.
Recommended driveway CBR	3%

1 Introduction

Kāinga Ora is redeveloping the site at 25 Wihongi Street, Kaikohe. Beca Ltd (Beca) has been commissioned to undertake a geotechnical investigation and to provide analysis and recommendations to support the redevelopment of the site. This report outlines the findings from the geotechnical investigations, along with geotechnical design recommendations.

2 Site Location & Description

The house redevelopment is located in Kaikohe, at 25 Wihongi Street. The site is being uplifted from a single dwelling to a single dwelling on a plot covering an area of 900m^2. The site has predominately flat topography and is located 565 m west from the nearest waterway (Far North District Council, 2024). A review of historic aerial imagery shows the land was previously used for agricultural purposes. Residential development started in the area between as early as 1950 (Retrolens, 2016). The existing dwelling was built in 1952 (Kāinga Ora, 2023). The site location of the development is presented in Figure 1.

Figure 1: Site location plan

The *Far North Council Flood Modelling* database indicates there is no overland flow path on the site. The site is not classified as Flood Prone, and not located in a Flood Plain or in a tsunami evacuation zone (Far North District Council, 2024). Refer to information prepared by Civix Ltd for civil constraints.

3 Geology

3.1 Published Geology

The 1:250,000 published geological map, *Geology of the Kaitaia Area* (Isaac, 1996) indicates the site is underlain by Early Pleistocene to Late Pleistocene Kerikeri Volcanic Group basalt, Bay of Islands Volcanic Field. These deposits comprise “basalt lava and volcanic plugs”.

The geological map can be seen in Figure 2.

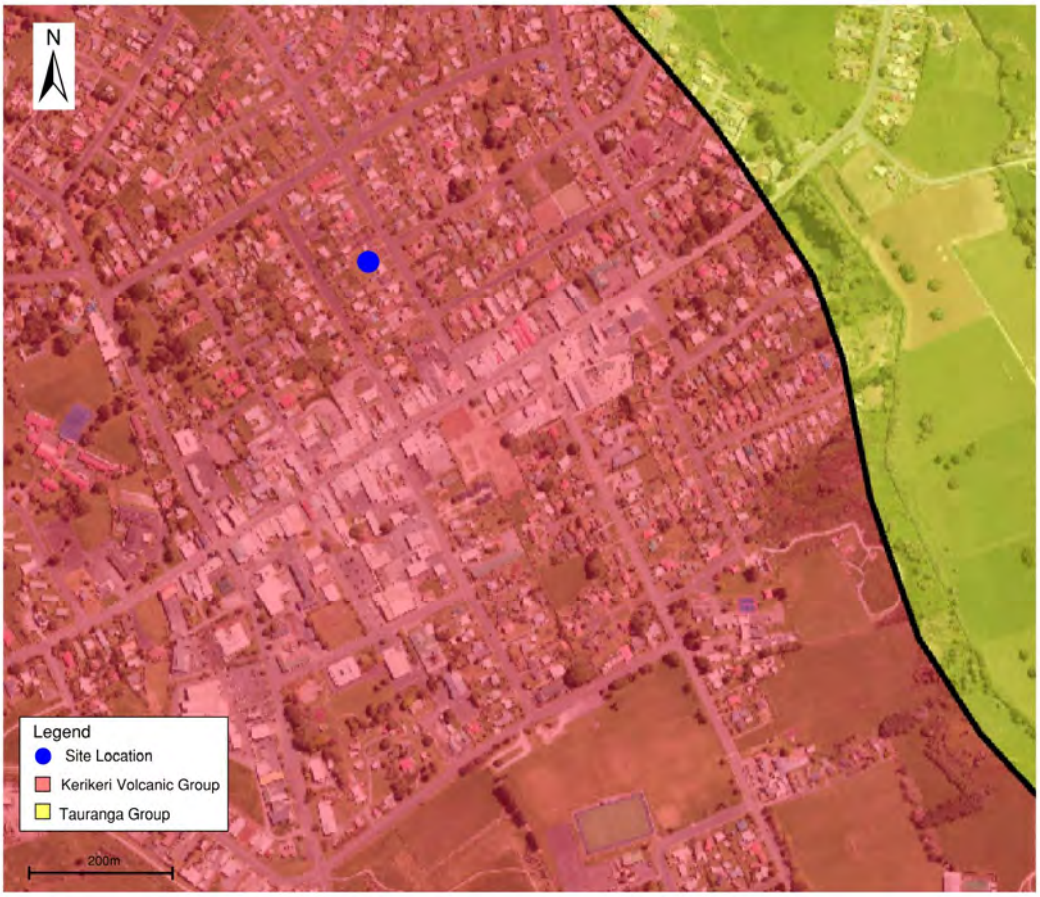


Figure 2: Geological map of Kaikohe (Geology 2.0.0 (gns.cri.nz)) showing property location.

3.2 Active Faults

The *GNS Science New Zealand Active Faults Database* (GNS Science, 2020) indicates the nearest active fault is the Waikopua Fault approximately 215 km south-east of the site. Additional unknown or unpublished faults may be present in closer proximity but have not been identified in this database.

4 Geotechnical Investigation

4.1 Previous Geotechnical Investigations

The *New Zealand Geotechnical Database* (NZGD, 2016) and the *Beca Geotechnical Reports Database* (Beca, 2022) indicates there are few existing geotechnical data within 250m of the site. The information showed the site is likely to be underlain by Kerikeri Volcanic Group. Rock is expected to be encountered around 1.50 – 3.0m below ground level (bgl). Groundwater was measured at a depth of 3.10mbgl.

4.2 Recent Geotechnical Investigations

Geotechnical site investigations were undertaken on 8th of April 2024. Investigation locations were surveyed before construction in terms of NZTM2000 and NZVD2016 and are presented in Appendix A. Site investigations were observed and logged by two Beca Geo-professionals, and the logs have been verified by a Beca Senior Engineering geologist.

Investigations comprised 3 Hand Augers (HAs) with shear vane / scala penetrometer measurements and 3 Cone Penetration Tests (CPTs). A summary of investigations is provided in Table 2.

- The hand auger logs and photographs are presented in Appendix B.
- Soil recovered by hand augers was logged in general accordance with the NZGS guideline *Field description of soil and rock* (NZGS, 2005).
- Scala penetrometer tests were completed in general accordance with methods described in *NZS 4402 Test 6.5.2* (Standards New Zealand, 1988). Testing was undertaken in non-cohesive layers between the ground surface and 1m below the final hole depth. The hole was augured between tests, and a maximum of one rod length per test.
- Shear vane tests were completed in general accordance with the NZGS *Guideline for Hand Held Shear Vane Test* (NZGS, 2001). Testing was undertaken in cohesive layers between the ground surface and the base of the augured hole at 250mm intervals.
- CPTs were undertaken by LandTech Consulting Ltd in general accordance with *ASTM D5778-20* (American Society for Testing and Materials, 2020). Test records for cone resistance, sleeve friction, friction ratio, zero drift and pore pressure are included in Appendix C.
- Laboratory testing was completed as part of expansive soil assessment. Sample IDs and results are presented in Table 3 and shown in Appendix D.
- No laboratory testing was completed as part of liquefication assessment as in-situ testing completed on site was sufficient.

4.3 Standards and Calibration

Investigations were undertaken in general accordance with the *New Zealand Ground Investigation Specification* (NZGS, 2017), and a list of standards used during the site investigation is shown in Table 1.

Table 1: Summary of standards adhered to during investigations

Field Procedure	Standard Used
Soil and Rock Logging	In general accordance with *Field description of soil and rock* (NZGS, 2005)
Hand-Held Shear Vane Test	In general accordance with *Guideline for Hand Held Shear Vane Test* (NZGS, 2001)
Scala (Dynamic Cone) Penetrometer Testing	In general accordance with *NZS 4402.6.5.2* (Standards New Zealand, 1988)
Cone Penetration Testing	*ASTM D5778-20*[1] (American Society for Testing and Materials, 2020)

Notes: 1 Standard widely adopted by contractors in NZ with the requirement of a maximum of half the allowable zero drift limit

Up to date calibration certificates for equipment used during investigations are attached in Appendix D.

4.4 Ground Investigation Summary

Table 2: Summary of ground investigations completed

Hole ID	Location	Easting (m)	Northing (m)	Ground Level (m RL)	Total Depth (m bgl)	GWL (m bgl)
AR109551-GE-HA01	25 Wihongi Street, front yard, 10m from eastern boundary.	1672705.7	6081776.7	195.18	1.70	N/E
AR109551-GE-CPT01					2.10	N/E
AR109551-GE-HA02	25 Wihongi Street, middle of property ~4m from southern boundary.	1672688.9	6081760.9	195.99	2.00	N/E
AR109551-GE-CPT02					0.80	N/E
AR109551-GE-HA03	25 Wihongi Street, backyard in northeast corner, 2m from northern fence.	1672671.5	6081759.5	196.36	1.00	N/E
AR109551-GE-CPT03					0.47	N/E

Notes:

RL (Relative Level)

m bgl (metres below ground level)

GWL (Groundwater Level)

N/E (groundwater Not Encountered)

Survey coordinates are given in NZTM2000 and NZVD2016.

4.5 Laboratory Testing

Laboratory testing has been undertaken on selected soil samples collected during the investigation. Tests undertaken are in accordance with:

- Soil Reactivity Test – Shrink-Swell Index *AS 1289.7.1.1 2003* (Standards Australia, 2003). The Site Classification of the samples are classified using Table 2.3 in *AS 2870:2011* (Standards Australia, 2011).
- Atterberg Limits – *NZS4402:1986* Tests 2.2, 2.3 and 2.4 (Standards New Zealand, 1988).
    - Liquid Limit – Test 2.2
    - Plastic Limit – Test 2.3
    - Plasticity Index – Test 2.4

Laboratory testing completed is summarised in Table 3, and full results are presented in Appendix E. Undisturbed samples used for shrink swell testing were collected adjacent to CPT locations. Disturbed samples used to determine linear shrinkage and Atterberg limits were collected from hand auger material.

Table 3: Summary of Lab Testing Data

Hole ID	Sample Depth Top (m)	Sample Depth Bottom (m)	Shrink Swell Index (%)	Liquid Limit (%)	Linear Shrinkage (%)	Moisture Content (%)
AR109551-GE-S01 (CPT01)	0.30	0.50	3.5 [M]	-	-	-
AR109551-GE-S02 (HA01)	0.50	0.80	-	81	21	34.1
AR109551-GE-S03 (HA03)	0.40	0.70	-	67	16	29.3
[x] = site classification						

4.6 Groundwater

Depth to groundwater was measured in CPT and hand auger holes following the completion of drilling. Groundwater depths measured in hand auger holes are considered to be more representative of true levels at the time of investigation. Depths measured in CPT holes are only indicative as natural groundwater levels may be disturbed during testing, and groundwater levels may not stabilise between the completion of testing and time of measurement. Measured groundwater depths are summarised in in Table 2, which shows groundwater was not encountered in our investigations. Groundwater in nearby investigations was measured at 3.60mbgl, this level has been used for design.

5 Design Soil Profile & Soil Parameters

A generalised soil profile and soil parameters adopted for design are presented and shown in Figure 3: Ground Model Cross Section and Table 4, respectively.

Table 4: Soil Strength Parameters

Soil Unit	Description	Depth to Top of Layer (m bgl)	Unit Weight (kN/m^3)	Friction Angle, Φ (degree)	Effective Cohesion c' (kPa)	Design Undrained Shear Strength, s_u (kPa)	Young's Modulus, E (MPa)	$C_c/(e_0+1)$ (%)
1a	Stiff, silty SAND/sandy SILT [Topsoil]	0.00	N/A	N/A	N/A	N/A	N/A	N/A
2a	Very stiff, sensitive, SILT [Kerikeri Volcanic Group)	0.30	18	30	3	190	30	3
3a	SW-MW Basalt rock [Kerikeri Volcanic Group]	1.00-2.00	N/A	N/A	N/A	N/A	N/A	N/A
m bgl (metres below ground level)								

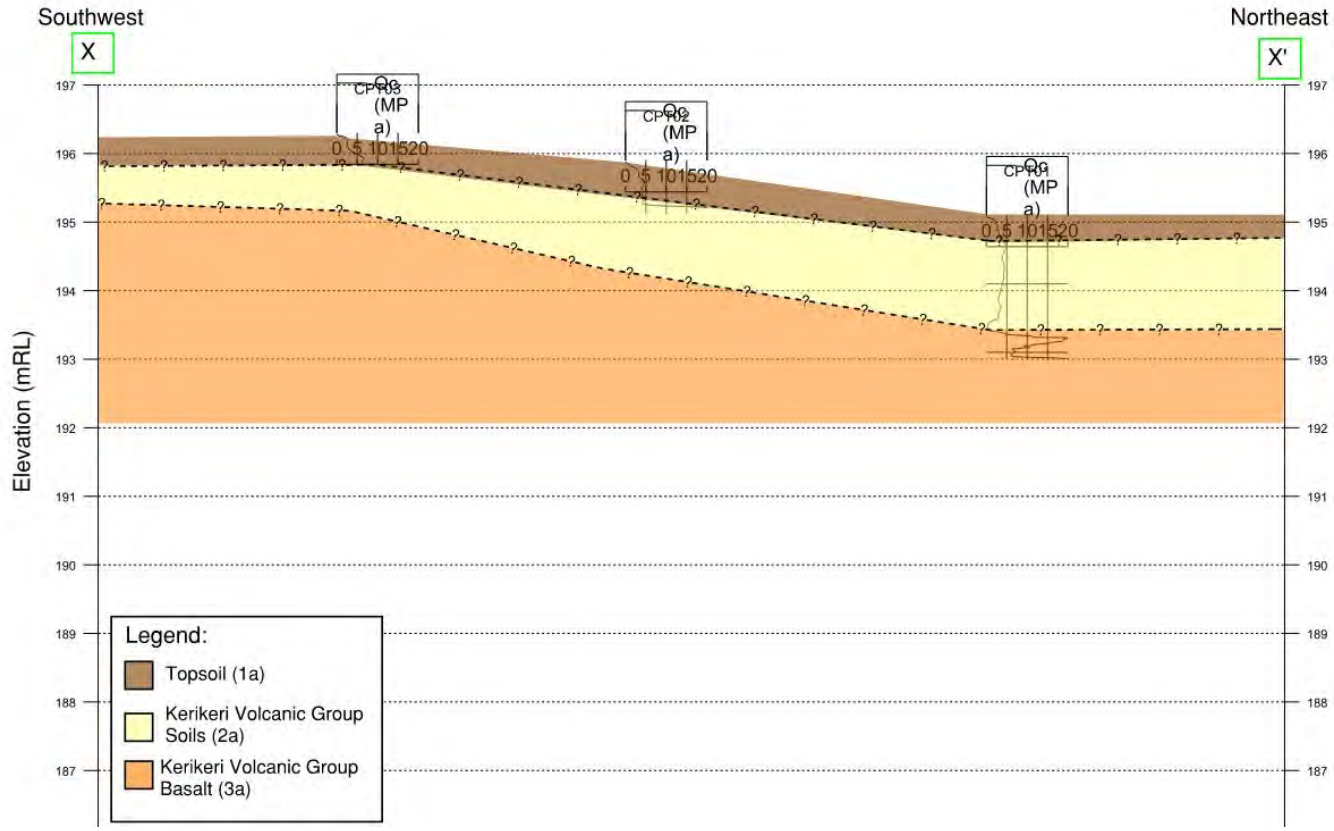


Figure 3: Ground Model Cross Section

6 Seismic Design Requirements

6.1 Design Life and Importance Level

Proposed structures will be designed with an Importance Level of 2 (IL2) and design life of 50 years, in accordance with AS/NZS 1170.0 (Standards New Zealand, 2002) and agreed with Kāinga Ora.

6.2 Site Subsoil Class C

The site subsoil class in accordance with NZS 1170.5 (Standards New Zealand, 2004) depends on the depth and stiffness of the underlying soil or rock, with each site being classified as either Site Class A, B, C, D or E.

CPT investigations encountered Kerikeri Volcanic Group Basalt rock at a depth of 1.00-2.00 m bgl. A review of the geological map, Beca data and publicly available information suggests that Kerikeri Volcanic Group Basalt rock is expected from depths of approximately 1.60 – 4.10m bgl. As such, site subsoil Class C – Shallow Soil Sites will be adopted for this assessment. Class C refers to shallow soil sites with a limit concerning the maximum depth of soils depending on soil behaviour and density. The maximum depth of a Class C site for a loose to medium dense cohesionless soil is 45m and a very stiff or hard cohesive soil is 60m.

6.3 Seismic Loads

Seismic (earthquake) loads have been computed for the site in accordance with NZS 1170.5:2004 (Standards New Zealand, 2004) for the selected site soil subclass, importance level, and design life. Two

limit state loads cases were analysed: Serviceability Limit State (SLS) and Ultimate Limit State (ULS) design earthquake:

- For a SLS design earthquake: The structure is intended to be used without the need for repair.
- For a ULS design earthquake: The structure is required to maintain life safety of the building's occupants and ensure the structural integrity of the building is not lost following the event.

Peak ground acceleration (PGA) and effective magnitude (M_w) values adopted for design are summarised in Table 5.

Table 5: Seismic Design Parameters

Design Event	Annual Probability of Exceedance	Return Period Factor (R_u)	Weighted Peak Ground Acceleration (Class C)	Effective Magnitude (M_w)
SLS	1/25	0.25	0.04g	7.5
ULS	1/500	1	0.17g	

7 Liquefaction Assessment Methodology

7.1 Overview

Liquefaction describes the short-term loss of strength of a loosely packed cohesionless (sandy) soil during an earthquake or other dynamic loading. Liquefaction occurs when soil particles are disturbed and densify during dynamic loading, temporarily raising pore water pressures and reducing effective stress between particles to near zero. This causes the affected soil to behave essentially like a liquid until excess pore pressures are dissipated.

In accordance with recommendations from *CPT and SPT Based Liquefaction Triggering Procedures* (Boulanger & Idriss, 2014), site soils are divided into two categories: soils that behave under seismic shaking in a 'sand-like' manner (i.e., potentially subject to classical cyclic liquefaction) and soils that behave in a 'clay-like' manner which do not liquefy but may be subject to cyclic softening. Soils are generally assessed quantitatively from CPT tests using the soil behaviour type (SBT) index, I_c. Generally, soils are assumed to be 'clay-like' where the $I_c > 2.6$ and 'sand-like' where $I_c < 2.6$. In addition, soils with a plasticity index (PI) less than 12 are typically assumed to be 'sand-like', while soils with a plasticity index greater than 12 are assumed to be 'clay-like'.

Soils present on site have been characterized into 'sand-like' and 'clay-like' categories based on CPT data and material descriptions of samples. An I_c cut-off of 2.6 has been adopted for the assessment. Unsaturated soils above the groundwater table are assumed not to be susceptible to liquefaction.

7.2 Assessment Results

Due to the soil profile and groundwater conditions encountered on site, the site is not expected to be susceptible to liquefaction.

7.1.2 Lateral Spreading

Lateral spreading occurs as liquefied soils lose shear strength and flow towards an unconfined free face exposure (i.e., towards a riverbank), resulting in horizontal displacements of the ground surface. Surface effects typically include cracking and ejection of liquefied deposits.

Due to low topographical variability across the site and the nearest watercourse being approximately 565m away, the site is considered to have a very low risk of lateral spreading.

8 Foundation Design Recommendations

8.1 Static Settlement

The magnitude of static settlement will vary due to the dwelling load and the compressibility of the underlying soils. Due to shallow rock encountered on site, the total static settlement is expected to be negligible and differential settlement is expected to be less than 20mm over 6m.

8.2 Soil Classification

We recommend the following to account for the expansive soil risk on site:

- The near surface very stiff, SILT soils do not meet 'good ground' criteria as per the requirements of NZS 3604:2011 (Standards New Zealand, 2011).
- For this reason, the site needs to be classified into one of the expansivity classes set out in AS 2870:2011 (Standards Australia, 2011) as detailed in Section 8.3.

8.3 Foundation solution

Waffle slab foundations founded on natural soils are considered suitable for all units of the proposed development. An ultimate bearing capacity of 300kPa should be adopted for design providing the following criteria are met:

- Topsoil is to be cut and removed at foundation locations. Topsoil and fill was found to extend to between 0.30 m bgl across the site.
- Natural soils found on site are expansive. The expansivity class across the site was determined as Class M. The proposed dwellings are to be of a lightweight clad timber frame construction. Foundations are to be specified as per *AS 2870:2011* Section 1.8.9 (Standards Australia, 2011).

A geotechnical strength reduction factor of 0.5 is recommended as per *B1/VM4:2021* (MBIE, 2023). The ultimate bearing capacity calculations are presented in Appendix G.

To confirm soil strength design assumptions, the subgrade below the waffle slab footings is to be inspected prior to construction by a suitably qualified Geo-professional to ensure the average undrained shear strength of the subgrade is at least 60kPa. If the above minimum subgrade testing requirement is not achieved, soil beneath the footing shall be undercut and replaced with hardfill. The extent of the undercut is to be based on the values achieved and is to be agreed by the Geotechnical Engineer prior to further construction. The proposed hardfill replacement is GAP20 or GAP40 with a maximum fines content (<75 micron) of 10% compacted to ≥92% MDD (Maximum Dry Density by Standard Compaction Effort).

9 Retaining Wall Recommendations

Retaining walls will be required where stable batters cannot be achieved within the property boundary. Walls will comprise of round timber posts and sawn timber rails. Walls will be designed in accordance with verification method *B1/VM4* (MBIE, 2023) and the Waka Kotahi *Bridge manual (SP/M/022)* (Waka Kotahi, 2022). Retaining wall details will be provided within the Building Consent package.

10 Cut & Fill

Hardfill Batters

Where hardfill batters under 500mm high are designed for the site, a maximum slope gradient of 1V:2H is recommended. Should it be required, hardfill with 5% cement by dry weight can be used to form batters up to 1V:1H.

In-Situ Soil Cut Batters

Where cut batters located in the in-situ material are designed for the site, a maximum slope gradient of 1V:3H is recommended. Soil batters should be topsoiled and planted to reduce erosion.

11 Pavement Design Recommendations

The California Bearing ratio (CBR) for pavement design was assessed by using shear vane testing completed down hand auger holes. The CBR percentages are calculated in accordance with *Austroads – Guide to Pavement Technology Part 2* (Austroads, 2019). A recommended CBR of 3% is proposed for pavement design provided all topsoil and uncontrolled fill is stripped. Topsoil was found to be 0.30 m deep across the site.

All excavated topsoil and fill should be removed from the site or stockpiled away from the building platform and earthworks area.

12 Site Specific Risks

The following specific geotechnical and natural hazard risks and proposed mitigations are outlined below:

	Hazard	Likelihood/Risk	Proposed mitigation
Geotechnical	Heavy rain during subgrade cut or backfilling works	[**Possible**] Foundation softens and requires additional over-excavation. Fill becomes contaminated with fines and cannot be compacted to target density, fill removed and replaced, significant delays.	Aim to complete foundation excavation works only during fine weather. Install geotextile between cut subgrade and fill to reduce risk of fines migration into fill during rain events. Backfill the excavation promptly. Adjust the compaction methodology to match the subgrade and aggregate moisture content.
	Encountering groundwater during foundation excavations	[**Rare**] Groundwater is unlikely to be encountered, was not recorded at depths up to 2.00m bgl (shallowest).	If work is completed during winter months, erosion and sediment control measures are recommended to be in place during construction. Minor dewatering may be required.
	Isolated soft zones in subgrade cut	[**Possible**] Additional over-excavation required, minor delays.	Test subgrade cut surface during construction and recommend additional excavation and replacement with compacted GAP20 or GAP40 in affected areas.
	Existing underground utilities	[**Possible**] Utilities are noted to cross the site.	None of the proposed structures are situated over existing assets.
	Sensitive soils	[**Likely**] Over work of soils will result in a significant drop in	Softened material will need to be undercut and replaced with hardfill.

		strength leading to difficult access.	Earthworks contractor to consider this in their methodology.
	Noise and vibration during earthworks	[**Likely**] Noise and vibration generation is expected to be insignificant during earthworks.	Rock is expected at depths between 1.00 and 2.00m. Excavation into rock should be avoided if possible. Where excavation into rock is specified, blasting and vibratory methods will be required. Plans to limit vibrations and noise will need to be in place. are anticipated to be required.
Natural Hazard	Subsidence and settlement (Seismic)	[**Low Risk**] The liquefication assessment indicates there is a non-liquefiable crust, to suggest minimal surface movement.	The foundations have been designed appropriately.
	Subsidence and settlement (Static)	[**Low Risk**] CPTs and hand augers have indicated there is no peat or soft cohesive soils within the ground profile.	An assessment has estimated the static consolidation settlement to be negligible.
	Lateral Spreading	[**Low Risk**] the site is not situated near any free faces or waterbodies (nearest 565m to the east) that may cause lateral spreading in an earthquake.	
	Slips	[**Low Risk**] the property is not located near a slope or channel.	
	Volcanic activity	[**Low Risk**] there are no active volcanoes in close proximity.	
	Flood inundation	[**Low Risk**] Far North District Council does not indicate the site is located in a flood zone.	Stormwater management is being designed in accordance with the Far North District Council Stormwater Management Guideline by the civil engineers.

13 Applicability Statement

This report has been prepared by Beca on the specific instructions of our Client. It is solely for our Client's use for the purpose for which it is intended in accordance with the agreed scope of work. Any use or reliance by any person contrary to the above, to which Beca has not given its prior written consent, is at that person's own risk.

The site investigation has been undertaken at discrete locations and no inferences about the nature and continuity of ground conditions away from the investigation locations are made. Furthermore, logs are provided presenting description of the soils and geology based on our observation of the samples recovered in the fieldwork and may not be truly representative of the actual underlying conditions.

Should you be in any doubt as to the applicability of this report for the proposed development described herein, it is essential that you carry out independent investigations to satisfy your needs.

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A

Appendix A – Site Investigation Plan

Key:

Lot Area

Cone Penetration Test

Hand Auger

No.	Revision	By	Chk	Appd	Date
01	GEOTECHNICAL SITE INVESTIGATION PLAN	OKM		JJ	19.04.24

Drawing Originator: Beca

Original Scale (A1)	Design	OKM	19.04.24
	Drawn		
Reduced Scale (A3)	Dsg Verifier		
	Dwg Check		

* Refer to Revision 1 for Original Signature

Client: Kāinga Ora Homes and Communities

Project: HOUSING DELIVERY SYSTEM (HDS) - AR109551 25 Wihongi Street, Kaikohe

Title: GEOTECHNICAL INVESTIGATION LOCATION PLAN

Discipline: GEOTECHNICAL

Drawing No.

Rev. A

DO NOT SCALE

IF IN DOUBT ASK.

B

Appendix B – Hand Auger Logs and Photographs

Geotechnical Log Key Sheet

SOIL AND ROCK DESCRIPTIONS

Soil and Rock Descriptions are in general accordance with the NZ Geotechnical Society (NZGS), 2005.
Hand-held Vane Shear Strength measurements are in general accordance with the NZGS, 2001.

METHODS

BH	Machine Borehole
CPT	Cone Penetration Test
DCP	Dynamic Cone Penetration
HA	Hand Auger
SPT	Standard Penetration Test
IVAN	In-situ Vane Test
MA	Machine Auger
OB	Open Barrel
SNC	Sonic Core Drilling
TP	Test Pit/Trench
TT	Triple Tube
PT	Thin-walled Open Drive Tube
VE	Vacuum Excavation
W	Wash Boring

WEATHERING

CW	Completely Weathered
HW	Highly Weathered
MW	Moderately Weathered
SW	Slightly Weathered
UW	Unweathered

SAMPLES

B	Bulk Disturbed Sample
C	Core Sample
D	Small Disturbed Sample
U	Thin-wall Open Drive (Push) Tube Sample

WATER

Groundwater Level (GWL)

IN-SITU TESTS

Shear Vane

Su	In-situ peak undrained shear strength and remoulded undrained shear strength
UTP	Unable to Penetrate
CB	Pilcon-type vane tested in Core Barrel
DH	Pilcon-type vane tested in-situ (downhole)
GV	Geonor vane, tested in-situ
IcV	Icone vane, tested in-situ

Standard Penetration Test (SPT)

N	SPTn Sampler (Split-spoon)
Nc	SPTn Solid Cone
HB	SPT Hammer Bouncing

TERMINOLOGY

RL	Reduced Level
RQD	Rock Quality Designation

GRAPHIC LOG (1 or a combination of the following)

Clay, Silt, Sandstone (SST), Conglomerate, Fine Igneous
Gravel, Sand, Siltstone (ZST), Limestone, Coarse Igneous
Shells, Organic Material, Mudstone, Foliated Metamorphic, Ignimbrite
Cobbles / Boulders, Wood, Interbedded SST & ZST, Asphalt, No Core

MONITORING INSTALLATION

Backfill Material

Sand, Grout, Bentonite
Gravel, Cement Mixes

Standpipe

Plain, Slotted, Vibrating Wire

ORGANIC SOILS

Von Post Degree of Humification

H1	Completely unconverted and mud-free peat, when pressed gives clear water and plant structure is visible.
H2	Partially unconverted and mud-free peat, when pressed gives almost clear water and plant structure is visible.
H3	Very slightly decomposed or very slightly muddy peat, when pressed gives marked muddy water, no peat substance passes through the fingers and plant structure is less visible.
H4	Slightly decomposed or slightly muddy peat, when pressed gives muddy water and plant structure is less visible.
H5	Moderately decomposed or very muddy peat with growth structure evident but slightly obliterated.
H6	Moderately decomposed or very muddy peat with indistinct growth structure.
H7	Fairly well decomposed or very muddy peat but the growth structure can just be seen.
H8	Well decomposed or very muddy peat with very indistinct growth structure.
H9	Practically decomposed or mud-like peat in which almost no growth structure is evident.
H10	Completely decomposed or mud peat where no growth structure can be seen, entire substance passes through the fingers when pressed.

Hand Auger Log

Hand Auger ID: HA01

Sheet 1 of 1

Project:	HDS - 25 Wihongi Street, Kaikohe	**Project Number:**	3912124/AR109551
Site Location:	Kaikohe, New Zealand.	**Client:**	Kāinga Ora
Location:	25 Wihongi Street, front yard, 10m from eastern boundary.	**Coordinate System:**	NZTM2000
		Northing:	6081776.7
		Easting:	1672705.7
		Vertical Datum:	NZVD 2016
		Ground level (mRL):	195.10
		Location Method:	Survey

Groundwater (m)	In Situ Tests: Su (kPa)	In Situ Tests: Scala blows/50mm	Samples	Depth (m)	RL (m)	Graphic Log	Soil/ Rock Description	Geological Unit
				0.0	195.0		Very stiff, SILT, minor sand, minor organics; dark brown; dry, non plastic. Organics: rootlets, fibrous. [Topsoil].	
	189/39							
	144/30			0.5	194.5		Very stiff, SILT, some clay, minor fine sand to medium sand, trace coarse gravel; dark orange brown; moist, low plasticity, sensitive. Gravel: SW, sub-angular, basalt.	Kerikeri Volcanic Group
	210+						*0.75m: hard.*	
	207/30			1.0	194.0			
	210+							
	210+	10 3 3 2 3 3 2 1 3 3 5 4 8 12		1.5	193.5		Hard, clayey SILT, trace fine sand; dark greyish brown; moist, high plasticity. *1.60m: soft.*	
				2.0	193.0		1.70m - End of hand auger, Hole terminated at target depth.	
				2.5	192.5			
				3.0	192.0			
				3.5	191.5			
				4.0	191.0			
				4.5	190.5			

Date Started:	08/04/2024	**Vane ID:**	GEO2242	**Comments:**	
Logged By:	OKM/REHP	**Vane Width:**	19mm	Groundwater not encountered.	
Diameter:	50mm	**Vane Type:**	Down hole		

For Explanation of Symbols and Abbreviations See Key Sheet

Photo Log

Location ID: HA01

Project:	HDS - 25 Wihongi Street, Kaikohe	**Project number:**	3912124/AR109551
Site location:	Kaikohe, New Zealand.	**Client Name:**	Kāinga Ora
Location:	25 Wihongi Street, front yard, 10m from eastern boundary.	**Coordinate system:**	NZTM2000
		Northing:	6081776.7
		Easting:	1672705.7
		Vertical datum:	NZVD 2016
		Ground level (mRL):	195.10
		Location method:	Survey

Box 1 - 0.00mbgl to 2.70mbgl

Hand Auger Log

Hand Auger ID: HA02

Sheet 1 of 1

Project:	HDS - 25 Wihongi Street, Kaikohe	**Project Number:**	3912124/AR109551
Site Location:	Kaikohe, New Zealand.	**Client:**	Kāinga Ora
Location:	25 Wihongi Street, middle of property ~4m from southern boundary.	**Coordinate System:**	NZTM2000
		Northing:	6081760.9
		Easting:	1672688.9
		Vertical Datum:	NZVD 2016
		Ground level (mRL):	195.90
		Location Method:	Survey

Groundwater (m)	In Situ Tests: Su (kPa)	In Situ Tests: Scala blows/50mm	Samples	Depth (m)	RL (m)	Graphic Log	Soil/ Rock Description	Geological Unit
				0	195.5		Very stiff, SILT, trace sand, silt, trace organics; light orange brown; dry, non-plastic. Organics: rootlets, fibrous. [Topsoil].	
	180/36							
	UTP			0.5	195.0		Very stiff, SILT, minor fine to medium sand, minor fine gravel, trace clay; dark brown; moist, low plasticity, sensitive. Gravel: MW, sub-angular, basalt.	Kerikeri Volcanic Group
	UTP			1.0	194.5			
	UTP	3 2 4 7 10 6 6 4 2 3 3 4 5 6 5 6 4 0 1 2		1.5	194.0		*1.80m: soft.*	
				2.0	193.5		2.00m - End of hand auger, Hole terminated at practical refusal.	
				2.5	193.0			
				3.0	192.5			
				3.5	192.0			
				4.0	191.5			
				4.5	191.0			

Date Started:	08/04/2024	**Vane ID:**	GEO2242	**Comments:**	
Logged By:	OKM/REHP	**Vane Width:**	19mm	Groundwater not encountered.	
Diameter:	50mm	**Vane Type:**	Hand held		

For Explanation of Symbols and Abbreviations See Key Sheet

Photo Log

Location ID: HA02

Project:	HDS - 25 Wihongi Street, Kaikohe	**Project number:**	3912124/AR109551
Site location:	Kaikohe, New Zealand.	**Client Name:**	Kāinga Ora
Location:	25 Wihongi Street, middle of property ~4m from southern boundary.	**Coordinate system:**	NZTM2000
		Northing:	6081760.9
		Easting:	1672688.9
		Vertical datum:	NZVD 2016
		Ground level (mRL):	195.90
		Location method:	Survey

Box 1 - 0.00mbgl to 1.80mbgl

Hand Auger Log

Hand Auger ID: HA03

Sheet 1 of 1

Project:	HDS - 25 Wihongi Street, Kaikohe	**Project Number:**	3912124/AR109551
Site Location:	Kaikohe, New Zealand.	**Client:**	Kāinga Ora
Location:	25 Wihongi Street, backyard in northeast corner, 2m from northern fence.	**Coordinate System:**	NZTM2000
		Northing:	6081759.5
		Easting:	1672671.5
		Vertical Datum:	NZVD 2016
		Ground level (mRL):	196.30
		Location Method:	Survey

Groundwater (m)	In Situ Tests: Su (kPa)	In Situ Tests: Scala blows/50mm	Samples	Depth (m)	RL (m)	Graphic Log	Soil/ Rock Description	Geological Unit
	150/30	4 6 7 9 8 9	UTP	0.0	196.0		Very stiff, SILT, minor fine sand, trace organics; dark brown; dry, low plasticity, sensitive Organics: rootlets, fibrous. [Topsoil].	
				0.5	195.5		Very stiff, SILT, minor clay; brown; dry, low plasticity, sensitive. *0.60m: light grey.* *0.85m: minor clay [CW cobble].*	Kerikeri Volcanic Group
				1.0	195.0		1.00m - End of hand auger, Hole terminated at target depth.	
				1.5	194.5			
				2.0	194.0			
				2.5	193.5			
				3.0	193.0			
				3.5	192.5			
				4.0	192.0			
				4.5	191.5			

Date Started:	08/04/2024	**Vane ID:**	GEO2242	**Comments:**
Logged By:	OKM/REHP	**Vane Width:**	19mm	Groundwater not encountered.
Diameter:	50mm	**Vane Type:**	Hand held	

For Explanation of Symbols and Abbreviations See Key Sheet

Photo Log

Location ID: HA03

Project:	HDS - 25 Wihongi Street, Kaikohe	**Project number:**	3912124/AR109551
Site location:	Kaikohe, New Zealand.	**Client Name:**	Kāinga Ora
Location:	25 Wihongi Street, backyard in northeast corner, 2m from northern fence.	**Coordinate system:**	NZTM2000
		Northing:	6081759.5
		Easting:	1672671.5
		Vertical datum:	NZVD 2016
		Ground level (mRL):	196.30
		Location method:	Survey

Box 1 - 0.00mbgl to 1.00mbgl

C

Appendix C – Cone Penetration Testing (CPT) results

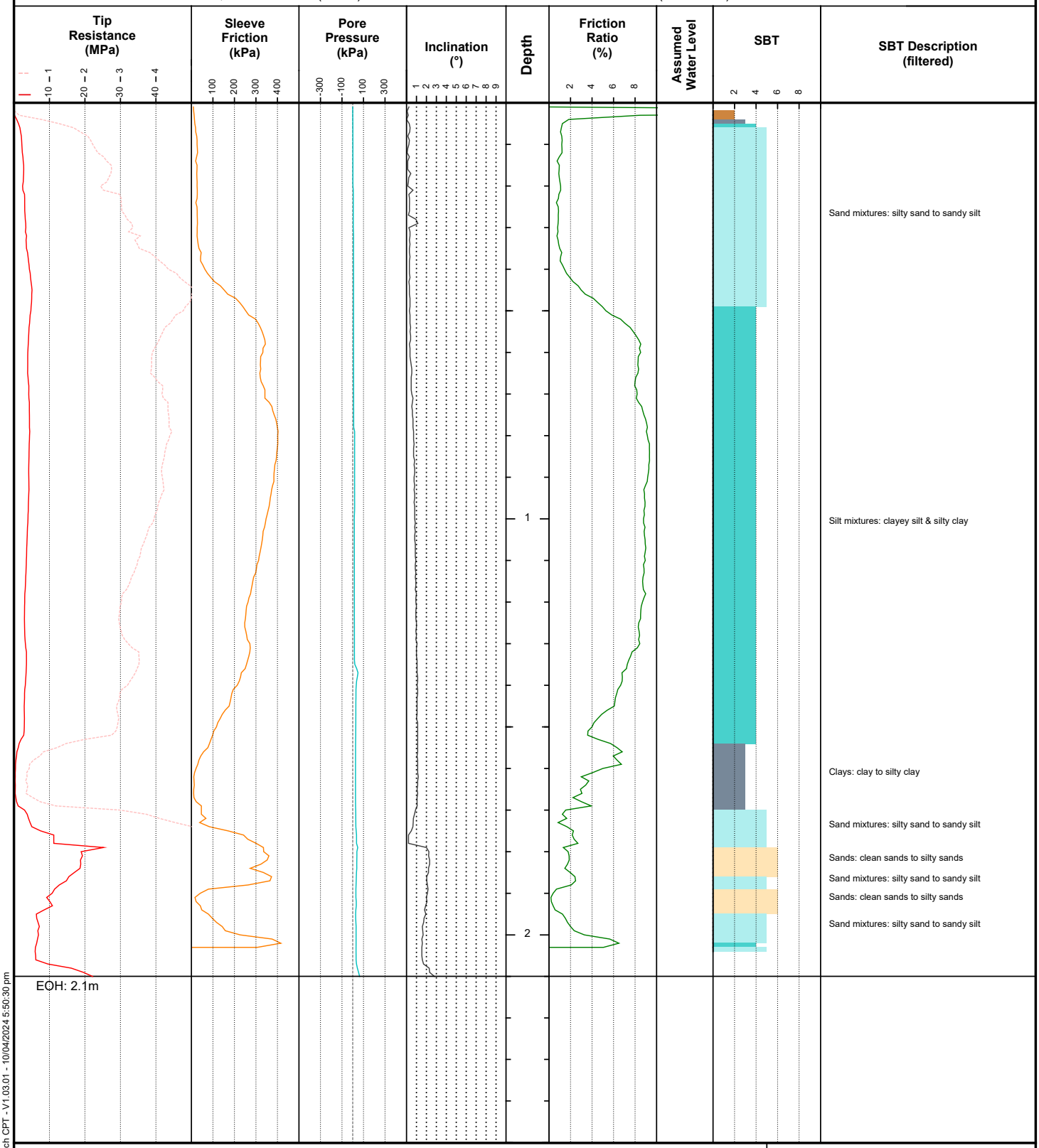
CONE PENETRATION TEST (CPT) LOG

HOLE NO.: CPT01

CLIENT: Kāinga Ora - Homes and Communities
PROJECT: CPT Testing
JOB NO.: LTA24090

SITE LOCATION: 25 Wihongi Street, Kaikohe
OPERATOR: CW
START DATE: 08/04/2024

CO-ORDINATES: 1672705.00mE, 6081778.00mN (NZTM)
ELEVATION: 199m (NZVD2016)
END DATE: 08/04/2024



REMARKS:

Groundwater not encountered
Coordinates from handheld GPS accurate to +/-4m
Pagani TG63-150 Rig, 10 cm² piezocone

NOTES:

TEST DETAILS:

Cone Number	000862
Cone Type	PC
Area Ratio	0.80
Filter Location	u2
Termination Reason	Auger fail

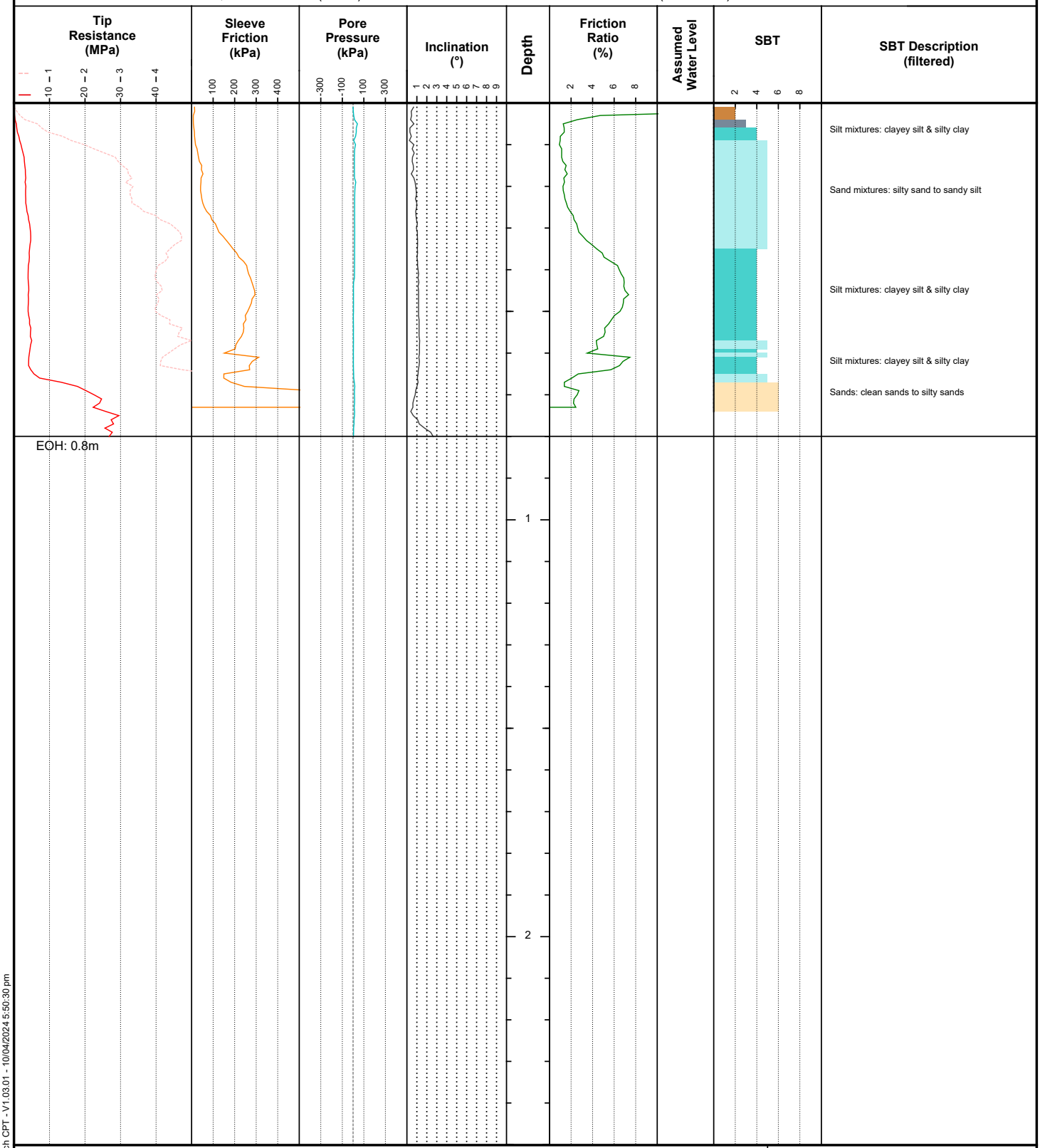
CONE PENETRATION TEST (CPT) LOG

HOLE NO.: CPT02

CLIENT: Kāinga Ora - Homes and Communities
PROJECT: CPT Testing
JOB NO.: LTA24090

SITE LOCATION: 25 Wihongi Street, Kaikohe
OPERATOR: CW
START DATE: 08/04/2024

CO-ORDINATES: 1672688.00mE, 6081763.00mN (NZTM)
ELEVATION: 199m (NZVD2016)
END DATE: 08/04/2024



REMARKS:

Groundwater not encountered
Coordinates from handheld GPS accurate to +/-4m
Pagani TG63-150 Rig, 10 cm² piezocone

NOTES:

TEST DETAILS:

Cone Number	000862
Cone Type	PC
Area Ratio	0.80
Filter Location	u2
Termination Reason	Auger fail

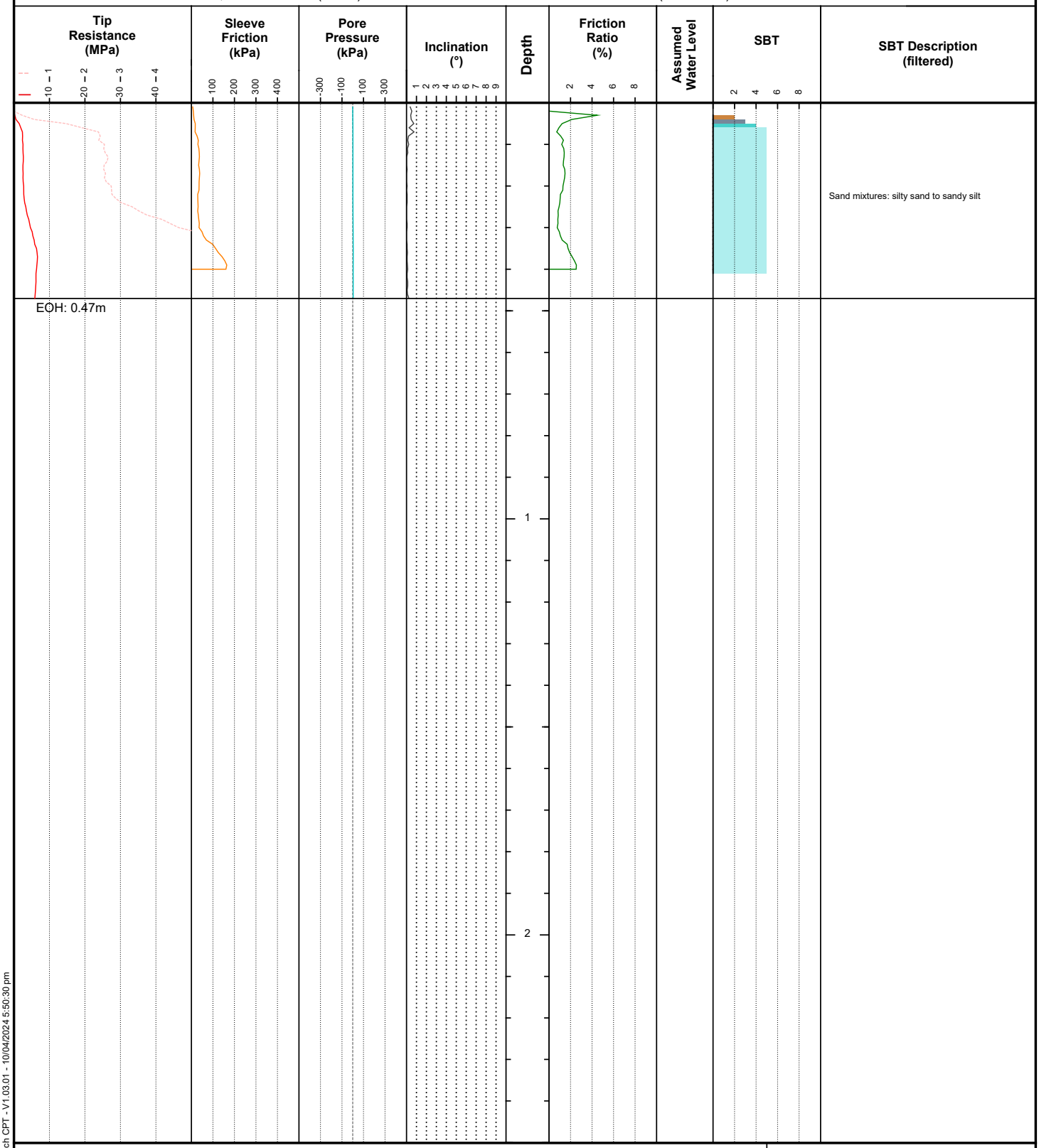
CONE PENETRATION TEST (CPT) LOG

HOLE NO.: CPT03

CLIENT: Kāinga Ora - Homes and Communities
PROJECT: CPT Testing
JOB NO.: LTA24090

SITE LOCATION: 25 Wihongi Street, Kaikohe
OPERATOR: CW
START DATE: 08/04/2024

CO-ORDINATES: 1672673.00mE, 6081760.00mN (NZTM)
ELEVATION: 199m (NZVD2016)
END DATE: 08/04/2024



REMARKS:

Groundwater not encountered
Coordinates from handheld GPS accurate to +/-4m
Pagani TG63-150 Rig, 10 cm² piezocone

NOTES:

TEST DETAILS:

Cone Number	000862
Cone Type	PC
Area Ratio	0.80
Filter Location	u2
Termination Reason	Auger fail

D

Appendix D – Calibration Certificates

MCC

Calibration Certificate

Certificate No: M721671.13

Certificate Issued To	Beca Ltd - Auckland		**Address**	21 Pitt Street Auckland CBD Auckland 1010	
Purchase Order No					
Manufacturer	Geotechnics	**Model**	Geovane	**S/No**	2242
				Unique ID	
Description	Handheld shear vane with matching blade(s)				
Calibration Date	4/09/2023		**Temp During Test**	20.3 to 20.9 °C	
Method	MCC 5.51c.01 – Handheld Soil Shear Vane Testers (2021), Guideline for Hand Held Shear Vane Test (NZGS, 2001) was used as a guide.				

Results

19 mm Ø Vane Blade

Shear Strength = A × Reading	**A (kPa/div)**	**1.502**	**Area Ratio**	23.9%

Reading (div)	Shear Strength (kPa)	Reading (div)	Shear Strength (kPa)	Reading (div)	Shear Strength (kPa)	Reading (div)	Shear Strength (kPa)	Reading (div)	Shear Strength (kPa)
0	0	30	45	60	90	90	135	120	180
2	3	32	48	62	93	92	138	122	183
4	6	34	51	64	96	94	141	124	186
6	9	36	54	66	99	96	144	126	189
8	12	38	57	68	102	98	147	128	192
10	15	40	60	70	105	100	150	130	195
12	18	42	63	72	108	102	153	132	198
14	21	44	66	74	111	104	156	134	201
16	24	46	69	76	114	106	159	136	204
18	27	48	72	78	117	108	162	138	207
20	30	50	75	80	120	110	165	140	210
22	33	52	78	82	123	112	168		
24	36	54	81	84	126	114	171		
26	39	56	84	86	129	116	174		
28	42	58	87	88	132	118	177		

The expanded uncertainty of measurement, expressed at the 95% confidence level, is ±4.2 kPa. The coverage factor (k) is 2.

Remarks

When received, this equipment was in good condition.

Measurement results are traceable to the International System of Units (SI), or other recognised references via an unbroken chain of comparisons to the New Zealand National Standards or to the National Standards of other Signatories to the CIPM MRA.

This certificate has been prepared for the benefit of Beca Ltd - Auckland, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.

This calibration was performed at 1 Hill Street, Onehunga, Auckland, NZ.

Prepared by

Ivan Caresosa
Calibration Technician

Checked by

Annalyse Ryan
Metrologist | Team Leader

Key Technical Person

Annalyse Ryan
Metrologist | Team Leader

ACCREDITED CALIBRATION LABORATORY

All measurements reported herein have been performed in accordance with the laboratory's scope of accreditation

PAGANI®
GEOTECHNICAL EQUIPMENT

Loc. Campogrande , n° 26
29010 CALENDASCO (PC)
ITALY

www.pagani-geotechnical.com
info@pagani-geotechnical.com
Tel: +39 0523 771535 - Fax: +39 0523 773449

CONE CALIBRATION CERTIFICATE

N° Z222/23 **30/08/2023**

Calibrated system (Sistema tarato):

Type	**P-C**
Serial number	**000862**
Sensor	**TIP RESISTANCE**
Max. Capacity [MPa]:	**50**
Scaling Factor:	**180060**
Tip net area ratio (a_n):	**0,79**
Sleeve net ratio (b_n):	**0,00**

Addressee *(destinatario)* **:**
LandTech Consulting Ltd
11b Carlyle Street, Sydenham,
Christchurch 8023 (New Zealand)

Applied load measurement system:
(Sistema di rilevamento del carico applicato)

Load cell:

Manufacturer	AEP transducers
Model	KAL 50 kN
Serial Number	65495

Power press:

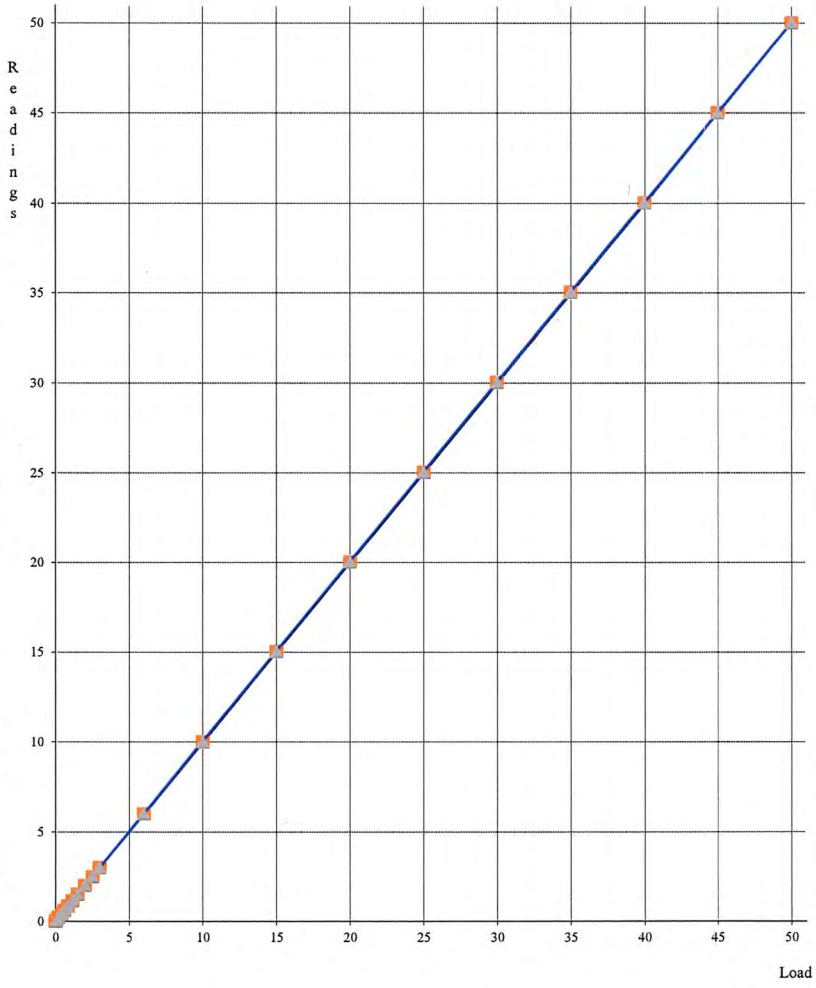
Manufacturer	Easydur Italiana
Model	Aura 10T
Serial Number	29002

The measurement system is periodically checked in a SIT calibration center. *(Il sistema di rilevamento è sottoposto a verifica periodica presso un centro SIT)*

Last verification date:	12/01/2023
Certificate N.	LAT 091 2023-010

Temperature of calibration	22°C
Humidity	45%

Factory calibration in accordance with :
ASTM D5778-12 Validity 12 Months



	Ascending		Descending	
	Load	Readings	Load	Readings
1	0,00	0,00	0,00	-0,01
2	0,03	0,03	0,03	0,02
3	0,20	0,19	0,20	0,19
4	0,40	0,39	0,40	0,39
5	0,60	0,59	0,60	0,59
6	0,85	0,84	0,85	0,84
7	1,15	1,14	1,15	1,15
8	1,50	1,49	1,50	1,50
9	2,00	1,99	2,00	2,00
10	2,50	2,49	2,50	2,50
11	3,00	3,00	3,00	3,00
12	6,00	6,01	6,00	6,02
13	10,00	10,01	10,00	10,02
14	15,00	15,02	15,00	15,03
15	20,00	20,03	20,00	20,04
16	25,00	25,04	25,00	25,05
17	30,00	30,04	30,00	30,05
18	35,00	35,04	35,00	35,04
19	40,00	40,03	40,00	40,04
20	45,00	45,02	45,00	45,02
21	50,00	50,00	50,00	50,01

Unit: Mpa

Zero-load error:	=	0,022	% FSO
Zero-load thermal stability:	<=	1,000	% FSO
Nonlinearity:	=	0,080	% FSO
Hysteresis:	=	0,022	% FSO
Calibration error:	=	0,000	% MO
Apparent load:	=	0,000	% FSO

The adopted calibration procedure has been developed according to the suggestions given by Prof. Paul W. Mayne (Georgia Institute of technology) and Prof. Diego Lo Presti (University of Pisa)

Cone calibrated by _____ Date of issue 30/08/2023

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29010 CALENDASCO (PC)
ITALY

www.pagani-geotechnical.com
info@pagani-geotechnical.com
Tel: +39 0523 771535 - Fax: +39 0523 773449

CONE CALIBRATION CERTIFICATE

N° Z222/23 **30/08/2023**

Calibrated system (Sistema tarato):

Type	**P-C**
Serial number	**000862**
Sensor	**SLEEVE FRICTION**
Max. Capacity [kPa]:	**1600**
Scaling Factor:	**29946**

Addressee *(destinatario)* **:**
LandTech Consulting Ltd
11b Carlyle Street, Sydenham,
Christchurch 8023 (New Zealand)

Applied load measurement system:
(Sistema di rilevamento del carico applicato)

Load cell:

Manufacturer	AEP transducers
Model	KAL 50 kN
Serial Number	65495

Power press:

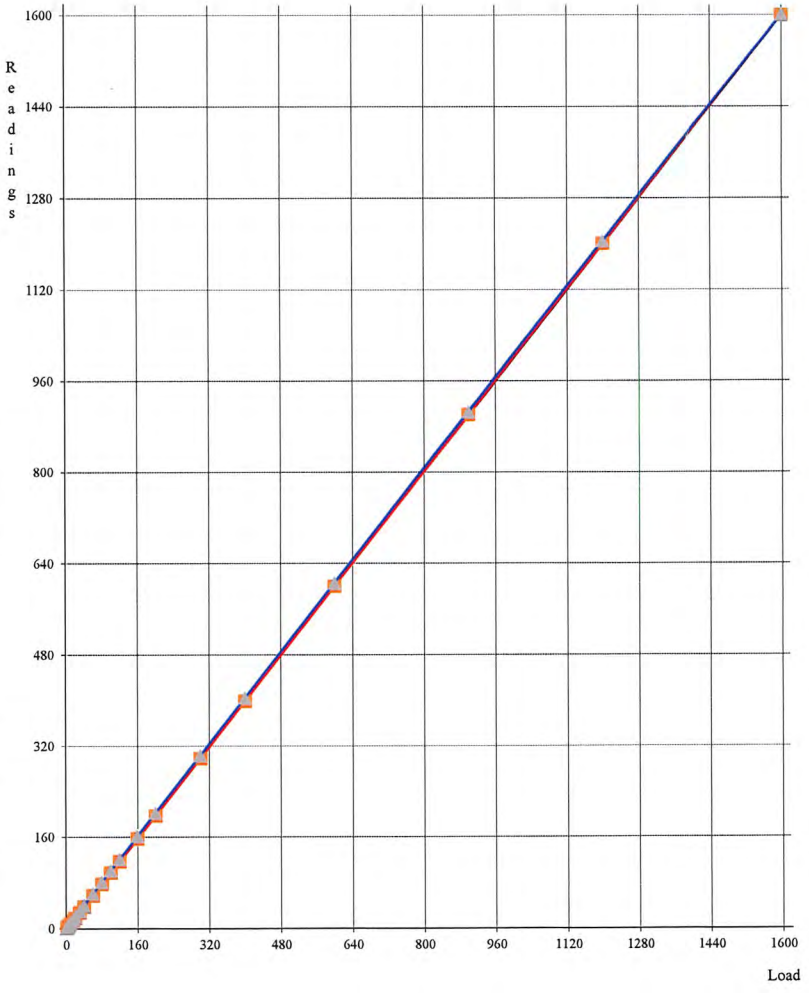
Manufacturer	Easydur Italiana
Model	Aura 10T
Serial Number	29002

The measurement system is periodically checked in a SIT calibration center. *(Il sistema di rilevamento è sottoposto a verifica periodica presso un centro SIT)*

Last verification date:	12/01/2023
Certificate N.	LAT 091 2023-010

Temperature of calibration	22°C
Humidity	45%

Factory calibration in accordance with :
ASTM D5778-12 Validity 12 Months



	Ascending		Descending	
	Load	Readings	Load	Readings
1	0,00	-0,07	0,00	0,13
2	2,00	0,80	2,00	1,73
3	5,00	3,53	5,00	4,67
4	7,00	5,33	7,00	6,73
5	10,00	8,27	10,00	9,80
6	16,00	13,93	16,00	15,67
7	20,00	17,87	20,00	19,67
8	30,00	27,73	30,00	29,60
9	40,00	37,60	40,00	39,67
10	60,00	57,40	60,00	60,07
11	80,00	77,27	80,00	80,53
12	100,00	97,07	100,00	100,87
13	120,00	117,00	120,00	121,13
14	160,00	156,87	160,00	161,47
15	200,00	197,07	200,00	201,80
16	300,00	297,73	300,00	302,80
17	400,00	398,53	400,00	403,73
18	600,00	599,67	600,00	605,00
19	900,00	900,80	900,00	905,73
20	1200,00	1201,00	1200,00	1205,20
21	1600,00	1600,00	1600,00	1600,40

Unit: kPa

Zero-load error:	=	0,013	% FSO
Zero-load thermal stability:	<=	1,000	% FSO
Nonlinearity:	=	0,196	% FSO
Hysteresis:	=	0,333	% FSO
Calibration error:	=	0,000	% MO
Apparent load:	=	0,086	% FSO

The adopted calibration procedure has been developed according to the suggestions given by Prof. Paul W. Mayne (Georgia Institute of technology) and Prof. Diego Lo Presti (University of Pisa)

Cone calibrated by _____ Date of issue 30/08/2023

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ITALY

www.pagani-geotechnical.com
info@pagani-geotechnical.com
Tel: +39 0523 771535 - Fax: +39 0523 773449

CONE CALIBRATION CERTIFICATE

N° Z222/23 **30/08/2023**

Calibrated system (Sistema tarato):

Type	**P-C**
Serial number	**000862**
Sensor	**PORE PRESSURE**
Max. Capacity [kPa]:	**2500**
Scaling Factor:	**10287**
Sensor	**TILT ANGLE**
Max. Inclination [°]:	**20**
Scaling Factor:	**334354**

Addressee *(destinatario)* **:**
LandTech Consulting Ltd
11b Carlyle Street, Sydenham,
Christchurch 8023 (New Zealand)

Applied load measurement system:
(Sistema di rilevamento del carico applicato)

Pressure Generator:

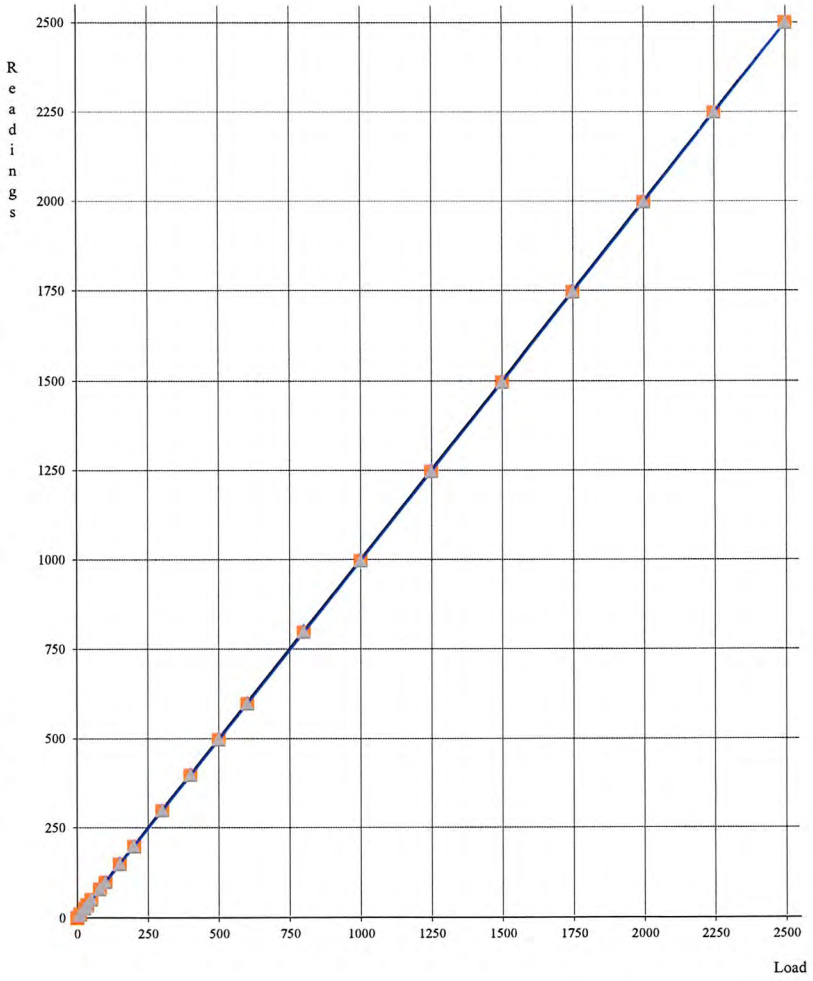
Manufacturer	MENSOR
Model	CPC 4000
Serial Number	41000V56
Sensor Descr	Silicon Pressure Transducer
Sensor Serial Number	41000SYF

The measurement system is periodically checked in a SIT calibration center. *(Il sistema di rilevamento è sottoposto a verifica periodica presso un centro SIT)*

Last verification date:	09/05/2023
Certificate N.	0370-SP-23

Temperature of calibration	22°C
Humidity	45%

Factory calibration in accordance with :
ASTM D5778-12 Validity 12 Months



	Ascending		Descending	
	Load	Readings	Load	Readings
1	0,10	0,00	0,10	-0,20
2	10,00	9,70	9,80	9,40
3	25,00	24,60	25,00	24,40
4	35,00	34,40	35,00	34,20
5	50,00	49,30	50,00	49,10
6	80,00	78,80	80,00	78,70
7	100,00	98,60	100,00	98,60
8	150,00	148,20	150,00	148,20
9	200,00	197,70	199,90	197,90
10	300,00	297,40	300,00	297,60
11	400,00	397,00	399,90	397,10
12	500,00	496,70	500,00	496,90
13	600,00	596,50	600,00	596,60
14	800,00	796,20	800,00	796,30
15	1000,00	996,00	1000,00	996,10
16	1250,00	1246,00	1250,00	1246,00
17	1500,00	1496,10	1500,00	1496,20
18	1750,00	1746,60	1750,00	1746,60
19	2000,00	1997,40	2000,00	1997,50
20	2250,00	2248,70	2250,00	2248,50
21	2500,00	2500,00	2500,00	2500,00

Unit: kPa

Zero-load error:	=	0,008	% FSO
Nonlinearity:	=	0,160	% FSO

The adopted calibration procedure has been developed according to the suggestions given by Prof. Paul W. Mayne (Georgia Institute of technology) and Prof. Diego Lo Presti (University of Pisa)

Cone calibrated by _____

Date of issue 30/08/2023

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29010 CALENDASCO (PC)
ITALY

www.pagani-geotechnical.com
info@pagani-geotechnical.com
Tel: +39 0523 771535 - Fax: +39 0523 773449

CONE CALIBRATION CERTIFICATE

N° Z222/23 **30/08/2023**

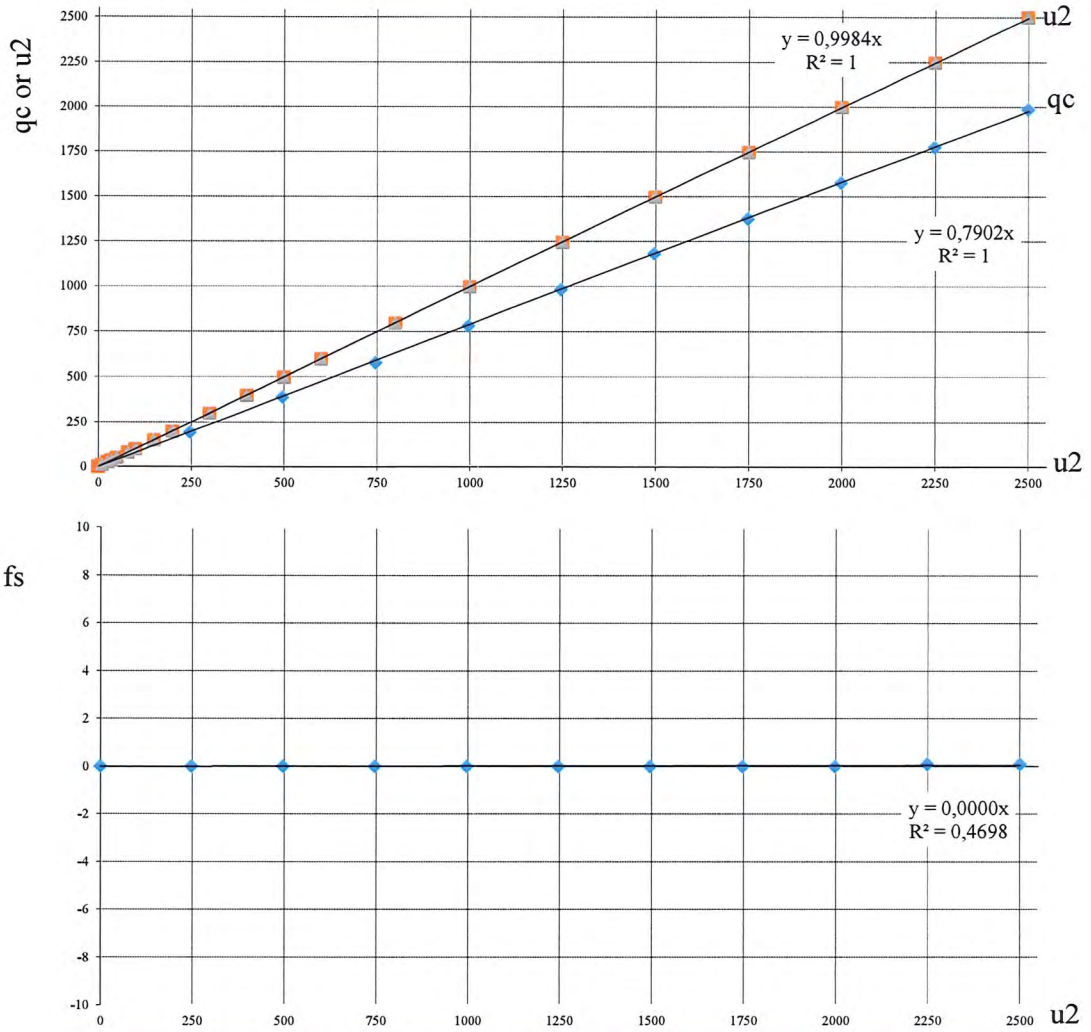
Calibrated system (Sistema tarato):

Type	**P-C**
Serial number	**000862**
Tip net area ratio (a_n):	**0,7902**
Sleeve net ratio (b_n):	**0,0000**

Addressee *(destinatario)* **:**
LandTech Consulting Ltd
11b Carlyle Street, Sydenham,
Christchurch 8023 (New Zealand)

	u2 (kPa)	qc (kPa)	fs (kPa)	u2 (psi)	qc (psi)	fs (psi)
0 (0)	0,00	0,00	0,00	0,00	0,00	0,00
250 (36,26)	247,80	194,00	0,00	35,94	28,14	0,00
500 (72,52)	496,90	389,00	0,00	72,07	56,42	0,00
750 (108,78)	746,70	578,00	0,00	108,30	83,83	0,00
1000 (145,04)	996,60	783,00	0,00	144,54	113,56	0,00
1250 (181,30)	1246,60	983,00	0,00	180,80	142,57	0,00
1500 (217,56)	1496,90	1183,00	0,00	217,11	171,58	0,00
1750 (253,82)	1747,50	1377,00	0,00	253,45	199,72	0,00
2000 (290,08)	1998,40	1577,00	0,00	289,84	228,72	0,00
2250 (326,33)	2249,40	1777,00	0,10	326,25	257,73	0,01
2500 (362,59)	2501,00	1988,00	0,10	362,74	288,33	0,01

Unit: kPa - (psi)



Temperature of calibration	22°C
Humidity	45%

Factory calibration in accordance with :
ASTM D5778-12 Validity 12 Months

The adopted calibration procedure has been developed according to the suggestions given by Prof. Paul W. Mayne (Georgia Institute of technology) and Prof. Diego Lo Presti (University of Pisa)

Cone calibrated by _____ Date of issue 30/08/2023

Cleaning instructions for the U sensor on the piezocone

The U sensor shall be cleaned at the end of each test.
To clean the U sensor, remove the piezocone tip and the saturation ring to access the space where the sensor is located (see Figure 1). Carefully clean the U sensor membrane using paper or cotton buds (see Figure 2).

Figure 1 - U sensor position

Figure 2 - U sensor cleaning

It is important to be careful when cleaning leaving the sensor in perfect condition (see Figure 3) to ensure its perfect functionality.
Damage to the sensor may cause abnormalities during use.

Figure 3 - U sensor properly cleaned

ATTENTION

- ***Never touch the U sensor membrane with your fingers.***
- ***Do not use air compressors with high pressure jets on the U sensor membrane.***
- ***Do not clean with hard objects (screwdrivers, keys, etc.) that could damage the U sensor membrane.***

E

Appendix E – Laboratory Testing Results

Beca Geotest
21 Pitt Street
PO Box 6345
Auckland 1141
New Zealand

p + 64 9 300 9380

Report Number: SSI:AKL24-00112-S01
Date of Issue:16/04/2024
Issue Number: 1

Shrink Swell Index Report

Client:	Kainga Ora - Homes and Communities
Project Name:	Project Velocity
Project No:	3170470
Client Request ID:	3912124/300/GA

ACCREDITED IANZ TESTING LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Authorised Signatory:
Kajal Ranchal
(Laboratory Technician)

Sample Details

Sample ID:	AKL24-00112-S01	**Sampling Method:**	Tested as Received
Field ID:	CPT01	**Material:**	Soil
Date Sampled:	9/04/2024	**Source:**	Borehole
Date Submitted:	10/04/2024	**Specification:**	No Specification
Project Location:	25 Wihongi St, Kaikohe		
Sample Location:	25 Wihongi St, Kaikohe		
Borehole Number:	CPT01		
Borehole Depth (m):	0.3-0.5		
Soil Description:	Very stiff clayey SILT		

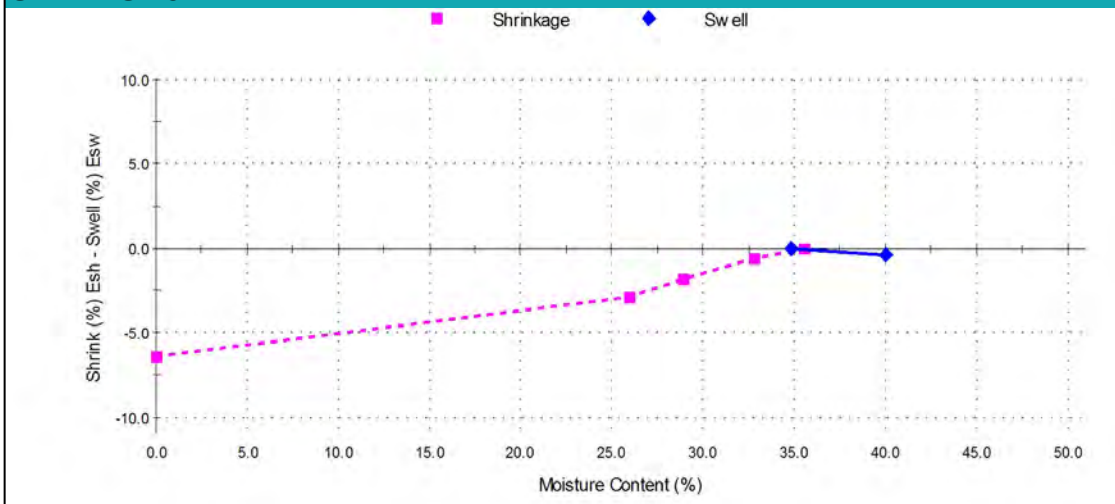
Swell Test — AS 1289.7.1.1

Swell on Saturation (%):	-0.4
Moisture Content before (%):	34.8
Moisture Content after (%):	40.0
Est. Unc. Comp. Strength before (kPa):	-
Est. Unc. Comp. Strength after (kPa):	-

Shrink Test — AS 1289.7.1.1

Shrink on drying (%):	6.4
Shrinkage Moisture Content (%):	35.5
Est. inert material (%):	0
Crumbling during shrinkage:	-
Cracking during shrinkage:	10%

Shrink Swell



Shrink Swell Index - Iss (%): 3.5

Comments

Sample description (Not IANZ endorsed)
The Shrinkage specimen does not have a length within the range of 1.5 to 2 diameters.

Beca Geotest
21 Pitt Street
PO Box 6345
Auckland 1141
New Zealand

p + 64 9 300 9380

Report Number: MAT:AKL24-00112-S02
Date of Issue:16/04/2024
Issue Number: 1

Material Test Report

Client: Kainga Ora - Homes and Communities

Project Name: Project Velocity

Project No: 3170470

Client Request ID: 3912124/300/GA

ACCREDITED IANZ TESTING LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Authorised Signatory:
Kajal Ranchal
(Laboratory Technician)

Sample Details

Sample ID	AKL24-00112-S02	**Client Sample ID**	HA01
Field Sample ID	HA01		
Date Sampled	9/04/2024		
Date Received	10/04/2024		
Source	Borehole		
Material	Soil		
Specification	No Specification		
Sampling Method	Tested as Received		
Material Description	Very stiff clayey SILT		
Depth (m)	0.5-0.8		
Location	25 Wihongi St, Kaikohe		
Tested By	Kajal Ranchal		

Test Results

Description	Method	Result	Limits
Liquid Limit	NZS 4402 : 1986 Test 2.2 (Note 12) and 2.6	81	
Linear Shrinkage		21	
Curling		No	
Cracking		yes	
Sample History		As Receievd	
Fraction Tested		0.425mm	
Tested By		K.Ranchal	
Date Tested		15/04/2024	
Moisture Content (%)	NZS 4402:1986 Test 2.1	34.1	
Tested By		Kajal Ranchal	
Date Tested		12/04/2024	

Comments

Sample description (Not IANZ endorsed)

Beca Geotest
21 Pitt Street
PO Box 6345
Auckland 1141
New Zealand

p + 64 9 300 9380

Report Number: MAT:AKL24-00112-S03
Date of Issue:16/04/2024
Issue Number: 1

Material Test Report

Client: Kainga Ora - Homes and Communities

Project Name: Project Velocity

Project No: 3170470

Client Request ID: 3912124/300/GA

ACCREDITED IANZ TESTING LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Authorised Signatory:
Kajal Ranchal
(Laboratory Technician)

Sample Details

Sample ID	AKL24-00112-S03	**Client Sample ID**	HA03
Field Sample ID	HA03		
Date Sampled	9/04/2024		
Date Received	10/04/2024		
Source	Borehole		
Material	Soil		
Specification	No Specification		
Sampling Method	Tested as Received		
Material Description	Very stiff clayey SILT		
Depth (m)	0.4-0.7		
Location	25 Wihongi St, Kaikohe		
Tested By	Kajal Ranchal		

Test Results

Description	Method	Result	Limits
Liquid Limit	NZS 4402 : 1986 Test 2.2 (Note 12) and 2.6	67	
Linear Shrinkage		16	
Curling		No	
Cracking		Yes	
Sample History		As received	
Fraction Tested		0.425mm	
Tested By		S.Shah	
Date Tested		12/04/2024	
Moisture Content (%)	NZS 4402:1986 Test 2.1	29.3	
Tested By		Kajal Ranchal	
Date Tested		11/04/2024	

Comments

Sample description (Not IANZ endorsed)

F

Appendix F – Bearing Capacity Assessment Results

Project	Housing Delivery System - 25 Wihongi Street, Kaikohe
Client	Kainga Ora
Job No.	3912124
Date	23/04/2024
Calculated by	OKM
Reviewed by	JJ
Design Case	Static

Input

1.0 Foundation Geometry

Foundation breadth	B	6.00	m
Foundation length	L	10.00	m
Foundation thickness	T	0.31	m
Depth to underside of foundation	D_f	0.10	mbgl
Groundwater Depth	D_w	3.10	mbgl
Foundation Type		Cast-in-situ Concrete	

2.0 Slope Profile

Minimum horizontal distance from the edge of the underside of the foundation to the face of an adjacent downward slope	D_e	100.00	m
Slope, below horizontal, of the ground adjacent to the edge of the foundation	ω	20	degrees

3.0 Applied Forces or Structural Demands (refer to sketch below)

A Static Case

Design factored vertical load	V	0	kN
Unfactored vertical load	V_{uf}	0	kN
Design factored horizontal load - along the breadth	H	0	kN
Unfactored horizontal load - along the breadth	H_{uf}	0	kN
Design factored horizontal load - along the length	H_L	0	kN
Unfactored horizontal load - along the length	H_{Luf}	0	kN
Design factored momemt - axis parallel to the breadth	M_b	0	kNm
Design factored momemt - axis parallel to the length	M_l	0	kNm

B Seismic Case

EQ_Design factored vertical load	V_e	0	kN
EQ_Unfactored vertical load	V_{e_uf}	0	kN
EQ_Design factored horizontal load - along the breadth	H_e	0	kN
EQ_Unfactored horizontal load - along the breadth	H_{e_uf}	0	kN
EQ_Design factored horizontal load - along the length	H_{le}	0	kN
EQ_Unfactored horizontal load - along the length	H_{le_uf}	0	kN
EQ_Design factored moment - axis parallel to the breadth	M_{be}	0	kNm
EQ_Design factored moment - axis parallel to the length	M_{le}	0	kNm

4.0 Load Factors

C3.0 Load Factors and Strength Reduction Factors

Load factor for foundation selfweight	LF_{DL}	1.25	
Strength reduction factor for static and EQ bearing failure	Φ_{bc}	0.45	
Strength reduction factor for static and EQ sliding failure	Φ_{sl}	0.8	
Base sliding coefficient	δ_{sl}	1	ϕ

5.0 Ground Profile & Soil Parameters

Unit weight	Y	18	kN/m^3
Undrained shear strength	Su	190	kPa
Effective cohesion	c'	3	kPa
Friction Angle	ϕ'	30	degrees
Soil Type		Sand Like	

Output & Reference

6.0 Summary of LRFD Bearing Capacity Checks

		Along the Breadth	Along the Length
ST Static	Reaction force within middle 2/3? (As per B1/VM4 requirement)	YES	YES
	Reaction force within middle 1/3? (Beca Geotechnical practice)	YES	YES
	Base Sliding (Factored resistance > Factored demand?)	OK	OK
	Bearing Capacity (Factored resistance > Factored demand?)	OK	
ST EQ	Reaction force within middle 2/3? (As per B1/VM4 requirement)	YES	YES
	Reaction force within middle 1/3? (Beca Geotechnical practice)	YES	YES
	Base Sliding (Factored resistance > Factored demand?)	OK	OK
	Bearing Capacity (Factored resistance > Factored demand?)	OK	
LT Static	Reaction force within middle 2/3? (As per B1/VM4 requirement)	YES	YES
	Reaction force within middle 1/3? (Beca Geotechnical practice)	YES	YES
	Base Sliding (Factored resistance > Factored demand?)	OK	OK
	Bearing Capacity (Factored resistance > Factored demand?)	OK	

7.0 Bearing Capacities and Design Bearing Strengths

	q_u (kPa)	q_{dbs} (kPa)	q_d (kPa)
Short Term - Static (ST Static)	490	219	10
Short Term - Earthquake (ST EQ)	490	219	10
Long Term - Static (LT Static)	490	219	10

8.0 Lateral Capacities and Design Sliding Resistance

	S (kN)	ΦS (kN)	H (kN)
Short Term - Static (ST Static)	516	412	0
Short Term - Earthquake (ST EQ)	448	359	0
Long Term - Static (LT Static)	516	412	0

9.0 Reference Formulae

q_d design bearing pressure = V/A' (kPa).

q_u ultimate bearing strength (kPa).

q_{dbs} design bearing strength = $\Phi_{bc} q_u$ (kPa).

$$q_u = c'\lambda_{cs}\lambda_{cd}\lambda_{ci}\lambda_{cg} N_c + q'\lambda_{qs}\lambda_{qd}\lambda_{qi}\lambda_{qg} N_q + {}^1/_2\gamma' B'\lambda_{\gamma s}\lambda_{\gamma d}\lambda_{\gamma i}\lambda_{\gamma g} N_\gamma$$

$$q_u = s_u\lambda_{cs}\lambda_{cd}\lambda_{ci}\lambda_{cg} N_c + \lambda_{qg} q$$

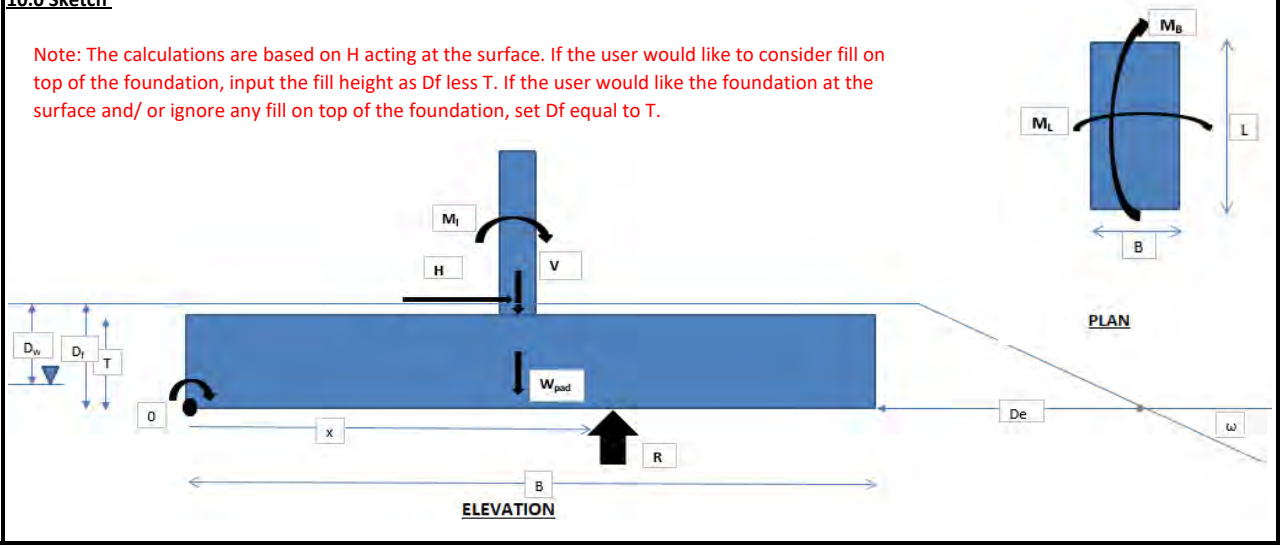
S ultimate shear strength between the base of the foundation and the ground (kN).

$$S = A's_u$$

$$S = c'A' + V' \tan\delta' \qquad H \le \Phi_{sl} S$$

10.0 Sketch

Note: The calculations are based on H acting at the surface. If the user would like to consider fill on top of the foundation, input the fill height as Df less T. If the user would like the foundation at the surface and/ or ignore any fill on top of the foundation, set Df equal to T.



APPENDIX 7 – RULES ASSESSMENT

Site Details	
Site address	25 Wihongi Street, Kaikohe
Legal description	Lot 58 DP 36638
Plan Details	
Plan	Northland District Plan
Zone	Chapter 7 Urban Environment, Section 6 – Residential Zone
Precinct	N.A
Overlays	N.A
Controls	N.A
Designations	N.A
Plan Changes	Clause 16 amendments to the proposed district plan.

FAR NORTH DISTRICT PLAN (OPERATIVE IN PART) RULES ASSESSMENT

Rule	Compliance	Non-Compliance
Residential Zone		
Rule 7.6.5.1 Permitted Activities		
Rule 7.6.5.1.2 Residential Intensity Activity status: **Permitted Activity** where: (a) Each residential unit for a single household shall have available to it a minimum net site area of:	**Complies**	

Rule	Compliance	Non-Compliance
Sewered sites: 600 m^2 Unsewered sites: 3,000 m^2		
Rule 7.6.5.1.3 Scale of Activities Activity status: **Permitted Activity** where: The total number of people engaged at any one period of time in activities on a site including employees and persons making use of any facilities, but excluding people who normally reside on the site shall not exceed: • 2 persons per 600 m2 (Sewered) • 2 persons per 3,000 m2 (Unsewered)	**Not applicable** - The proposed use is limited to people who normally reside on the site.	
Rule 7.6.5.1.4 Building Height **Permitted Activity:** The maximum height of any building shall be 8m.	**Complies**	
Rule 7.6.5.1.5 Sunlight Activity status: **Permitted Activity** where: No part of any building shall project beyond a 45-degree recession plane as measured inwards from any point 2 m vertically above ground level on any site boundary except that: a) A building may exceed this standard for a maximum distance of 10 m along any one boundary other than a road boundary, provided that the maximum height of any building where it exceeds the standard is 2.7 m.	**Complies-** see architectural drawings included in **Appendix 2** as confirmation of compliance.	

Rule	Compliance	Non-Compliance
b) Where a site boundary adjoins a legally established entrance strip, private way, access lot, or access way serving as rear site, the measurement shall be taken from the farthest boundary of the entrance strip, private way, access lot or access way.		
Rule 7.6.5.1.6 Stormwater Management Activity status: **Permitted Activity** where: The maximum proportion of the gross site area covered by buildings and other impermeable surfaces shall be 50%.		**Does not comply**- the proposed area covered by buildings and other impervious surfaces is 51.8%.
Rule 7.6.5.1.7 Setback from Boundaries Activity status: **Permitted Activity** where: (a) The minimum building setback from road boundaries shall be 3 m. (b) The minimum set-back from any boundary other than a road boundary shall be 1.2 m. (c) Not less than 50% of that part of the site between the road boundary and a parallel line 2m there from (i.e. a 2m wide planting strip along the road boundary) shall be landscaped. Refer to exceptions under the Rule.	**Complies**	
Rule 7.6.5.1.9 Outdoor Activities Activity status: **Permitted Activity** except where:	**Complies**	

Rule	Compliance	Non-Compliance
Except as otherwise provided by Rule 7.6.5.1.10, any activity may be carried out outside except that any commercial non- residential activity involving manufacturing, altering, repairing, dismantling or processing of any materials, live produce, goods or articles shall be carried out within a building.		
Rule 7.6.5.1.11 Transportation Refer to Chapter 15 – Transportation for traffic rules.	**Complies**- refer to the transport assessment included in **Appendix 9** for full assessment against Chapter 15.	
Rule 7.6.5.1.17 Building Coverage Activity status: **Permitted Activity** Any new building or alteration/ addition to an existing building is a permitted activity if the total building coverage of a site does not exceed 45% of the gross site area.	**Complies**	
Rule 7.6.5.2 Controlled Activities		
Rule 7.7.5.2.3 Stormwater Activity status: **Controlled Activity** where: The disposal of collected stormwater from the roof of all new buildings and new impervious surfaces provided that: (a) where the means of disposal of collected stormwater will be by way of piping to an approved outfall, each allotment shall be provided with a piped connection to the outfall laid at least 600mm into the net area of the allotment. This includes land allocated on a cross-lease; and	**Complies**	

Rule	Compliance	Non-Compliance
(b) the stormwater collection system shall be designed to avoid any contaminants stored or used on the site from being entrained in any stormwater discharge unless that stormwater is discharged through a stormwater interceptor system; and (c) the site is managed such that the concentration of contaminants in stormwater leaving the site do not pose an immediate or long-term hazard to human health or the environment.		
Rule 7.6.5.3 Restricted Discretionary Activities		
Rule 7.6.5.3.1 Residential Intensity Activity status: **Restricted Discretionary Activity** where: • Each residential unit for a single household shall have available to it a minimum net site area of: Sewered Sites: 300 m^2 Unsewered Sites: 2,000 m^2	**Complies.**	
Rule 7.6.5.3.2 Scale of Activities Activity status: **Restricted Discretionary Activity** where: • The total number of people engaged at any one period of time in activities on a site, including employees and persons making use of any facilities, but excluding people who normally reside on the site or are members of the same household shall not exceed: 4 persons per 600 m^2 (Sewered) 4 persons per 3,000 m^2 (Unsewered)	**Complies.**	

Rule	Compliance	Non-Compliance
Rule 7.6.5.3.3 Building Height Activity status: **Restricted Discretionary Activity** where: • The maximum height of any building shall be 9 m.	**Complies.**	
Rule 7.6.5.3.4 Sunlight Activity status: **Restricted Discretionary Activity** where: No part of any building shall project beyond a 45-degree recession plane as measured inwards from any point 3 m vertically above ground level on any site boundary.	**Complies.**	
Rule 7.6.5.3.5 Building Coverage Activity status: **Restricted Discretionary Activity** where: Any new building or alteration/ addition to an existing building is a restricted discretionary activity if the total building coverage of a site does not exceed 55% or 550 m^2, which ever is lesser of the gross site area.	**Complies.**	
Chapter 12 - Natural and Physical Resources		
12.3.6.1.3 EXCAVATION AND/OR FILLING, EXCLUDING MINING AND QUARRYING, IN THE RESIDENTIAL, INDUSTRIAL, HORTICULTURAL PROCESSING, COASTAL RESIDENTIAL AND RUSSELL TOWNSHIP ZONES Excavation and/or filling, excluding mining and quarrying, on any site in the Residential, Industrial, Horticultural Processing, Coastal Residential or Russell Township Zones is permitted, provided that: (a) it does not exceed 200m3 in any 12 month period per site; and		**Does not comply**- the proposed earthworks volume is 448m^3.

Rule	Compliance	Non-Compliance
(b) it does not involve a cut or filled face exceeding 1.5m in height i.e. the maximum permitted cut and fill height may be 3m.		
12.3.6.2.2 EXCAVATION AND/OR FILLING, EXCLUDING MINING AND QUARRYING, IN THE RESIDENTIAL, INDUSTRIAL, HORTICULTURAL PROCESSING, COASTAL RESIDENTIAL AND RUSSELL TOWNSHIP ZONES Excavation and/or filling, excluding mining and quarrying, on any site in the Residential, Industrial, Horticultural Processing, Coastal Residential or Russell Township Zones is a restricted discretionary activity provided that: (a) it does not exceed 500m3 in any 12 month period per site; and (b) it does not involve a cut or filled face exceeding 1.5m in height i.e. the maximum permitted cut and fill height may be 3m.	**Complies**	
Chapter 16 – Signs and Lighting		
16.6.1 Light Spill & Glare **Permitted Activity** (a) Outdoor lighting used by, or in association with, any activity, including any illuminated sign, shall not exceed the following limits: (i) between 0700hrs and 2200hrs the use of any outdoor lighting shall not cause an added luminance in excess of 25Lux measured horizontally or vertically at any point on the boundary of any adjacent site zoned Residential, Coastal Residential, Rural Living, Russell Township, South Kerikeri Inlet or Coastal Living;	**Complies.**	

Rule	Compliance	Non-Compliance
(ii) between 2200hrs and 0700hrs the following day the use of any outdoor lighting shall not cause an added luminance in excess of 10Lux measured horizontally or vertically at any point 2m within the boundary of any adjacent site zoned Residential, Coastal Residential, Rural Living, Russell Township, South Kerikeri Inlet or Coastal Living. (b) All outdoor lighting, except street lighting, shall be directed away from roads and any adjacent sites zoned Residential, Coastal Residential, Rural Living, Russell Township, South Kerikeri Inlet or Coastal Living. Street lighting shall be designed and constructed in accordance with the AS/NZS 1158, NZS 4404:2002 "Land Development and Subdivision Engineering" and Council's "Engineering Standards and Guidelines" (June 2004 – Revised 2009). (c) Any activity which involves lighting and is situated on a site adjacent to a State Highway and within 50m of the carriageway is permitted provided that all exterior lighting on properties adjacent to State Highways is in accordance with Australian Standard No. 4282-1997 "Control of Obtrusive Effects of Outdoor Lighting".		

PROPOSED FAR NORTH DISTRICT PLAN RULES ASSESSMENT

Rule	Compliance	Non-Compliance
Earthworks		
Proposed earthworks rules and standards with immediate legal effect		
EW-R12 Earthworks and the discovery of suspected sensitive material **Permitted activity where:** The earthworks that complies with standard EW-S3 – Accidental Discovery Protocol.	**Complies**	
EW-R13 Earthworks and erosion and sediment control **Permitted activity where:** The earthworks that complies with standard EW-S5 Erosion and sediment control.	**Complies**	
EW-S3 Accidental discovery protocol On discovery of any suspected sensitive material, the person must take the following steps: 1. Cease all works within 20m of any part of the discovery immediately and secure the area, including: a) shutting down all earth disturbing machinery and stopping all earth moving activities; and	**Will Comply**	

Rule	Compliance	Non-Compliance
b) establish a sufficient buffer area to ensure that all material remains undisturbed. 2. Within 24 hours of the discovery the owner of the site, tenant or the contractor must: a) inform the following parties of the discovery: i. The New Zealand Police if the discovery is of human remains or kōiwi; ii. The Council in all cases; iii. Heritage New Zealand Pouhere Taonga if the discovery is an archaeological site, Māori cultural artefact, human remains or kōiwi; and iv. Tangata Whenua if the discovery is an archaeological site, Māori cultural artefact, or kōiwi. 3. No works shall recommence until the discovery area is inspected by the relevant authority or agency, this shall include: a) If the discovery is human remains or kōiwi the New Zealand Police are required to investigate the human remains to determine whether they are those of a missing person or a crime scene. The remainder of this process will not apply until the New Zealand Police confirm that they have no further interest in the discovery; or b) If the discovery is of archaeological material, other than evidence of contaminants, a site inspection for the		

Rule	Compliance	Non-Compliance
purpose of initial assessment and response will be arranged by the Council in consultation with Heritage New Zealand Pouhere Taonga and appropriate Tangata Whenua representatives. 4. Recommencement of work: a) Heritage New Zealand has confirmed that an archaeological authority has been approved for the work or that none is required; b) Any required notification under the Protected Objects Act 1975 has been made to the Ministry for Culture and Heritage; and c) Resource consent has been granted to any alteration or amendment to the earthworks or land disturbance that may be necessary to avoid the sensitive materials that is not otherwise permitted under the plan or allowed by any existing resource consent.		
EW-S5 Erosion and sediment control Earthworks 1. must for their duration be controlled in accordance with the Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region 2016 (Auckland Council Guideline Document GD2016/005); and	**Will Comply**	

Rule	Compliance	Non-Compliance
2. shall be implemented to prevent silt or sediment from entering water bodies, coastal marine area, any stormwater system, overland flow paths, or roads.		

25 Wihongi Street, Kaikohe

Remedial Action Plan

for: Kāinga Ora – Homes and Communities

Job No: 66115#BEE

Version: Rev0

eTrack No: 200047957

Date of Issue: 21/05/2024

ACKNOWLEDGEMENT OF SUBMISSION

This report was prepared by Charlotte Lucas and reviewed by Hiram Garcia.

Respectfully submitted

Babbage Consultants Ltd

Charlotte Lucas
Environmental Consultant

Hiram Garcia
Principal Environmental Consultant

I have assessed the site in accordance with current New Zealand Regulations and guidance documents and reported in accordance with the current edition of Contaminated Land Management Guidelines No 1: Reporting of Contaminated Sites in New Zealand.
I am considered by Babbage Consultants Limited as a suitably qualified and experienced practitioner (SQEP) pursuant to the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011, based on the company's definition of a SQEP as given below.

Name: Hiram Garcia

Signed:  Date: 21 May 2024

Babbage Consultants Limited: SQEP Definition

Babbage Consultants Limited requires that a SQEP has the following Qualifications/Experience:

- Tertiary education in environmental science, engineering, or other relevant field;
- Ten years of relevant post graduate environmental experience;
- A commitment to continuing professional development; and
- Full membership of an appropriate professional body requiring a commitment to operating in accordance with a professional code of ethics.

Date	Version	eTrack No.	Author(s)	Reviewer(s)
21/05/2024	Rev0	200047957	Charlotte Lucas	Hiram Garcia

Remedial Action Plan

Site: 25 Wihongi Street, Kaikohe

This Remedial Action Plan (RAP) has been prepared by Babbage Consultants Limited (Babbage) for the site located at 25 Wihongi Street, Kaikohe. The site will likely be developed for residential land use. The purpose of this report is to set out the remediation goals to address identified impacted soil on the subject site. This RAP documents the proposed remediation goal, remediation method(s), and method to demonstrate achievement of the remediation goal(s).

This report must be read in conjunction with the Detailed Site Investigation Report – 25 Wihongi Street, Kaikohe[1].

This report meets the requirements outlined in the Ministry for the Environment (MfE) Contaminated Land Management Guideline (CLMG) No. 1[2].

This report was prepared under the direction of a suitably qualified and experienced practitioner (SQEP) – as defined by the requirements of the NESCS Users Guide[3].

Item	Description
Site description	The site is located on the south-west side of Wihongi Street in Kaikohe. The site currently contains a dwelling with associated structures.
Scope and purpose of remediation	**Summary of contamination** Soil sample analyses reported metals (specifically lead) at concentrations above 10% produce consumption residential land use NESCS[4] Soil Contaminant Standard (SCS) within the dwelling halo. **Remediation strategy** Removal and disposal of soil to achieve: Lead in soil to at/or below 10% produce consumption residential land use criteria presented in the NESCS Users' Guide and MfE methodology[5].

[1] Babbage 2024. 25 Wihongi Street, Kaikohe- Supplementary Detailed Site Investigation Report by Babbage Consultants Limited, dated 16 May 2024.

[2] MfE 2021. Contaminated Land Management Guidelines No. 1. Reporting on Contaminated Sites in New Zealand (Revised 2021).

[3] Ministry for the Environment "Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health", 2012 (MfE).

[4] Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

[5] MfE 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health (June 2011).

Item	Description
	Summary of remedial options Available remedial options are removal through excavation, encapsulation to immobilise contaminants, or leave in place which will require a site specific risk assessment. As topsoil will require removal for redevelopment purposes, excavation will be the remedial method used. Excavated soil that is disposed off-site requires disposal to an approved disposal facility consented to accept that level of impacted soil.
Remediation method(s)	**Proposed remedial method** Soils that require remediation are as follows: • Pursuant to the Kāinga Ora – Homes and Communities Generic Contaminated Site Management & Contamination Soil Discovery Guide (CSMP)[6], the halo surrounding buildings (soil sample locations WSC01, WSC02, WSC03 and WSC04) is to be removed to a depth of 0.2 metres below grade surface (m bgl) will require removal (**as designated by "R" in red on Figure 1**) and disposal to landfill[7] prior to redevelopment for residential purposes. Further Toxicity Characteristic Leaching Procedure (TCLP) analysis for lead may be required to confirm acceptance at landfill facility, contractor must confirm with facility prior to disposal. Remaining soils do not require remediation, however, should they require removal for redevelopment purposes (example geotechnically unsuitable material to build on) the following applies: • Soil cell WS06 up to 0.5 m bgl (**shaded orange on Figure 1 and 2**); • Soil cell WS04 up to 0.2 m bgl (**shaded orange on Figure 1**); and • Soil cell WSC03 from 0.3 to 0.5 m bgl (**shaded orange on Figure 2**). These soils can be re-used on site or if disturbed, can be stripped and stockpiled separately or transported directly off site to managed fill in accordance with the waste disposal categories and depths provided. If stockpiled, these soils must be segregated based on soil waste disposal classification and placed on

[6] Kāinga Ora 2021. Generic Contaminated Site Management & Contamination Soil Discovery Guide, 13 December 2021.

[7] Landfill designation based on Hampton Downs and Envirofill South criteria at the time of this report. Disposal criteria varies from each disposal facility. Earthworks contractor needs to verify disposal facility requirements if using a different disposal facility.

Item	Description
	polyethylene sheeting or similar to prevent affecting underlying clean material. The contractor is required to document locations on a plan where these soils are re-used on site and forward them to Babbage. The remaining soils (up to 0.5 m depth) at the site **do not** require off-site disposal from a contamination perspective as they are unlikely to exceed the adopted NESCS SCS based on shallow soil sampling results. However, if these surface soils require removal for redevelopment purposes (example geotechnically unsuitable material to build on), they can need to be disposed of as clean fill, subject to prior approval by the disposal facility. **Proposed timing of remediation** The remediation will occur once a contractor has been assigned to the site. It is anticipated that the remediation of soils requiring removal will be less than two months from commencement of earthworks. **Proposed remediation mitigation methods/controls** The following mitigation methods/controls shall be implemented by the earthwork contractor prior to/during the remedial works on site: ***Excavation and disposal*** • The contractor is required to dispose of soil to a disposal facility consented to accept the level of contamination identified on site. Laboratory transcripts are attached in Appendix A for soil disposal acceptance with selected disposal facility (to be completed prior to commencing works). Soil requiring disposal to landfill or containing asbestos, if required, should be directly loaded into trucks, which are then covered before exiting the site. Verify if the consented disposal facility requires wrapped soil/lined trays for asbestos containing soils prior to loading trucks. • Trucks and excavators should avoid driving through managed fill or landfill areas if present to minimise tracking of contaminated material across the site and/or off site. Water blaster (soils contaminated with metals **but not asbestos**) or low-pressure hose (**soils contaminated with asbestos**) to be provided on site, if necessary, in the immediate vicinity of entry/exit point to the site. Where trucks or excavators must enter managed fill or landfill areas, they shall be placed/parked on an area of geotextile for decontamination. At the end of the works, the geotextile will be disposed the same waste as the area the trucks or excavator tracked through. Adjoining roading network is to be always kept clear of mud and debris, including street sweeping if necessary. • Temporary stockpiling of soils above NESCS SCS or NZGAMAS should be avoided. If not, such soils should be temporarily placed on a secure stockpile, located on an impervious surface, and covered with tarpaulins or similar impervious cover, or alternatively placed in covered bins, until they can be removed from site.

Item	Description
	Note: Contractor to notify Babbage Consultants Limited (Babbage) within 5 days of commencing earthworks. Kāinga Ora may need Babbage to mark out areas requiring off-site disposal prior to commencing earthworks. ***Erosion, sediment, and dust control*** Erosion and sediment controls are to be operational prior to any other works commencing on site and shall remain in place until site is reinstated to an erosion resistant state. Sediment and erosion controls shall comply with the Erosion and Sediment Control Guide for Land Disturbing Activities[8]. Dust control through light and frequent water spraying should be implemented where soil disturbance works are undertaken in dry conditions. These works should be undertaken in accordance with the MfE Good Practice Guide for Assessing and Managing Dust[9]. ***Worker hygiene*** Workers must follow standard health and safety requirements and adherence to strict hygiene procedures, including no eating, drinking, or smoking in the area where excavation works are being undertaken. These activities must take place away from work areas. Soap and water shall be used for washing hands thoroughly prior to food consumption. Should it prove necessary for workers to handle or come into contact with the contaminated soil, disposable nitrile gloves, overalls, and safety glasses shall be worn. In addition, a decontamination boot wash will be made available on site. The contractor is to undertake the management of their soil disturbance activities in accordance with the Kāinga Ora Generic Contaminated Site Management Plan (CSMP)[10] which sets out Kāinga Ora's general requirements for redevelopment of residential property in relation to soil disturbance. **Proposed contamination management measures** The contractor will monitor dust generation during remedial works. The contractor will decontaminate plant and equipment used for the remedial works prior to demobilising from the site. **Proposed remedial activity record keeping** The required record keeping includes but is not limited to:

[8] Auckland Council Guideline Document No.2016/005, ISSN 2230-455X (Online), Auckland Council

[9] Good Practice Guide for Assessing and Managing Dust (2016), ISBN 978-0-908339-73-0, Ministry for the Environment

[10] Kāinga Ora Generic Contaminated Site Management Plan (CSMP) Version 1 (3 December 2021)

Item	Description
	• Contractor will provide a statement to Kāinga Ora Project Manager that the excavation and removal of soils has met the RAP. • Email digital photographs of the work to Kāinga Ora Project Manager. Photographs must be of the excavated area and a separate photograph must be included showing a close-up of a tape measurer and the excavation bottom to verify excavation depth. Post soil removal photographs must be submitted as evidence the site works were undertaken in accordance with this RAP. • Waste disposal dockets must be supplied to Kāinga Ora Project Manager on completion of the work.
Standard of remediation	**Proposed standard of remediation on completion** The following will be used to determine remediation is completed: • Soils from halo areas (WSC01, WSC02, WSC03 and WSC04) have been removed to 0.2 m bgl.
Soil validation	Soil pre-validation sampling has been completed from the remedial excavation areas during the investigation stage, with the exception of WSC01, WSC02 and WSC04. Soil validation sampling from the base of the remedial excavation area WSC01, WSC02 and WSC04 (designated as "V" in Figure 2) is the proposed method to demonstrate the remediation goal has been achieved. The soil validation sampling and reporting will be in accordance with the following: • MfE CLMG No. 1. • MfE Contaminated Land Management Guidelines No. 5. Site Investigation and Analysis of Soils (Revised 2021)[11];. • NZGAMAS. Validation soil samples will be analysed for lead in soil by International Accreditation New Zealand (IANZ) accredited laboratories using industry standard methods.

[11] MfE 2021. Contaminated Land Management Guidelines No. 5. Site Investigation and Analysis of Soils (Revised 2021).

Item	Description
Soil Validation Report	Soil validation sampling results (if required) and soil disposal weigh dockets will be presented in a soil validation report to Kāinga Ora project manager within three months of completion of earthworks.
Unexpected contamination discovery protocols	If, during soil disturbance activities, the contractor encounters any visually stained or odorous soil, asbestos containing material (ACM), rubbish/building debris or other materials that appear to be contaminated, they shall stop work within that area and advise Babbage who will then visit the site to determine the nature and extent of the potentially contaminated soil. This is likely to include the collection of soil samples and laboratory analysis, followed by disposal off site to a disposal facility consented to accept the level of contamination identified on site. Subject to the approval of Babbage, the affected material may be temporarily stockpiled as above, while waiting for the laboratory results. Work shall not recommence within this area unless authorised by Babbage.

This document is not intended to relieve the person conducting a business or undertaking (PCBU, previously referred to as the controller of the place of work) of either their responsibility for the health and safety of their workers, contractors and the public, or their responsibility for protection of the environment. Persons undertaking ground disturbance works on the site should develop a site-specific risk assessment (such as a job safety analysis (JSA), or similar) to complement this RAP and to address other health and safety requirements that may be applicable to their particular works. The site-specific risk assessment should also be modified to address specific health, safety or environmental issues that may arise during the works.

Babbage Consultants Limited
Level 4, 68 Beach Road, Auckland 1010
PO Box 2027, Shortland Street
Auckland 1140, New Zealand
T 09 379 9980 F 09 377 1170
E admin@babbage.co.nz www.babbage.co.nz

CLIENT / PROJECT

KĀINGA ORA - HOMES AND COMMUNITIES

25 WIHONGI STREET, KAIKOHE

MAP TITLE

SOIL DISPOSAL PLAN 0.0 m to 0.2 m depth

MAP REVISIONS

16/5/2024 Initial version by ARB.

Legend

- Site boundary
- Halo Samples
- Sampling Locations
- Landfill to be removed
- Managed Fill or re-use
- Cleanfill or re-use
- 'R' locations to be removed

NOTES
Aerial Images: LINZ Basemap

DISCLAIMER:
This map/plan is not an engineering draft.
This map/plan is illustrative only and all information should be independently verified on site before taking any action.

SCALE

1:200 @ A3

MAP NO.

FIGURE 1

Babbage Consultants Limited
Level 4, 68 Beach Road, Auckland 1010
PO Box 2027, Shortland Street
Auckland 1140, New Zealand
T 09 379 9980 F 09 377 1170
E admin@babbage.co.nz www.babbage.co.nz

CLIENT / PROJECT

KĀINGA ORA - HOMES AND COMMUNITIES

25 WIHONGI STREET, KAIKOHE

MAP TITLE

SOIL DISPOSAL PLAN 0.2 m to 0.5 m depth

MAP REVISIONS

16/5/2024 Initial version by ARB.
20/05/2024 Revised version by CL.

Legend

- Site boundary
- Halo Samples
- Sampling Locations
- Managed Fill or re-use
- Cleanfill or re-use
- 'V' locations to be validated

NOTES
Aerial Images: LINZ Basemap

DISCLAIMER:
This map/plan is not an engineering draft.
This map/plan is illustrative only and all information should be independently verified on site before taking any action.

SCALE

1:200 @ A3

MAP NO.

FIGURE 1

Certificate of Analysis

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Kainga Ora – Homes and Communities - Ni
107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Attention: **Alistair Brown**

Report **1085966-S**
Project name 25 Wihongi Street
Project ID KAINGA ORA HDS
Received Date Apr 10, 2024

Client Sample ID			**WS01 0.0**	**WS02 0.0**	**WS03 0.0**	**WS04 0.0**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**K24-Ap0022861**	**K24-Ap0022862**	**K24-Ap0022863**	**K24-Ap0022864**
Date Sampled			**Apr 09, 2024**	**Apr 09, 2024**	**Apr 09, 2024**	**Apr 09, 2024**
Test/Reference	LOR	Unit				
Metals (As/Cu/Pb/Zn)						
Arsenic	0.1	mg/kg	6.0	7.6	6.0	12
Copper	0.1	mg/kg	42	40	46	49
Lead	0.1	mg/kg	46	57	42	87
Zinc	5	mg/kg	120	130	140	160
Sample Properties						
% Moisture	1	%	21	20	25	23

Client Sample ID			**WS05 0.0**	**WS06 0.0**	**Composite of WSC01 WSC02 WSC03 and WSC04**	**WS04 0.2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**K24-Ap0022865**	**K24-Ap0022866**	**K24-Ap0022867**	**K24-Ap0022872**
Date Sampled			**Apr 09, 2024**	**Apr 09, 2024**	**Apr 09, 2024**	**Apr 09, 2024**
Test/Reference	LOR	Unit				
Metals (As/Cu/Pb/Zn)						
Arsenic	0.1	mg/kg	9.8	20	10	-
Copper	0.1	mg/kg	56	120	63	-
Lead	0.1	mg/kg	50	150	2000	-
Zinc	5	mg/kg	190	260	310	-
Sample Properties						
% Moisture	1	%	20	22	21	25
Metals M8 (NZ MfE)						
Lead	0.1	mg/kg	-	-	-	50

Client Sample ID			WS06 0.2	WSC01	WSC02	WSC03
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			K24-Ap0022875	K24-Ap0022877	K24-Ap0022878	K24-Ap0022879
Date Sampled			Apr 09, 2024	Apr 09, 2024	Apr 09, 2024	Apr 09, 2024
Test/Reference	LOR	Unit				
Sample Properties						
% Moisture	1	%	22	25	30	19
Metals M8 (NZ MfE)						
Lead	0.1	mg/kg	120	780	280	180
Arsenic	0.1	mg/kg	19	-	-	-
Heavy Metals						
Copper	0.1	mg/kg	97	-	-	-

Client Sample ID			WSC04
Sample Matrix			Soil
Eurofins Sample No.			K24-Ap0022880
Date Sampled			Apr 09, 2024
Test/Reference	LOR	Unit	
Sample Properties			
% Moisture	1	%	12
Metals M8 (NZ MfE)			
Lead	0.1	mg/kg	6300

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Metals (As/Cu/Pb/Zn)	Auckland	Apr 11, 2024	6 Months
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8 (NZ MfE)	Auckland	Apr 15, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals	Auckland	Apr 15, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Auckland	Apr 15, 2024	14 Days
- Method: LTM-GEN-7080 Moisture Content in Soil by Gravimetry			

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Company Name: Kainga Ora – Homes and Communities - Ni
Address: 107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Project Name: 25 Wihongi Street
Project ID: KAINGA ORA HDS

Order No.: 6228093
Report #: 1085966
Phone: (021) 537 696
Fax:

Received: Apr 10, 2024 2:02 PM
Due: Apr 17, 2024
Priority: 5 Day
Contact Name: Alistair Brown

Eurofins Analytical Services Manager : Katyana Gausel

Sample Detail	Arsenic	Asbestos - AS4964	Copper	HOLD	Lead	Moisture Set	Metals (As/Cu/Pb/Zn)
Auckland Laboratory - IANZ# 1327	X		X	X	X	X	X
Auckland (Focus) Laboratory - IANZ# 1308							
Christchurch Laboratory - IANZ# 1290		X					
Tauranga Laboratory - IANZ# 1402							
External Laboratory							

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	WS01 0.0	Apr 09, 2024		Soil	K24-Ap0022861		X				X	X
2	WS02 0.0	Apr 09, 2024		Soil	K24-Ap0022862		X				X	X
3	WS03 0.0	Apr 09, 2024		Soil	K24-Ap0022863		X				X	X
4	WS04 0.0	Apr 09, 2024		Soil	K24-Ap0022864		X				X	X
5	WS05 0.0	Apr 09, 2024		Soil	K24-Ap0022865		X				X	X
6	WS06 0.0	Apr 09, 2024		Soil	K24-Ap0022866		X				X	X
7	Composite of WSC01 WSC02 WSC03 and WSC04	Apr 09, 2024		Soil	K24-Ap0022867		X				X	X

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

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35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
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Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

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46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Company Name: Kainga Ora – Homes and Communities - Ni
Address: 107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Project Name: 25 Wihongi Street
Project ID: KAINGA ORA HDS

Order No.: 6228093
Report #: 1085966
Phone: (021) 537 696
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Received: Apr 10, 2024 2:02 PM
Due: Apr 17, 2024
Priority: 5 Day
Contact Name: Alistair Brown

Eurofins Analytical Services Manager : Katyana Gausel

Sample Detail						Arsenic	Asbestos - AS4964	Copper	HOLD	Lead	Moisture Set	Metals (As/Cu/Pb/Zn)
Auckland Laboratory - IANZ# 1327						X		X	X	X	X	X
Auckland (Focus) Laboratory - IANZ# 1308												
Christchurch Laboratory - IANZ# 1290							X					
8	WS02 0.2	Apr 09, 2024		Soil	K24-Ap0022868				X			
9	WS02 0.5	Apr 09, 2024		Soil	K24-Ap0022869				X			
10	WS03 0.2	Apr 09, 2024		Soil	K24-Ap0022870				X			
11	WS03 0.5	Apr 09, 2024		Soil	K24-Ap0022871				X			
12	WS04 0.2	Apr 09, 2024		Soil	K24-Ap0022872					X	X	
13	WS05 0.2	Apr 09, 2024		Soil	K24-Ap0022874				X			
14	WS06 0.2	Apr 09, 2024		Soil	K24-Ap0022875	X		X		X	X	
15	WS06 0.5	Apr 09, 2024		Soil	K24-Ap0022876				X			
16	WSC01	Apr 09, 2024		Soil	K24-Ap0022877					X	X	
17	WSC02	Apr 09, 2024		Soil	K24-Ap0022878					X	X	
18	WSC03	Apr 09, 2024		Soil	K24-Ap0022879					X	X	
19	WSC04	Apr 09, 2024		Soil	K24-Ap0022880					X	X	
20	WS01 0.2	Apr 09, 2024		Soil	K24-Ap0022917				X			
Test Counts						2	7	2	7	6	14	7

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Metals (As/Cu/Pb/Zn)							
Arsenic	mg/kg	< 0.1			0.1	Pass	
Copper	mg/kg	< 0.1			0.1	Pass	
Lead	mg/kg	< 0.1			0.1	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Metals (As/Cu/Pb/Zn)							
Arsenic	mg/kg	< 0.1			0.1	Pass	
Copper	mg/kg	< 0.1			0.1	Pass	
Lead	mg/kg	< 0.1			0.1	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Metals (As/Cu/Pb/Zn)							
Arsenic	%	112			80-120	Pass	
Copper	%	107			80-120	Pass	
Lead	%	108			80-120	Pass	
Zinc	%	113			80-120	Pass	
LCS - % Recovery							
Metals (As/Cu/Pb/Zn)							
Arsenic	%	120			80-120	Pass	
Copper	%	108			80-120	Pass	
Lead	%	105			80-120	Pass	
Zinc	%	115			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Metals (As/Cu/Pb/Zn)				Result 1					
Lead	K24-Ap0023036	NCP	%	108			75-125	Pass	
Zinc	K24-Ap0023036	NCP	%	108			75-125	Pass	
Spike - % Recovery									
Metals (As/Cu/Pb/Zn)				Result 1					
Arsenic	K24-Ap0022867	CP	%	98			75-125	Pass	
Copper	K24-Ap0022867	CP	%	105			75-125	Pass	
Spike - % Recovery									
Metals (As/Cu/Pb/Zn)				Result 1					
Arsenic	K24-Ap0022875	CP	%	113			75-125	Pass	
Copper	K24-Ap0022875	CP	%	114			75-125	Pass	
Lead	K24-Ap0022875	CP	%	106			75-125	Pass	
Zinc	K24-Ap0022875	CP	%	104			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Metals (As/Cu/Pb/Zn)				Result 1	Result 2	RPD			
Arsenic	K24-Ap0022866	CP	mg/kg	20	21	8.7	30%	Pass	
Copper	K24-Ap0022866	CP	mg/kg	120	110	9.3	30%	Pass	
Lead	K24-Ap0022866	CP	mg/kg	150	170	13	30%	Pass	
Zinc	K24-Ap0022866	CP	mg/kg	260	280	11	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	K24-Ap0022866	CP	%	22	22	2.6	30%	Pass	

Duplicate									
Metals (As/Cu/Pb/Zn)				Result 1	Result 2	RPD			
Arsenic	K24-Ap0022872	CP	mg/kg	8.6	9.2	6.4	30%	Pass	
Copper	K24-Ap0022872	CP	mg/kg	45	45	1.2	30%	Pass	
Lead	K24-Ap0022872	CP	mg/kg	50	45	11	30%	Pass	
Zinc	K24-Ap0022872	CP	mg/kg	120	120	3.5	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	K24-Ap0022875	CP	%	22	22	<1	30%	Pass	
Duplicate									
Metals (As/Cu/Pb/Zn)				Result 1	Result 2	RPD			
Arsenic	K24-Ap0022880	CP	mg/kg	5.7	6.5	13	30%	Pass	
Copper	K24-Ap0022880	CP	mg/kg	38	39	2.8	30%	Pass	
Lead	K24-Ap0022880	CP	mg/kg	6300	5900	7.2	30%	Pass	
Zinc	K24-Ap0022880	CP	mg/kg	220	230	5.2	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Katyana Gausel	Analytical Services Manager
Raymond Siu	Senior Analyst-Metal
Sophie Bush	Senior Analyst-Asbestos

Raymond Siu
Senior Instrument Chemist (Key Technical Personnel)

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates IANZ accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Certificate of Analysis

eurofins | Environment Testing

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Kainga Ora – Homes and Communities - Ni
107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Attention:	Alistair Brown
Report	1085966-AID
Project Name	25 Wihongi Street
Project ID	KAINGA ORA HDS
Received Date	Apr 10, 2024
Date Reported	Apr 18, 2024

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence IANZ Accreditation does not cover the performance of this service (non-IANZ results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name 25 Wihongi Street
Project ID KAINGA ORA HDS
Date Sampled Apr 09, 2024
Report 1085966-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
WS01 0.0	24-Ap0022861	Apr 09, 2024	Approximate Sample 92g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS02 0.0	24-Ap0022862	Apr 09, 2024	Approximate Sample 126g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS03 0.0	24-Ap0022863	Apr 09, 2024	Approximate Sample 72g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS04 0.0	24-Ap0022864	Apr 09, 2024	Approximate Sample 113g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS05 0.0	24-Ap0022865	Apr 09, 2024	Approximate Sample 108g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS06 0.0	24-Ap0022866	Apr 09, 2024	Approximate Sample 113g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
Composite of WSC01 WSC02 WSC03 and WSC04	24-Ap0022867	Apr 09, 2024	Approximate Sample 376g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Christchurch	Apr 10, 2024	Indefinite

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Company Name: Kainga Ora – Homes and Communities - Ni
Address: 107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Project Name: 25 Wihongi Street
Project ID: KAINGA ORA HDS

Order No.: 6228093
Report #: 1085966
Phone: (021) 537 696
Fax:

Received: Apr 10, 2024 2:02 PM
Due: Apr 17, 2024
Priority: 5 Day
Contact Name: Alistair Brown

Eurofins Analytical Services Manager : Katyana Gausel

Sample Detail	Arsenic	Asbestos - AS4964	Copper	HOLD	Lead	Moisture Set	Metals (As/Cu/Pb/Zn)
Auckland Laboratory - IANZ# 1327	X		X	X	X	X	X
Auckland (Focus) Laboratory - IANZ# 1308							
Christchurch Laboratory - IANZ# 1290		X					
Tauranga Laboratory - IANZ# 1402							
External Laboratory							

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	WS01 0.0	Apr 09, 2024		Soil	K24-Ap0022861		X				X	X
2	WS02 0.0	Apr 09, 2024		Soil	K24-Ap0022862		X				X	X
3	WS03 0.0	Apr 09, 2024		Soil	K24-Ap0022863		X				X	X
4	WS04 0.0	Apr 09, 2024		Soil	K24-Ap0022864		X				X	X
5	WS05 0.0	Apr 09, 2024		Soil	K24-Ap0022865		X				X	X
6	WS06 0.0	Apr 09, 2024		Soil	K24-Ap0022866		X				X	X
7	Composite of WSC01 WSC02 WSC03 and WSC04	Apr 09, 2024		Soil	K24-Ap0022867		X				X	X

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Company Name: Kainga Ora – Homes and Communities - Ni
Address: 107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Project Name: 25 Wihongi Street
Project ID: KAINGA ORA HDS

Order No.: 6228093
Report #: 1085966
Phone: (021) 537 696
Fax:

Received: Apr 10, 2024 2:02 PM
Due: Apr 17, 2024
Priority: 5 Day
Contact Name: Alistair Brown

Eurofins Analytical Services Manager : Katyana Gausel

Sample Detail						Arsenic	Asbestos - AS4964	Copper	HOLD	Lead	Moisture Set	Metals (As/Cu/Pb/Zn)
Auckland Laboratory - IANZ# 1327						X		X	X	X	X	X
Auckland (Focus) Laboratory - IANZ# 1308												
Christchurch Laboratory - IANZ# 1290							X					
8	WS02 0.2	Apr 09, 2024		Soil	K24-Ap0022868				X			
9	WS02 0.5	Apr 09, 2024		Soil	K24-Ap0022869				X			
10	WS03 0.2	Apr 09, 2024		Soil	K24-Ap0022870				X			
11	WS03 0.5	Apr 09, 2024		Soil	K24-Ap0022871				X			
12	WS04 0.2	Apr 09, 2024		Soil	K24-Ap0022872					X	X	
13	WS05 0.2	Apr 09, 2024		Soil	K24-Ap0022874				X			
14	WS06 0.2	Apr 09, 2024		Soil	K24-Ap0022875	X		X		X	X	
15	WS06 0.5	Apr 09, 2024		Soil	K24-Ap0022876				X			
16	WSC01	Apr 09, 2024		Soil	K24-Ap0022877					X	X	
17	WSC02	Apr 09, 2024		Soil	K24-Ap0022878					X	X	
18	WSC03	Apr 09, 2024		Soil	K24-Ap0022879					X	X	
19	WSC04	Apr 09, 2024		Soil	K24-Ap0022880					X	X	
20	WS01 0.2	Apr 09, 2024		Soil	K24-Ap0022917				X			
Test Counts						2	7	2	7	6	14	7

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V** = **r** x **t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_x}{x}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix may be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (**P_A**). This estimate is not NATA-accredited.
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to “non-bonded / friable”.
AFM	Airborne Fibre Monitoring, e.g., by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total %w/w asbestos content in asbestos-containing finds in a soil sample (**% w/w**).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021).
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
Sampling	Unless otherwise stated Eurofins are not responsible for sampling equipment or the sampling process.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average %w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (**$\%_{WA}$**).

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Adelle Black	Senior Analyst-Asbestos

Authorised by:

Sophie Bush	Senior Analyst-Asbestos

Sophie Bush
Senior Analyst-Asbestos (Key Technical Personnel)

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates ISO/IEC 17025:2017 accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

25 Wihongi Street, Kaikohe

Detailed Site Investigation

for: Kāinga Ora Homes and Communities

Job No: 66115

Version: Rev1

eTrack No: 200047932

Date of Issue: 21/05/2024

EXECUTIVE SUMMARY

Kāinga Ora Homes and Communities (Kāinga Ora) propose to redevelop the piece of land located at 25 Wihongi Street, Kaikohe as residential land use. To assess actual and potential contamination issues on site, Babbage Consultants Limited (Babbage) has undertaken a Detailed Site Investigation (DSI). The findings of this investigation are summarised as follows:

1 The site has been in residential use for at least 55 years. Prior to that, the site was used for pastoral purposes. Site history review and subsequent site investigation walkover indicates that the site has not been subjected to an activity on the Hazardous Activities and Industry List (HAIL).

2 Soil sample analyses reported metals at concentrations above residential 10% produce consumption land use NESCS[1] Soil Contaminant Standard (SCS) (specifically lead) at sample locations on the site. Asbestos in soil was not detected above the New Zealand Guidelines for Assessing and Managing Asbestos in Soil (NZGAMAS)[2] human health soil guideline values.

3 As the piece of land covered by this report does not meet the criteria outlined in regulation 5(7) (a) through to (c) and that it is more likely than not that a HAIL activity has not taken place on the piece of land, the NESCS does not apply to the site.

4 Consents will be required from Regional Council from a contamination perspective. Specifically, a controlled activity consent for contaminated land remediation in accordance with the Proposed Regional Plan of Northland[3].

5 Based on the soil sample results, some soils pose a risk to current and future site users as soils are above the applicable NESCS SCS which require removal or management.

6 The upper surface soils up to 0.5 metres below ground level (m bgl) may require removal for geotechnical purposes. Surface soils up to 0.5 m bgl from the site that require off-site removal, will need to be disposed of as either clean fill, managed fill, or landfill waste.

7 Under the Health and Safety at Work (Asbestos) Regulations 2016[4], an asbestos demolition survey on the dwellings/structures, including testing of suspected asbestos containing material

[1] Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

[2] Building Research Association of New Zealand (BRANZ) 2017. New Zealand Guidelines for Assessing and Managing Asbestos in Soil

[3] Northland Regional Council 2024. Proposed Regional Plan for Northland. February 2024.

[4] Health and Safety at Work (Asbestos) Regulations 2016.

(ACM) by an International Accreditation New Zealand (IANZ) accredited laboratory must be undertaken.

8 Additional Toxicity Characteristic Leaching Procedure (TCLP) analysis may be required for lead to confirm if landfill designated material requires pre-treatment prior to landfill disposal.

9 Soil validation will be required at final cut depth of dwelling halo (sample locations WSC01, WSC02, and WSC04) due to lead exceedance above the NESCS SCS for 10% produce consumption residential land use.

10 A contaminated soil Remedial Action Plan (RAP) should be created for the site, setting out health and safety and environmental management controls, including the appropriate off-site disposal of excavated soils, and management practices for unexpected discovery of contamination, including ACM.

ACKNOWLEDGEMENT OF SUBMISSION

This report was prepared by Alistair Brown and reviewed by Hiram Garcia.

Respectfully submitted

Babbage Consultants Limited

Alistair Brown
Environmental Consultant

Hiram Garcia
Principal Environmental Consultant

I have assessed the site in accordance with current New Zealand Regulations and guidance documents and reported in accordance with the current edition of Contaminated Land Management Guidelines No 1: Reporting of Contaminated Sites in New Zealand.
I am considered by Babbage Consultants Limited as a suitably qualified and experienced practitioner (SQEP) pursuant to the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011, based on the company's definition of a SQEP as given below.

Name: Hiram Garcia

Signed: Date: 21 May 2024

Babbage Consultants Limited: SQEP Definition

Babbage Consultants Limited requires that a SQEP has the following Qualifications/Experience:

- Tertiary education in environmental science, engineering, or other relevant field;
- Ten years of relevant post graduate environmental experience;
- A commitment to continuing professional development; and
- Full membership of an appropriate professional body requiring a commitment to operating in accordance with a professional code of ethics.

Date	Version	eTrack No.	Author(s)	Reviewer(s)
16/05/2024	Rev0	200047932	Alistair Brown	Hiram Garcia
21/05/2024	Rev1	200047932	John Timpany	Hiram Garcia

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1 INTRODUCTION AND BACKGROUND

Babbage has been engaged by Kāinga Ora to undertake a DSI at 25 Wihongi Street, Kaikohe (the site) to support Kāinga Ora's site redevelopment.

The key aims of the DSI were to determine:

- Whether historic use is likely to have resulted in ground contamination and verify whether activities detailed on the HAIL, issued by the Ministry for the Environment (MfE)[5], apply to the site.
- Concentrations of contaminants of concern in the superficial soils on the site.
- Whether resource consents may be required to address ground contamination issues as part of the proposed redevelopment work with respect to the NESCS, Regional, and District Council criteria if applicable.
- Whether contamination at the site requires remedial work, poses material handling issues and/or off-site disposal/landfill constraints as part of the redevelopment programme.

The site identification details are presented in Table 1.

Table 1. Site identification

Address	Legal description	Area in square metres (m^2)
25 Wihongi Street	Lot 58 DP 36638	900

Note: Source – Land Information New Zealand (LINZ) data service website[6].

The contaminated site investigation work performed follows the general reporting and investigation methodology presented in the MfE Contaminated Land Management Guidelines (CLMG) No. 1[7] and CLMG No. 5[8]. In addition, the requirements outlined in the NZGAMAS has also been followed where appropriate.

[5] MfE 24 March 2023. Land – Guidance and guidelines on contaminated land. Retrieved from https://www.mfe.govt.nz/land/hazardous-activities-and-industries-list-hail

[6] LINZ data service 4 April 2024. Retrieved from https://data.linz.govt.nz/layer/50772-nz-primary-parcels

[7] MfE 2021. Contaminated Land Management Guidelines No. 1. Reporting on Contaminated Sites in New Zealand (Revised 2021)

[8] MfE 2021. Contaminated Land Management Guidelines No. 5. Site Investigation and Analysis of Soils (Revised 2021)

2 SITE DESCRIPTION

The site is located on the western side of Wihongi Street, in the town of Kaikohe. The site currently contains a single standalone dwelling and associated structures.

The current surrounding property use is presented in Table 2.

Table 2. Surrounding property use

Direction	Observation
North	To the north of the site are residential properties.
South	To the south of the site are residential properties.
East	To the east of the site is Wihongi Street, with residential properties beyond.
West	To the west of the site are residential properties.

Note: Source – Based on site observations supported with information from Northland Regional Council's Local Maps website[9].

Far North District Council (FNDC) Maps website[10] shows the site slopes to the northeast, with a fall of approximately 1.5 metres. Stormwater surface runoff generated at the site is collected into the reticulated stormwater, discharging to the Mangamutu Stream[11]. The site does not appear in the Selected Land Use Register (SLUR)/HAIL sites map[12].

Published geological information[13] shows the site to be underlain by the Kerikeri Volcanic Group consisting of basalt lava and volcanic plugs.

Babbage performed a site inspection on 8 April 2024. A summary of observed conditions is presented in Table 3. A photographic log of the site is presented as Appendix A.

[9] Northland Regional Council 19 April 2024. Northland Regional Council Local Maps. Retrieved from https://localmaps.nrc.govt.nz/localmapsviewer/?map=79f54a18dcae4fbd9e1cf774aa2de871

[10] Far North District Council, 15 April 2024. Retrieved from https://fndc.maps.arcgis.com/apps/webappviewer/index.html?id=3baf5c44f716429497077101518a2342

[11] NZ Topo Map, 18 April 2024. Retrieved from https://www.topomap.co.nz/NZTopoMap?v=2&ll=-37.725379,176.155472&z=15

[12] FNDC HAIL sites, 15 April 2024. Retrieved from https://fndc.maps.arcgis.com/apps/webappviewer/index.html?id=7e50cf7a5bcb4a758590cf3c3b278d01

[13] Institute of Geological and Nuclear Sciences (GNS). 4 April 2024.Geology 2.0.0 Webmap NZ 1:250k Geological unit. Retrieved from *https://data.gns.cri.nz/geology/index.html?map=NZ%20Geology* .

Table 3. Site condition

Condition	Observation
Surface water	Not observed on site.
Local sensitive environments	None within 200 m of the site.
Visible signs of plant stress	Not observed on site.
Visible signs of potential contamination sources	Dwelling/structure constructed with potential ACM.

3 SITE HISTORY

Babbage has reviewed historic aerial photographs dating back to 1950 held on the Retrolens website[14]. A summary of selected historic aerial photography is presented in Table 4, and the historical aerial photographs are shown in Appendix B.

Table 4. Summary of historical aerial photographs

Year	Site	Surrounding land use
1950	The site appears to be vacant and appears to be used for pastoral purposes.	The site was surrounded by mostly vacant land. Some residential properties are present to the south of the site. Wihongi Street is present to the east of the site.
1969	The site has been developed for residential purposes with a single residential dwelling and garage present on the site.	Further residential development has occurred around the site.
1987 onwards	The site appears similar to the previous historical aerial image.	Further residential intensification can be seen surrounding the site. No other significant changes can be observed.

3.1 Summary

Based on review of historical aerial photographs, the FNDC HAIL sites map and site observations, it is concluded that the site has not been subjected to an activity on the HAIL. However, the dwelling on the site was present in the era when lead paint (prior to 1993) and ACM (prior to 2000) may have been used. These materials have the potential to impact surface soil, particularly, if they were poorly maintained.

[14] Local Government Geospatial Alliance 19 April 2024. Retrolens Historic Image Resource. Retrieved from http://retrolens.nz/

4 REDEVELOPMENT PROPOSAL

Babbage has not sighted development design drawings or plans for the site, but based on instruction from Kāinga Ora, the site will likely be developed for 10% produce consumption residential land use (single standalone dwelling).

5 SAMPLING ANALYSIS PLAN

The soil sampling and analysis plan for the site is provided in Table 5. The Kāinga Ora Soil Sampling and Analysis Plan (SAP[15]) was used to estimate the soil sampling density for the DSI. The selection of analytes was based on the Conceptual Site Model (CSM) below and guidance presented in the Kāinga Ora SAP.

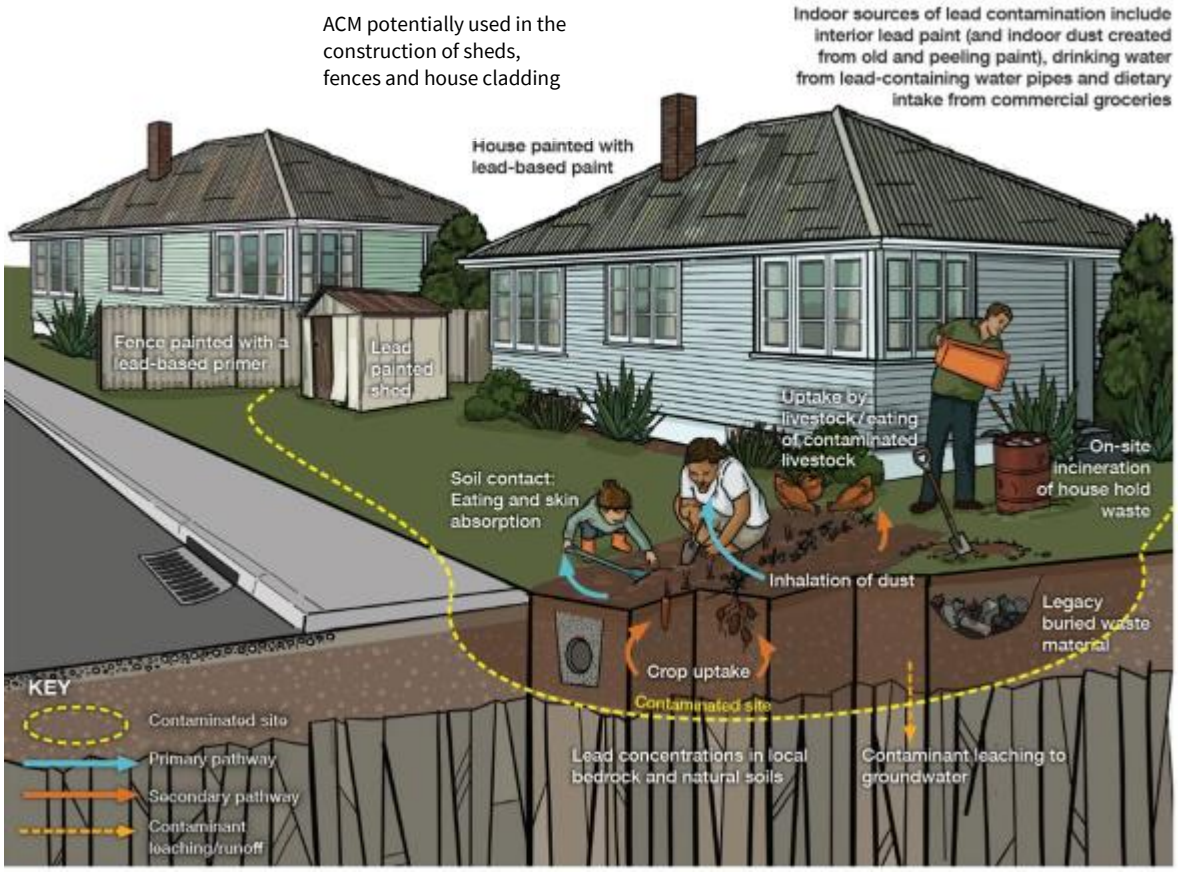


Figure 1. CSM from Kāinga Ora SAP

[15] Kāinga Ora 2022. Residential Property – Soil Sampling and Analysis Plan prepared by EHS Support New Zealand Ltd, May 2022.

A total of six soil samples were collected from the site and four subsamples from the dwelling halo which will be composited by the laboratory as presented in Figure 2. Samples were taken in general accordance with CLMG No 5, Kāinga Ora SAP and the NZGAMAS. The soil sampling and analysis plan for the site is presented in Table 5 below.

Table 5. Soil sampling and analysis plan

Sample number	**Matrix**	**Sample design**	**Depths (m below ground level (bgl))**	**Sample analysis***
WS01 through WS06	Soil.	Targeted. Two in front yard, four in back yard per property.	For each property, six soil samples collected at 0.0, 0.2, and 0.5 or refusal.	Arsenic, copper, lead, and zinc screen. Asbestos presence/absence. Asbestos semi-quantitative**.
WSC01 through WSC04	Soil.	One subsample from each side of dwelling halo for laboratory to composite as one.	Halo subsamples collected at 0.0.	Arsenic, copper, lead, and zinc screen. Asbestos presence/absence. Asbestos semi-quantitative**.
Duplicate				None taken in accordance with Kāinga Ora SAP.

Note: * Analysis was performed on deeper sample(s) (0.2 and 0.5 m bgl) where shallow sample(s) result(s) (surface to 0.1 m bgl) reported elevated contaminant concentrations. ** Semi Quant asbestos analyses was performed on 500 ml samples where asbestos presents/absence samples returned positive test results.

The soil investigation was performed by Babbage on 8 April 2024 in accordance with the sampling analysis plan above with no deviations.

6 SITE INVESTIGATION RESULTS

6.1 Field Observations

The following field observations were recorded as part of these investigations:

- Suspected ACM was observed on the dwellings/structures at the site.
- One weatherboard clad shed was present to along the southern fence line.
- Groundwater was not encountered to the maximum depth of this investigation.

6.2 Analytical Results

The soil sample results are presented in Table 6 below and locations are presented in Figure 2. The laboratory reports are given in Appendix C.

Soil sample results were compared against criteria for the assessment of regulatory requirements, the proposed redevelopment land use and acceptance criteria for local soil disposal sites to meet the objectives of the investigation. The adopted assessment acceptance criteria included:

- Land Resource Information System (LRIS) predicted background concentrations[16].
- Soil guideline values for the protection of ecological receptors (Eco-SGVs) [17].
- Residential 10% produce consumption land use presented in the NESCS Users' Guide and MfE methodology[18].
- Human health soil guideline values presented in the NZGAMAS.
- Acceptance criteria for example cleanfill, managed fill and landfill sites.

The findings are summarised below:

1. Soil samples collected and analysed reported metals concentrations (specifically lead) above the NESCS residential 10% produce consumption land use criteria at three soil sample locations (WSC01, WSC02 and WSC04) on the site. This assessment should be revisited if the final development proposal is not for residential 10% produce consumption land use.
2. Soil samples collected and analysed reported metals concentrations (specifically lead) above the

[16] Landcare Research via LRIS Portal. 19 April 2024. Predicted Background Soil Concentrations, New Zealand. Retrieved from: https://lris.scinfo.org.nz/layer/114281-pbc-predicted-background-soil-concentrations-new-zealand-h3-resolution-9

[17] Landcare Research. User Guide: Background soil concentrations and soil guideline values for the protection of ecological receptors (Eco-SGVs) – Consultation Draft. June 2016.

[18] MfE, 2011, Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health (June 2011)

Eco-SGVs at one soil sample location (WSC04) on the site.

3. Metal concentrations were reported above the selected background concentrations at soil sample locations on the site. The source of the metal impacted soil is likely to be anthropogenic, from approximately 55 years of residential land use.
4. Asbestos was not detected in soil sample locations at the site and around the dwelling halo.

Based on the soil sample results, it is highly unlikely that there will be a risk to human health if the redevelopment activity is done to the piece of land, provided appropriate management measures are in place to deal with the contamination issues identified on site.

6.3 Data Quality

A quality assurance and quality control (QA/QC) programme was implemented as part of field procedures to confirm data was fit for purpose and included:

- Experienced staff used to undertake the field investigation work.
- Decontamination of sampling equipment between sampling locations.
- Preservation of samples with ice during transport from the field to the laboratory.
- Soil analyses were carried out by IANZ accredited laboratories using industry standard methods.
- Transportation of samples with accompanying chain of custody documentation.
- Compliance with sample holding times.

Babbage Consultants Limited
Level 4, 68 Beach Road, Auckland 1010
PO Box 2027, Shortland Street
Auckland 1140, New Zealand
T 09 379 9980 F 09 377 1170
E admin@babbage.co.nz www.babbage.co.nz

CLIENT / PROJECT

KĀINGA ORA - HOMES AND COMMUNITIES

25 WIHONGI STREET, KAIKOHE

MAP TITLE

ENVIRONMENTAL SAMPLING LOCATION PLAN

MAP REVISIONS

8/4/2024 Initial version by ARB.

Legend

- Halo Samples
- Sampling Locations
- Site boundary

NOTES
Aerial Images: LINZ Basemap

DISCLAIMER:
This map/plan is not an engineering draft.
This map/plan is illustrative only and all information should be independently verified on site before taking any action.

SCALE

1:200 @ A3

MAP NO.

FIGURE 2

Table 6: Soil analytical results - metal and asbestos

					Asbestos[1]	Metals - Screen			
					Asbestos Containing Material (ACM) (Presence / absence and type)	Arsenic	Copper	Lead	Zinc
					-	mg/kg	mg/kg	mg/kg	mg/kg
NES Soil -Residential 10%[2]					**NA**	**20**	**>10,000**	**210**	**7,400 [5]**
Eco-SGV Residential (Environmental Protection)[3]					**-**	**60**	**-**	**900**	**-**
LRIS Predicted Background Concentrations[4]					**-**	**0.2-4.1**	**15.7-23.5**	**1.3-11.4**	**11.2-47.5**
Waste Acceptance Criteria - Cleanfill (Envirofill South)[6]					**NA**	**12**	**90**	**65**	**1,160**
Waste Acceptance Criteria - Managed fill (Ridge Road Quarry)[6]					**Presence**	**140**	**280**	**460**	**1,200**
Waste Acceptance Criteria - Hampton Downs landfill[6]					**Accepted**	**100**	**200**	**200**	**500**
Property Address	**Sample ID**	**Sample depth (m bgl)**	**Material Type**	**Sampled Date**					
25 Wihongi Street, Kaikohe	WS01	0.0	Natural	9/04/2024	No asbestos detected	**6**	**42**	**46**	**120**
	WS02	0.0	Natural	9/04/2024	No asbestos detected	**7.6**	**40**	**57**	**130**
	WS03	0.0	Natural	9/04/2024	No asbestos detected	**6**	**46**	**42**	**140**
	WS04	0.0	Natural	9/04/2024	No asbestos detected	**12**	**49**	**87**	**160**
		0.2	Natural	9/04/2024	-	-	-	**50**	-
	WS05	0.0	Natural	9/04/2024	No asbestos detected	**9.8**	**56**	**50**	**190**
	WS06	0.0	Natural	9/04/2024	No asbestos detected	**20**	**120**	**150**	**260**
		0.2	Natural	9/04/2024	-	**19**	**97**	**120**	-
	WSC01 Composited Sample	0.0	Natural	9/04/2024	No asbestos detected	**11**	**63**	**2,000**	**290**
	WSC01	0.0	Natural	9/04/2024	-	-	-	**780**	-
	WSC02	0.0	Natural	9/04/2024	-	-	-	**280**	-
	WSC03	0.0	Natural	9/04/2024	-	-	-	180	-
	WSC04	0.0	Natural	9/04/2024	-	-	-	**6,300**	-

Comments

Results are in milligrams per kilogram (mg/kg) unless specified.

1 = BRANZ, 2017. New Zealand Guidelines for Assessing and Managing Asbestos in Soil.

2 = MfE, June 2011. Methodology for Deriving Standards for Contaminants in Soil to Protect Human Health.

3 = Updated User Guide: Background soil concentrations and soil guideline values for the protection of ecological receptors (Eco-SGVs)- Consultation draft, Envirolink Tools Grant: C09X1402, June 2019

4 = LRIS Portal Predicted Background Soil Concentrations. https://lris.scinfo.org.nz/data/

5 = in the absence of available NESCS SCS Soil criterion for zinc, the criterion has been adopted from Assessment of Site Contamination National Environment Protection Measures (ASC NEPM) Toolbox

6 = Disposal criteria may vary. Verify with disposal facility prior to disposal.

NA = Not Applicable.

<LoR - below laboratory reporting limits.

BOLD underlined :	exceeds applicable NES:CS SCS criteria
BOLD underlined :	exceeds Eco SGV soil acceptance criteria
BOLD underlined:	exceeds applicable NES:CS SCS land use and Eco SGV soil acceptance criteria
BOLD Underlined	above background concentrations
	exceeds Cleanfill acceptance criteria for Envirofill south
	exceeds Managed Fill acceptance criteria for Ridge Road Quarry
	exceeds Landfill acceptance criteria for Hampton Downs landfill
- :	not tested for
m bgl:	metre below ground level

7 INVESTIGATION FINDINGS

The soils encountered during the excavation of investigation holes were logged (see Appendix D). In general, the site is underlain by a silt soil unit from surface to the investigation depth of 0.5 m bgl.

Laboratory analysis reported soil concentrations generally above expected background concentrations.

Based on the soil sample results, no deviations from the CSM were identified.

8 REGULATORY COMPLIANCE

Based on the results from the contaminated site assessment work described above, and given the anticipated redevelopment plans, a summary of the contaminated land regulatory requirements is presented below:

- As the piece of land covered by this report does not meet the criteria outlined in regulation 5(7) (a) through to (c) and that it is more likely than not that a HAIL activity has not taken place on the piece of land, the NESCS does not apply to the site.
- Land disturbance can be conducted as a permitted activity under the Regional Water and Soil Plan for Northland provided that:
    - The volume moved or disturbed is less than 5,000 m^3 in any 12 month period where the activity is not undertaken on erosion prone land;
    - The volume moved or disturbed is less than 1,000 m^3 in any 12 month period and the surface area of the soil exposed is less than 1,000 square metres where the activity is undertaken on erosion prone land;
    - There are no more than minor adverse effects on soil conservation beyond the property boundary; and
    - The Environmental Standards in Section 32 are complied with.
- The Proposed Regional Plan of Northland allows for a site investigation to be conducted as a permitted activity provided that the conditions in Rule C.6.8.1 are met. In addition, as contaminants above adopted NESCS SCS and Eco-SGVs will undergo remedial excavation (see Section 9 of this report), the site complies with Rule C.6.8.2 permitted activity status. However, a controlled activity consent will be required for contaminated land remediation in accordance with Rule C.6.8.3 of the Proposed Regional Plan of Northland.
- There are no specific rules with respect to contaminated land under the Far North District Council Fully Operative District Plan[19].

  As stated in Section 12.3.6 note 2: *Where soil sampling and soil disturbance is proposed on land where a hazardous activity or industry has been, is more likely than not to have been or is currently operating, then the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 apply.*

[19] Far North District Council 2019. Fully Operative District Plan.

9 REMEDIATION / MATERIAL HANDLING REQUIREMENTS

Babbage has no knowledge of foundation design or cut and fill requirements of the proposed development, therefore have assumed a final cut depth assumption of 0.5m bgl. The actual soil excavation volume and remedial costs could change based on site specific design plans or unexpected contamination discovery. An overview of soil disposal requirements and extent for soils that require removal is presented in Table 7 below.

Table 7. Overview of soil disposal requirements and extent that requires removal

Area	Extent	Disposal facility*
Halo zone	1.5 m outside the edge and inside of the former dwelling/structure location to 0.2 m bgl[20].	Landfill; landfill may require additional analysis prior to acceptance.

Note: *These disposal locations are based on current acceptance criteria from Ridge Road Quarry and Hampton Downs Landfill. If alternative facilities are used/preferred we recommend confirming acceptance with chosen facility prior to offsite removal of soil.

The remaining surface soils at the site do not require off-site disposal from a contamination perspective as they are below the adopted NESCS SCS and Eco-SGV criteria. However, if these surface soils require removal for redevelopment purposes (example geotechnically unsuitable material to build on), they will need to be disposed of as managed fill or clean fill[21], subject to prior approval by the disposal facility operator.

The estimated cost to dispose of soils up to 0.5 m bgl is presented in Table 8.

Table 8. Soil disposal cost

Soil disposal areas	Estimated cost	Estimated volume (m^3)	Estimated tonnage
Areas requiring remediation only	**$6,000**	**38**	**68**
Removal of site surface soil to 0.2 m bgl	**$12,500**	**180**	**324**
Removal of site surface soil to 0.5 m bgl	**$25,200**	**450**	**809**

Note: A breakdown of the costs is provided in Appendix E. Cost estimates are not inclusive of excavation, transportation charges, contractor preliminary and general costs, markup, escalation, or GST. Estimates are based on disposal criteria and costs for disposal to Ridge Road Managed Fill and Hampton Downs Landfill at the time of this report. There may be other facilities with different consent requirements that may change the waste classification and disposal costs (higher or lower than estimated here).

[20] Kāinga Ora 2022. Kāinga Ora Conceptual Site Model - Residential Properties prepared by EHS Support New Zealand Ltd, May 2022.

[21] Managed fill and cleanfill designation based on Ridge Road criteria and may not comply with AUP. Verify requirements with cleanfill facility.

Assumed weight of soil – 1.8 tonnes per m^3.

Based on the soil contamination identified, earthworks activities are not anticipated to pose significant risks to workers health or adverse environmental effects, provided appropriate management measures are put in place to deal with the contamination issues on site. Workers handling soils should adopt good hygiene standards.

A contaminated soil RAP will be provided as a separate document, setting out health and safety and environmental management controls, including the appropriate off-site disposal of excavated soils, and management practices for unexpected discovery of contamination, including ACM.

10 RECOMMENDATIONS

Based on the DSI, Babbage recommends the following:

1 The concentration of lead at three locations (WSC01, WSC02 and WSC04) exceeded 10% produce consumption residential land use SCS and requires remediation or management.

2 Contractors performing soil disturbance on site are to use the RAP (separate report) outlining health, environmental and safety controls, mitigation controls to manage unexpected discovery of contaminants, including ACM (underground services are common), and site soil disposal of excavated material based on available laboratory results.

3 Additional TCLP testing for lead may be required to determine if additional treatment is required for soil disposal.

4 A demolition asbestos survey is required to be undertaken on the dwellings/structures prior to demolition in accordance with the requirements of the Asbestos Regulations.

5 Soil validation will be required at final cut depth at sampling locations WSC01, WSC02 and WSC04 due to lead exceedance above the NESCS SCS 10% produce consumption residential land use, as vertical delineation was not completed.

APPLICABILITY AND LIMITATIONS

Restrictions of Intended Purpose

This report has been prepared solely for the benefit of Kāinga Ora Homes and Communities as our client with respect to the brief. The reliance by other parties on the information or opinions contained in the report shall, without our prior review and agreement in writing, be at such party's sole risk.

Legal Interpretation

Opinions and judgements expressed herein are based on our understanding and interpretation of current regulatory standards, and should not be construed as legal opinions. Where opinions or judgements are to be relied on they should be independently verified with appropriate legal advice.

Maps and Images

All maps, plans, and figures included in this report are indicative only and are not to be used or interpreted as engineering drafts. Do not scale any of the maps, plans or figures in this report. Any information shown here on maps, plans and figures should be independently verified on site before taking any action. Sources for map and plan compositions include LINZ Data and Map Services and local council GIS services. For further details regarding any maps, plans or figures in this report, please contact Babbage Consultants Limited.

Reliability of Investigation

Babbage has performed the services for this project in accordance with the standard agreement for consulting services and current professional standards for environmental site assessment. No guarantees are either expressed or implied.

Recommendations and opinions in this report are based on discrete sampling data. The nature and continuity of matrix sampled away from the sampling points are inferred and it must be appreciated that actual conditions could vary from the assumed model.

There is no investigation that is thorough enough to preclude the presence of materials at the site that presently, or in the future, may be considered hazardous. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable may in the future become subject to different regulatory standards, which cause them to become unacceptable and require further remediation for this site to be suitable for the existing or proposed land use activities.

Appendix A

Site Photographs

Client name:	Site location:	Photo dates:
Kāinga Ora - Home and Communities	25 Wihongi Street	8 April 2024

Photo No.	***1.***	
Direction Photo Taken: Facing south.		
Description: Front yard of 25 Wihongi Street.		

Photo No.	***2.***	
Direction Photo Taken: facing west.		
Description: Back yard of 25 Wihongi Street.		

Appendix B

Selected Historical Aerials


N
W
E
S
0
50
100
150
200 m
Date: 1950 aerial
Source: Retrolens
Babbage


N
W
E
S
0
50
100
150
200 m
Date: 1969 aerial
Source: Retrolens
Babbage


N
W
E
S
0
50
100
150
200 m
Date: 1987 aerial
Source: Retrolens
Babbage

Appendix C

Certificate of Analysis

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Kainga Ora – Homes and Communities - Ni
107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Attention: **Alistair Brown**

Report **1085966-S**
Project name 25 Wihongi Street
Project ID KAINGA ORA HDS
Received Date Apr 10, 2024

Client Sample ID			**WS01 0.0**	**WS02 0.0**	**WS03 0.0**	**WS04 0.0**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**K24-Ap0022861**	**K24-Ap0022862**	**K24-Ap0022863**	**K24-Ap0022864**
Date Sampled			**Apr 09, 2024**	**Apr 09, 2024**	**Apr 09, 2024**	**Apr 09, 2024**
Test/Reference	LOR	Unit				
Metals (As/Cu/Pb/Zn)						
Arsenic	0.1	mg/kg	6.0	7.6	6.0	12
Copper	0.1	mg/kg	42	40	46	49
Lead	0.1	mg/kg	46	57	42	87
Zinc	5	mg/kg	120	130	140	160
Sample Properties						
% Moisture	1	%	21	20	25	23

Client Sample ID			**WS05 0.0**	**WS06 0.0**	**Composite of WSC01 WSC02 WSC03 and WSC04**	**WS04 0.2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**K24-Ap0022865**	**K24-Ap0022866**	**K24-Ap0022867**	**K24-Ap0022872**
Date Sampled			**Apr 09, 2024**	**Apr 09, 2024**	**Apr 09, 2024**	**Apr 09, 2024**
Test/Reference	LOR	Unit				
Metals (As/Cu/Pb/Zn)						
Arsenic	0.1	mg/kg	9.8	20	10	-
Copper	0.1	mg/kg	56	120	63	-
Lead	0.1	mg/kg	50	150	2000	-
Zinc	5	mg/kg	190	260	310	-
Sample Properties						
% Moisture	1	%	20	22	21	25
Metals M8 (NZ MfE)						
Lead	0.1	mg/kg	-	-	-	50

Client Sample ID			WS06 0.2	WSC01	WSC02	WSC03
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			K24-Ap0022875	K24-Ap0022877	K24-Ap0022878	K24-Ap0022879
Date Sampled			Apr 09, 2024	Apr 09, 2024	Apr 09, 2024	Apr 09, 2024
Test/Reference	LOR	Unit				
Sample Properties						
% Moisture	1	%	22	25	30	19
Metals M8 (NZ MfE)						
Lead	0.1	mg/kg	120	780	280	180
Arsenic	0.1	mg/kg	19	-	-	-
Heavy Metals						
Copper	0.1	mg/kg	97	-	-	-

Client Sample ID			WSC04
Sample Matrix			Soil
Eurofins Sample No.			K24-Ap0022880
Date Sampled			Apr 09, 2024
Test/Reference	LOR	Unit	
Sample Properties			
% Moisture	1	%	12
Metals M8 (NZ MfE)			
Lead	0.1	mg/kg	6300

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Metals (As/Cu/Pb/Zn)	Auckland	Apr 11, 2024	6 Months
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Metals M8 (NZ MfE)	Auckland	Apr 15, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Heavy Metals	Auckland	Apr 15, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Auckland	Apr 15, 2024	14 Days
- Method: LTM-GEN-7080 Moisture Content in Soil by Gravimetry			

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Company Name: Kainga Ora – Homes and Communities - Ni
Address: 107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Project Name: 25 Wihongi Street
Project ID: KAINGA ORA HDS

Order No.: 6228093
Report #: 1085966
Phone: (021) 537 696
Fax:

Received: Apr 10, 2024 2:02 PM
Due: Apr 17, 2024
Priority: 5 Day
Contact Name: Alistair Brown

Eurofins Analytical Services Manager : Katyana Gausel

Sample Detail	Arsenic	Asbestos - AS4964	Copper	HOLD	Lead	Moisture Set	Metals (As/Cu/Pb/Zn)
Auckland Laboratory - IANZ# 1327	X		X	X	X	X	X
Auckland (Focus) Laboratory - IANZ# 1308							
Christchurch Laboratory - IANZ# 1290		X					
Tauranga Laboratory - IANZ# 1402							
External Laboratory							

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	WS01 0.0	Apr 09, 2024		Soil	K24-Ap0022861		X				X	X
2	WS02 0.0	Apr 09, 2024		Soil	K24-Ap0022862		X				X	X
3	WS03 0.0	Apr 09, 2024		Soil	K24-Ap0022863		X				X	X
4	WS04 0.0	Apr 09, 2024		Soil	K24-Ap0022864		X				X	X
5	WS05 0.0	Apr 09, 2024		Soil	K24-Ap0022865		X				X	X
6	WS06 0.0	Apr 09, 2024		Soil	K24-Ap0022866		X				X	X
7	Composite of WSC01 WSC02 WSC03 and WSC04	Apr 09, 2024		Soil	K24-Ap0022867		X				X	X

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Company Name: Kainga Ora – Homes and Communities - Ni
Address: 107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Project Name: 25 Wihongi Street
Project ID: KAINGA ORA HDS

Order No.: 6228093
Report #: 1085966
Phone: (021) 537 696
Fax:

Received: Apr 10, 2024 2:02 PM
Due: Apr 17, 2024
Priority: 5 Day
Contact Name: Alistair Brown

Eurofins Analytical Services Manager : Katyana Gausel

Sample Detail						Arsenic	Asbestos - AS4964	Copper	HOLD	Lead	Moisture Set	Metals (As/Cu/Pb/Zn)
Auckland Laboratory - IANZ# 1327						X		X	X	X	X	X
Auckland (Focus) Laboratory - IANZ# 1308												
Christchurch Laboratory - IANZ# 1290							X					
8	WS02 0.2	Apr 09, 2024		Soil	K24-Ap0022868				X			
9	WS02 0.5	Apr 09, 2024		Soil	K24-Ap0022869				X			
10	WS03 0.2	Apr 09, 2024		Soil	K24-Ap0022870				X			
11	WS03 0.5	Apr 09, 2024		Soil	K24-Ap0022871				X			
12	WS04 0.2	Apr 09, 2024		Soil	K24-Ap0022872					X	X	
13	WS05 0.2	Apr 09, 2024		Soil	K24-Ap0022874				X			
14	WS06 0.2	Apr 09, 2024		Soil	K24-Ap0022875	X		X		X	X	
15	WS06 0.5	Apr 09, 2024		Soil	K24-Ap0022876				X			
16	WSC01	Apr 09, 2024		Soil	K24-Ap0022877					X	X	
17	WSC02	Apr 09, 2024		Soil	K24-Ap0022878					X	X	
18	WSC03	Apr 09, 2024		Soil	K24-Ap0022879					X	X	
19	WSC04	Apr 09, 2024		Soil	K24-Ap0022880					X	X	
20	WS01 0.2	Apr 09, 2024		Soil	K24-Ap0022917				X			
Test Counts						2	7	2	7	6	14	7

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Metals (As/Cu/Pb/Zn)							
Arsenic	mg/kg	< 0.1			0.1	Pass	
Copper	mg/kg	< 0.1			0.1	Pass	
Lead	mg/kg	< 0.1			0.1	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Metals (As/Cu/Pb/Zn)							
Arsenic	mg/kg	< 0.1			0.1	Pass	
Copper	mg/kg	< 0.1			0.1	Pass	
Lead	mg/kg	< 0.1			0.1	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Metals (As/Cu/Pb/Zn)							
Arsenic	%	112			80-120	Pass	
Copper	%	107			80-120	Pass	
Lead	%	108			80-120	Pass	
Zinc	%	113			80-120	Pass	
LCS - % Recovery							
Metals (As/Cu/Pb/Zn)							
Arsenic	%	120			80-120	Pass	
Copper	%	108			80-120	Pass	
Lead	%	105			80-120	Pass	
Zinc	%	115			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Metals (As/Cu/Pb/Zn)				Result 1					
Lead	K24-Ap0023036	NCP	%	108			75-125	Pass	
Zinc	K24-Ap0023036	NCP	%	108			75-125	Pass	
Spike - % Recovery									
Metals (As/Cu/Pb/Zn)				Result 1					
Arsenic	K24-Ap0022867	CP	%	98			75-125	Pass	
Copper	K24-Ap0022867	CP	%	105			75-125	Pass	
Spike - % Recovery									
Metals (As/Cu/Pb/Zn)				Result 1					
Arsenic	K24-Ap0022875	CP	%	113			75-125	Pass	
Copper	K24-Ap0022875	CP	%	114			75-125	Pass	
Lead	K24-Ap0022875	CP	%	106			75-125	Pass	
Zinc	K24-Ap0022875	CP	%	104			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Metals (As/Cu/Pb/Zn)				Result 1	Result 2	RPD			
Arsenic	K24-Ap0022866	CP	mg/kg	20	21	8.7	30%	Pass	
Copper	K24-Ap0022866	CP	mg/kg	120	110	9.3	30%	Pass	
Lead	K24-Ap0022866	CP	mg/kg	150	170	13	30%	Pass	
Zinc	K24-Ap0022866	CP	mg/kg	260	280	11	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	K24-Ap0022866	CP	%	22	22	2.6	30%	Pass	

Duplicate									
Metals (As/Cu/Pb/Zn)				Result 1	Result 2	RPD			
Arsenic	K24-Ap0022872	CP	mg/kg	8.6	9.2	6.4	30%	Pass	
Copper	K24-Ap0022872	CP	mg/kg	45	45	1.2	30%	Pass	
Lead	K24-Ap0022872	CP	mg/kg	50	45	11	30%	Pass	
Zinc	K24-Ap0022872	CP	mg/kg	120	120	3.5	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	K24-Ap0022875	CP	%	22	22	<1	30%	Pass	
Duplicate									
Metals (As/Cu/Pb/Zn)				Result 1	Result 2	RPD			
Arsenic	K24-Ap0022880	CP	mg/kg	5.7	6.5	13	30%	Pass	
Copper	K24-Ap0022880	CP	mg/kg	38	39	2.8	30%	Pass	
Lead	K24-Ap0022880	CP	mg/kg	6300	5900	7.2	30%	Pass	
Zinc	K24-Ap0022880	CP	mg/kg	220	230	5.2	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Katyana Gausel	Analytical Services Manager
Raymond Siu	Senior Analyst-Metal
Sophie Bush	Senior Analyst-Asbestos

Raymond Siu
Senior Instrument Chemist (Key Technical Personnel)

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates IANZ accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Certificate of Analysis

eurofins | Environment Testing

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

Kainga Ora – Homes and Communities - Ni
107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Attention:	Alistair Brown
Report	1085966-AID
Project Name	25 Wihongi Street
Project ID	KAINGA ORA HDS
Received Date	Apr 10, 2024
Date Reported	Apr 18, 2024

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence IANZ Accreditation does not cover the performance of this service (non-IANZ results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name 25 Wihongi Street
Project ID KAINGA ORA HDS
Date Sampled Apr 09, 2024
Report 1085966-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
WS01 0.0	24-Ap0022861	Apr 09, 2024	Approximate Sample 92g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS02 0.0	24-Ap0022862	Apr 09, 2024	Approximate Sample 126g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS03 0.0	24-Ap0022863	Apr 09, 2024	Approximate Sample 72g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS04 0.0	24-Ap0022864	Apr 09, 2024	Approximate Sample 113g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS05 0.0	24-Ap0022865	Apr 09, 2024	Approximate Sample 108g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
WS06 0.0	24-Ap0022866	Apr 09, 2024	Approximate Sample 113g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
Composite of WSC01 WSC02 WSC03 and WSC04	24-Ap0022867	Apr 09, 2024	Approximate Sample 376g Sample consisted of: Fine grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Christchurch	Apr 10, 2024	Indefinite

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Company Name: Kainga Ora – Homes and Communities - Ni
Address: 107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Project Name: 25 Wihongi Street
Project ID: KAINGA ORA HDS

Order No.: 6228093
Report #: 1085966
Phone: (021) 537 696
Fax:

Received: Apr 10, 2024 2:02 PM
Due: Apr 17, 2024
Priority: 5 Day
Contact Name: Alistair Brown

Eurofins Analytical Services Manager : Katyana Gausel

Sample Detail	Arsenic	Asbestos - AS4964	Copper	HOLD	Lead	Moisture Set	Metals (As/Cu/Pb/Zn)
Auckland Laboratory - IANZ# 1327	X		X	X	X	X	X
Auckland (Focus) Laboratory - IANZ# 1308							
Christchurch Laboratory - IANZ# 1290		X					
Tauranga Laboratory - IANZ# 1402							
External Laboratory							

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID						
1	WS01 0.0	Apr 09, 2024		Soil	K24-Ap0022861		X				X	X
2	WS02 0.0	Apr 09, 2024		Soil	K24-Ap0022862		X				X	X
3	WS03 0.0	Apr 09, 2024		Soil	K24-Ap0022863		X				X	X
4	WS04 0.0	Apr 09, 2024		Soil	K24-Ap0022864		X				X	X
5	WS05 0.0	Apr 09, 2024		Soil	K24-Ap0022865		X				X	X
6	WS06 0.0	Apr 09, 2024		Soil	K24-Ap0022866		X				X	X
7	Composite of WSC01 WSC02 WSC03 and WSC04	Apr 09, 2024		Soil	K24-Ap0022867		X				X	X

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Company Name: Kainga Ora – Homes and Communities - Ni
Address: 107 Carlton Gore Road
Newmarket, Auckland
NZ 1023

Project Name: 25 Wihongi Street
Project ID: KAINGA ORA HDS

Order No.: 6228093
Report #: 1085966
Phone: (021) 537 696
Fax:

Received: Apr 10, 2024 2:02 PM
Due: Apr 17, 2024
Priority: 5 Day
Contact Name: Alistair Brown

Eurofins Analytical Services Manager : Katyana Gausel

Sample Detail						Arsenic	Asbestos - AS4964	Copper	HOLD	Lead	Moisture Set	Metals (As/Cu/Pb/Zn)
Auckland Laboratory - IANZ# 1327						X		X	X	X	X	X
Auckland (Focus) Laboratory - IANZ# 1308												
Christchurch Laboratory - IANZ# 1290							X					
8	WS02 0.2	Apr 09, 2024		Soil	K24-Ap0022868				X			
9	WS02 0.5	Apr 09, 2024		Soil	K24-Ap0022869				X			
10	WS03 0.2	Apr 09, 2024		Soil	K24-Ap0022870				X			
11	WS03 0.5	Apr 09, 2024		Soil	K24-Ap0022871				X			
12	WS04 0.2	Apr 09, 2024		Soil	K24-Ap0022872					X	X	
13	WS05 0.2	Apr 09, 2024		Soil	K24-Ap0022874				X			
14	WS06 0.2	Apr 09, 2024		Soil	K24-Ap0022875	X		X		X	X	
15	WS06 0.5	Apr 09, 2024		Soil	K24-Ap0022876				X			
16	WSC01	Apr 09, 2024		Soil	K24-Ap0022877					X	X	
17	WSC02	Apr 09, 2024		Soil	K24-Ap0022878					X	X	
18	WSC03	Apr 09, 2024		Soil	K24-Ap0022879					X	X	
19	WSC04	Apr 09, 2024		Soil	K24-Ap0022880					X	X	
20	WS01 0.2	Apr 09, 2024		Soil	K24-Ap0022917				X			
Test Counts						2	7	2	7	6	14	7

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V** = **r** x **t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_x}{x}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix may be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (**P_A**). This estimate is not NATA-accredited.
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to “non-bonded / friable”.
AFM	Airborne Fibre Monitoring, e.g., by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total %w/w asbestos content in asbestos-containing finds in a soil sample (**% w/w**).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021).
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
Sampling	Unless otherwise stated Eurofins are not responsible for sampling equipment or the sampling process.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average %w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (**$\%_{WA}$**).

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Adelle Black	Senior Analyst-Asbestos

Authorised by:

Sophie Bush	Senior Analyst-Asbestos

Sophie Bush
Senior Analyst-Asbestos (Key Technical Personnel)

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates ISO/IEC 17025:2017 accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Appendix D

Soil Logging

Soil Logging: 25 Wihongi Street, Kaikohe

Sample Location	Depth (m bgl)	Soil type
WS01 0.0m WS01 0.2m	0.0-0.3	**NATURAL:** SILT, orange, dry. **Refusal at 0.3 m bgl**
WS02 0.0m WS02 0.2m WS02 0.5m	0.0-0.5	**NATURAL:** SILT, orange, dry.
WS03 0.0m WS03 0.2m WS03 0.5m	0.0-0.5	**NATURAL:** SILT, orange, dry.
WS04 0.0m WS04 0.2m WS04 0.5m	0.0-0.5	**NATURAL:** SILT, orange, dry.
WS05 0.0m WS05 0.2m	0.0-0.4	**NATURAL:** SILT, orange, dry. Medium aggregates present. **Refusal at 0.4 m bgl**
WS06 0.0m WS06 0.2m WS06 0.5m	0.0-0.5	**NATURAL:** SILT, orange, dry.

Appendix E

Soil Disposal Volumes and Costs

Removal of 0.5m of material across the site								
Sample location	**Area (m^2)**	**Depth of excavation (m)**	**Thickness (m)**	**Soil volume (m^3)**	**Approx. tonnage[1]**	**Disposal site/ Landfill**	**Disposal rate/ tonne[2]**	**Disposal cost estimate[3]**
WSC01 to WSC04	190	0.0 to 0.2	0.2	38	68	Landfill	$85	$5,814
WS04 and WS06	226	0.0 to 0.2	0.2	45	81	Managed Fill	$33	$2,644
WS01, WS02, WS03 and WS05	483	0.0 to 0.2	0.2	97	174	Cleanfill	$23	$3,999
Material removed to 0.2 m bgl				**180**	**324**			**$12,457**
WSC01 to WSC04 and WS06	300	0.2 to 0.5	0.3	90	162	Managed Fill	$33	$5,265
WS01 to WS05	599	0.2 to 0.5	0.3	180	323	Cleanfill	$23	$7,440
Totals				**449.5**	**809.1**			**$25,162**

Assumed weight of soil – 1.8 tonnes per m^3, price indicative only and to be confirmed

Based on acceptance criteria and pricing from Hampton Downs Landfill and Ridge Road Managed fill / Cleanfill at the time of this report. There may be other facilities with different consent requirements that may change the waste classification and disposal costs (higher or lower than estimated here).

Cost estimates are not inclusive of excavation, transportation charges, contractor markup, escalation or GST.

Auckland

Address | Level 4, 68 Beach Road, Auckland 1010

Post | PO Box 2027, Shortland Street, Auckland 1140, New Zealand

Ph | 64 9 379 9980

Fax | +64 9 377 1170

Email | contact-us@babbage.co.nz

Hamilton

Address | Unit 1, 85 Church Road, Pukete, Hamilton 3200

Post | PO Box 20068, Te Rapa, Hamilton 3241, New Zealand

Ph | +64 7 850 7010

Fax | +64 9 377 1170

Email | contact-us@babbage.co.nz

Christchurch

Address | 128 Montreal Street, Sydenham, Christchurch 8023

Post | PO Box 2373, Christchurch 8140, New Zealand

Ph | +64 3 379 2734

Fax | +64 3 379 1642

Email | solutions@babbage.co.nz

Babbage Consultants Australia Pty Ltd – Melbourne

Address | Level 2, 1 Southbank Boulevard, Southbank, Melbourne, Victoria 3006, Australia

Ph | +61 3 8539 4805

Email | contact-us@babbage.co.nz

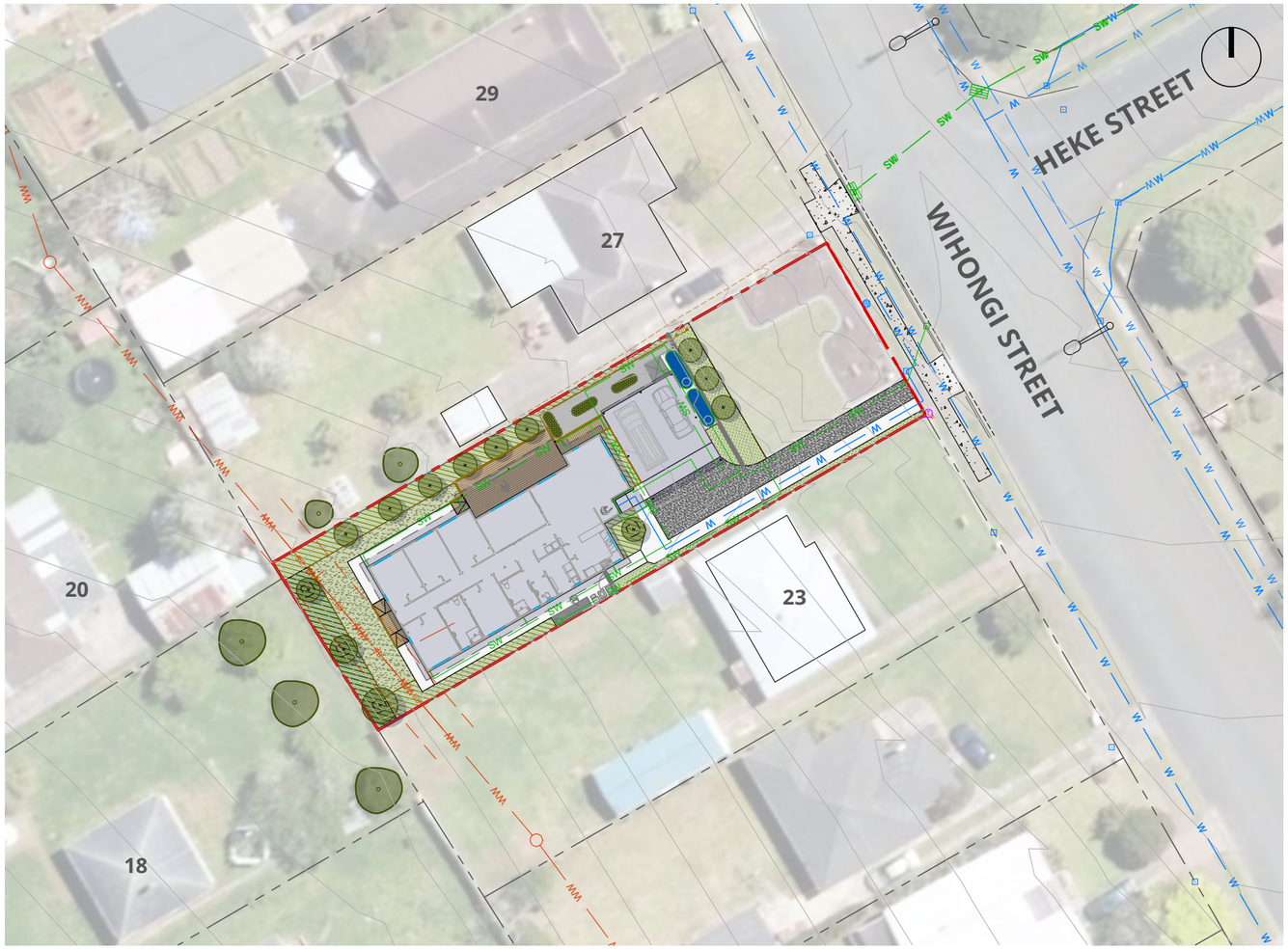
25 Wihongi Street

Kaikohe 0405

DRAWING INDEX

DWG NO.	DWG TITLE	REV.
L0-PROJECT OVERVIEW		
L0-00	Cover Page & Drawing Index	A
L0-01	Keynotes - Sheet 1	A
L0-02	Keynotes - Sheet 2	A
L0-10	Tree Protection & Removal Plan	A
L2-GENERAL ARRANGEMENT		
L2-00	General Arrangement - Overview	A
L2-01	General Arrangement - Sheet 1	A
L2-02	General Arrangement - Sheet 2	A
L4-FENCING STRATEGY		
L4-00	Fencing Strategy - Overview	A
L4-01	Fencing Strategy - Sheet 1	A
L4-02	Fencing Strategy - Sheet 2	A
L7-PLANTING		
L7-00	Planting Plan - Overview	A
L7-01	Planting Plan - Sheet 1	A
L7-02	Planting Plan - Sheet 2	A
L7-20	Plant Schedule	A
L7-50	Planting Details - Sheet 1	A
L7-51	Planting Details - Sheet 2	A

NOTE:
THIS DEVELOPED DESIGN PACKAGE IS ISSUED FOR CONSENTING PURPOSES AND HAS 'NOT FOR CONSTRUCTION' STATUS



ARCHITECT

Young + Richards Limited
4d Edwin Street, Mt Eden,
Auckland 1024
Joon Park
joon.p@youngrichards.com
+64 09 520 6444

PLANNER

Babbage Consultants Limited
Level 4, Quay Park Health Building,
68 Beach Road, Auckland
Nerilee Hakkaart
nerilee.hakkaart@babbage.co.nz
+64 09 379 9980

STRUCTURAL ENGINEER

Beca Group Limited
21 Pitt Street
Auckland 1010
Ken Hu
ken.hu@beca.com
+64 9 300 9295

GEOTECHNICAL ENGINEER

Beca Group Limited
21 Pitt Street
Auckland 1010
James Johnson
james.johnson@beca.com
+64 09 300 9295

CIVIL ENGINEER

Civix Limited
Level 8, 99 Albert St
Auckland 1010
Rachel Felton
rachel@civix.co.nz
+64 09 303 1113

TRAFFIC ENGINEER

Traffic Planning Consultants Ltd
Level 1, 400 Titirangi Road,
Titirangi, Auckland 0604
Peter Kelly
peter@trafficplanning.co.nz
+64 (09) 817 2500 ext. 811

SURVEYOR

McKenzie & Co Consultants Ltd
6/41 Shortland Street, Auckland CBD,
Auckland 1010

+64 09 3205707

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SITE

REF.	DESCRIPTION
	LOT BOUNDARIES
+XYZ	**SPOT ELEVATION - EXISTING**
+XYZ	**SPOT ELEVATION - PROPOSED**
1:XX	**SLOPE / FALL DIRECTION - PROPOSED**

HARDSCAPE

REFER TO L2 DRAWINGS FOR LOCATION

REF.	DESCRIPTION	QTY.
	CP02-CONCRETE PAVEMENT | EXPOSED AGGREGATE, LIGHT *Exposed aggregate 'low carbon' concrete (at least 10% below the Infrastructure Sustainability Council (ISC) 2020 embodied carbon baseline) with medium exposure 1-3 mm. 10mm Basalt or Greywacke chip. 4kg/m3 of black oxide. Thickness, MPa and reinforcing to be specified by structural engineer. Constructed in accordance with NZS3109*	61 m^2
	CP03-CONCRETE PAVEMENT | BROOM FINISH, LIGHT *Broom finish 'low carbon' concrete (at least 10% below the Infrastructure Sustainability Council (ISC) 2020 embodied carbon baseline). 10mm Basalt or Greywacke chip. 4kg/m3 of black oxide. Thickness, MPa and reinforcing to be specified by structural engineer. Constructed in accordance with NZS3109*	168 m^2
	TD-TIMBER DECK *140x32mm H3.2 Radiata Premium Griptread Decking, screw-fixed to substructure. Grip tread down. Fixing and substructure details by Structural Engineer*	45 m^2
	CG-COMPACTED GRAVEL *Compacted / bound gravel. Permeable & wheelchair trafficable surface.*	28 m^2
	LANDSCAPE WALL *Square timber pile & TGV lagging landscape wall, 0.2-0.5m level change*	16 m

FURNITURE

REFER TO L2 DRAWINGS FOR LOCATION

REF.	DESCRIPTION	QTY.
	CL01-CLOTHES LINE | AUSTRAL COMPACT 39 *Austral folding clothes line, 39.3m line capacity, 3.39x0.94m frame. Complete with Ground Mounting Kit, height to be 1.8m above ground. For specific mounting requirements refer to manufacturers installation guide. Do not secure to building.*	1 no.
	RRB-RUBBISH & RECYCLING BINS *2no. 240L Council specification wheelie bins.*	1 pair
	GS01-SECURE STORAGE AREA | LARGE *W1830 x D1530 x H1980-1830mm Secure storage area, Alu-zinc & Colour-coated steel, secured to concrete base pad. Supplier: Garden Master Sheds. Colour: Slate Grey. Code: GM1815.*	1 no.
	LB21-LETTERBOX | SINGLE *Metware Slimline Metal Letterbox. Screw fixed to fence/wall as per manufacturer's specifications. Refer to landscape plans for locations. Include a latch, clearly legible numbers, and hinges to comply with NZ post mailbox specifications. Key locks are not acceptable. Supplier: Metware, Colour: Black*	1 no.
	GB01-RAISED GARDEN PLANTER *Tanksalot Slimline Garden Bed, corrugated steel raised planter, ITEM: GBS-800-2400-500* *SIZE: W800 x L2400 x H500mm, VOLUME: 900L (0.9m^3), COLOUR: Pale Eucalypt - TBC*	3 no.

FENCING

REFER TO L4 DRAWINGS FOR LOCATION

REF.	DESCRIPTION	QTY.
	0.9m VERTICAL BATTEN TIMBER FENCE ***0.9m High Fence*** *(max height 2.0m incl retaining)* ***Posts:*** *100mm x 100mm H4 posts in 300mm dia concrete footing. Max spacing 1.9m.* ***Battens:*** *50mm x 50mm H3.2 Radiata, screw-fixed to Rails with 50mm gap between battens.* ***Rails:*** *100mmx50mm H3.2 rails nail fixed between posts. Locations : 1x level with top, 1x 100mm above ground level.*	24 m
	1.5m VERTICAL BATTEN TIMBER FENCE ***1.5m High Fence*** *(max height 2.0m incl retaining)* ***Posts:*** *100mm x 100mm H4 posts in 300mm dia concrete footing. Max spacing 1.9m.* ***Battens:*** *50mm x 50mm H3.2 Radiata, screw-fixed to Rails with 50mm gap between battens.* ***Rails:*** *100mmx50mm H3.2 rails nail fixed. Locations : 1x level with top, 1x mid height, 1x 100mm above ground level.*	16 m
	1.8m VERTICAL PALING TIMBER BOUNDARY FENCE ***1.8m High Fence*** *(max height 2.0m incl retaining)* ***Posts:*** *100mm x 100mm H4 posts in 300mm dia concrete footing. Max spacing 1.9m.* ***Palings:*** *150mm x 25mm H3.2 palings, nail fixed to rails with 10mm gap between palings.* ***Railings:*** *100mmx50mm H3.2 railings nail fixed. Locations : 1x 50mm from top, 1x mid height, 1x 100mm above ground level.*	101 m
	GATE - 1.2m ALUMINIUM *Boundaryline, Durapanel Delta gate. H1.2m x W0.95m, fixed to 100x100mm H4 posts. Self closing hinges with child proof latch at least 1500mm above ground level. Refer to manufacturer's installation specification.*	1 no.
	DRIVEWAY GATE - 1.5m ALUMINIUM *Automated sliding driveway gate. H1.5m x W3.60m. Remote and keypad entry.*	1 no.

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Kaikohe 0405

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SOFTSCAPE

REFER TO L7 DRAWINGS FOR FURTHER DETAIL

REF.	DESCRIPTION	QTY.
	EXISTING TREE | TO BE RETAINED *Existing tree to be retained and protected throughout duration of site works in accordance with "Kāinga Ora Tree Protection Procedure during Construction Activities" document. Refer to L0-10 for further detail.*	0 no.
	TREE PROTECTION ZONE *Area to be isolated and protected throughout duration of site works in accordance with "Kāinga Ora Tree Protection Procedure during Construction Activities" document. Refer to L0-10 for further detail.*	
	STRUCTURAL ROOT ZONE *Area to to avoid any alterations within if the subject tree is to be successfully retained. To be isolated and protected throughout duration of site works in accordance with "Kāinga Ora Tree Protection Procedure during Construction Activities" document. Refer to L0-10 for further detail.*	
	EXISTING TREE | TO BE REMOVED *Existing tree to be removed in accordance with best arboricultural practice, including root plate where applicable. Ensure all applicable permissions are granted prior to carrying out removal works.*	2 no.
	PROPOSED TREE | SPECIMEN *Proposed specimen tree, as specified in L7-20 Planting Schedule and installed in accordance with L7-50 detail*	2 no.
	PROPOSED TREE | FRUIT *Proposed fruit tree, as specified in L7-20 Planting Schedule and installed in accordance with L7-50 detail*	3 no.
	PROPOSED TREE | SMALL TREE / LARGE SHRUB *Proposed small tree / large shrub, as specified in L7-20 Planting Schedule and installed in accordance with L7-50 detail*	6 no.
	LW-LAWN *Min. 100mm Free-draining topsoil or lawn mix. Remove sufficient site soil as required to meet new levels. Earthwork to achieve an even grade. Apply blended local & imported lawn seed at a rate of 35g/m^2 and water in.*	53 m^2
	MPA1-MASS PLANTING | AMENITY MIX, LOW HEIGHT *400mm depth, high-quality, weed-free, imported topsoil (Living Earth Garden Mix or equivalent) spread over subgrade cultivated to 150mm depth. Apply 100mm depth bark mulch. Plant containerised nursery stock in accordance with L7-series Planting Plans and Planting Details.*	86 m^2
	MPA2-MASS PLANTING | AMENITY MIX, MEDIUM/HIGH *400mm depth, high-quality, weed-free, imported topsoil (Living Earth Garden Mix or equivalent) spread over subgrade cultivated to 150mm depth. Apply 100mm depth bark mulch. Plant containerised nursery stock in accordance with L7-series Planting Plans and Planting Details.*	32 m^2
	MPJ1-MASS PLANTING | JOAL MIX, LOW HEIGHT *400mm depth, high-quality, weed-free, imported topsoil (Living Earth Garden Mix or equivalent) spread over subgrade cultivated to 150mm depth. Apply 100mm depth bark mulch. Plant containerised nursery stock in accordance with L7-series Planting Plans and Planting Details.*	48 m^2
	TE-TIMBER EDGING *100x50mm H4 Radiata edge between lawn and garden bed. Secured vertically with 50x50x450mm H4 stakes driven at 1.2m max. spacings*	52 m

CIVIL

REFER TO CIVIL ENGINEER DRAWINGS FOR FURTHER DETAIL

REF.	DESCRIPTION	
	MANHOLE *Civil Engineer specification*	
	CATCH PIT / SUMP *Civil Engineer specification*	
—SW—	**STORM WATER LINE** *Civil Engineer specification*	
—WW—	**WASTE WATER LINE** *Civil Engineer specification*	
— W —	**WATER SUPPLY LINE** *Civil Engineer specification*	
	DT06-STORMWATER DETENTION TANK 6m^3 *Tanksalot Slimline, corrugated steel water tank, ITEM: SL1.5-6000* *SIZE: W1100 x L3500 x H1480mm, VOLUME: 6000L (6m^3), COLOUR: Pale Eucalypt* *Install in accordance with supplier and Civil Engineer documentation, complete with site-specific seismic restraint as required.*	2 no.

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RESILIO LTD
21 Scanlan Street
Grey Lynn
Auckland 1021

www.resilio.nz

PROJECT AR109551
25 Wihongi Street
Kaikohe 0405

CLIENT
Kāinga Ora Homes and Communities

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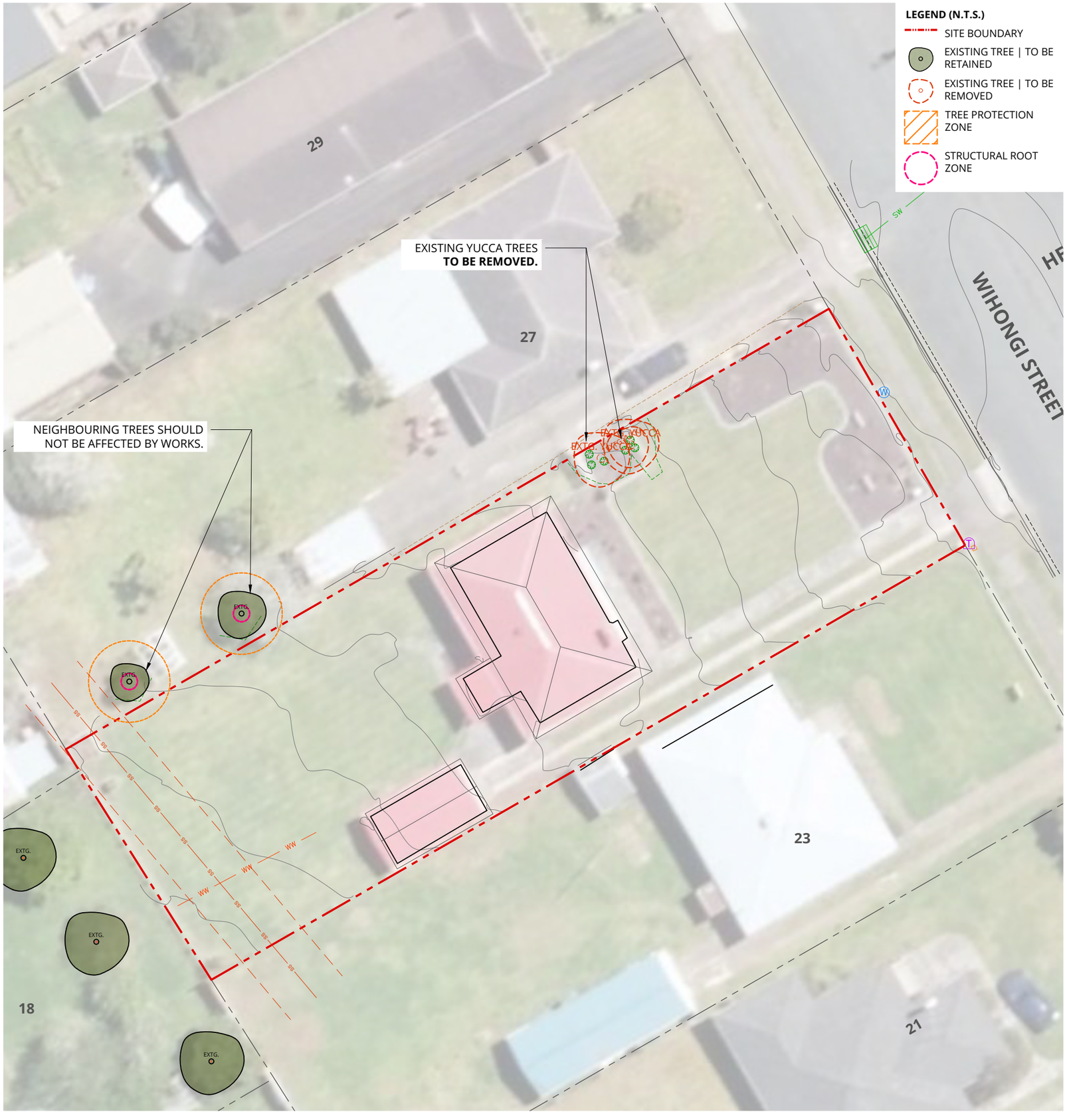

TREE PROTECTION MEASURES TO BE IMPLEMENTED BY CONTRACTORS ON KĀINGA ORA SITES

Introduction

On many Kāinga Ora construction sites, trees to be retained are identified – regardless of their protection status. If a non-protected tree is retained within a site, this tree was highlighted as worthy of retention and has been specifically designed around to enable this. Therefore, it is imperative that all contractors undertaking works within the site during the demolition and construction phases are aware of this, and that their works within the site do not adversely affect the subject tree(s).

Also of note, and requiring protection are trees on neighbouring sites that may have canopy or root zones that extend into the Kāinga Ora construction sites, as well as Council owned trees on any adjacent land like the street berm or council parks.

The root zones of trees proposed for retention within and adjacent to Kāinga Ora sites must be clearly shown and plotted on the Architectural, Landscape Architectural and Civil Site Drawings. On the drawings, this area may be referred to as the TPZ (Tree Protection Zone). The TPZ usually extends beyond the canopy spread of the subject tree and is a no-go area for any construction and excavation activities.

Tree Protection Measures

The following set of tree protection measures would be appropriate to ensure that the subject trees proposed for retention are adequately protected during the development and that the works are carried out in accordance with modern arboricultural standards;

a. The contractor needs to implement the tree protection advice from the Kāinga Ora Arborist report provided.

b. During the pre-start meetings to be held at the site prior to any demolition and construction activities, the trees to be retained must be discussed to gain a common understanding of the proposed tree protection measures and any relevant conditions of consent in that regard. Present at the meeting should be:
- Kāinga Ora Pre-Construction Project Manager
- Kāinga Ora Construction Project Manager
- Contractor site foreman or project manager
- The Kāinga Ora arborist
- Any other relevant subcontractors

c. Prior to any works commencing (including demolition), a layer of wood mulch (circa 150mm thick) should be spread within the root zones of trees that are proposed for retention. This will help ameliorate any root disturbance that may arise from nearby earthworks and will act as an extra buffer for the root zone. The root zone is, at a minimum, to be taken as the dripline or canopy extent of the tree if not accurately defined in the approved plan sets for the relevant project(s). The extent of the mulching, must be discussed and agreed upon.

d. Following the mulching, prior to any site works, protective fencing consisting of 1.8 metre steel mesh fencing must be erected around the trees to be retained, to isolate the branches and root zones from any site works. Steel Pegs (400mm x 16mm Round Bars) must be hammered into the ground along the TPZ line, indicated on the drawings mentioned above, at appropriate intervals and the fence must be erected against these pegs. The pegs will prevent the fence from being pushed or moved into the TPZ. The fence must remain in place for the duration of the construction project and can only be removed on construction final completion.

e. The following activities should not take place within the protective fences or the TPZ of any tree that is to be retained;
- No storage of materials, spoil or equipment of any sort
- No discharge or washings from fuels, oils or other toxic liquids including paint and concrete
- No passage of vehicles or machinery

f. If excavations within the TPZ of the trees are required, it should be carried out under supervision of the Kāinga Ora arborist and to his instructions.

g. Any roots encountered during excavations should be treated according to the instructions of the Kāinga Ora Arborist.

h. Any permanent fencing that is to be installed through the TPZ of any tree must be done according to the instructions of the Kāinga Ora Arborist.

i. A detailed log, with photographs, of all site visits, instructions and supervision carried out by the Kāinga Ora Project Managers and Arborist with regards to trees to be retained must be kept. This log would serve as a compliance report and must be filed in the project's Objective folder.

j. It will be the responsibility of the contractors project/site manager to ensure the Kāinga Ora Project Managers and Arborist is kept informed of progress on site during critical stages of works around the subject trees.

k. If the subject tree is formally protected (by Council), there may be additional tree protection measures detailed in the Consent or Tree Owner's Approval (TOA) form – which should also be complied with.

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25 Wihongi Street
Kaikohe 0405

CLIENT
Kāinga Ora Homes and Communities

SHEET
TREE PROTECTION & REMOVAL PLAN

DRAWING NUMBER
L0-10

DATE OF ISSUE
13/06/2024

FIRST ISSUED
13/06/2024

SCALE
1:250 @ A3

DRAWN: DS APPROVED: ER
For RESILIO Limited

CMYK
ORIGINAL DRAWING IN COLOUR

REVISION
A

0 2 4 6 8 10m

NOT FOR CONSTRUCTION
RESOURCE CONSENT

0 2 4 6 8 10m

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RESOURCE CONSENT

LEGEND (N.T.S.)

- SITE BOUNDARY
- SPOT ELEVATION | EXISTING
- SPOT ELEVATION | PROPOSED
- CP02-CONCRETE PAVEMENT | EXPOSED AGGREGATE, LIGHT
- CP03-CONCRETE PAVEMENT | BROOM FINISH, LIGHT
- TD-TIMBER DECK
- CG-COMPACTED GRAVEL
- 0.9m VERTICAL BATTEN TIMBER FENCE
- 1.5m VERTICAL BATTEN TIMBER FENCE
- 1.8m VERTICAL PALING TIMBER FENCE
- GATE - 1.2m ALUMINIUM
- CL01-CLOTHES LINE | AUSTRAL COMPACT 39
- RRB-RUBBISH & RECYCLING BINS
- GS01-SECURE STORAGE AREA | LARGE
- GB01-RAISED GARDEN PLANTER
- LB-LETTERBOX - SINGLE
- EXISTING TREE | TO BE RETAINED
- PROPOSED TREE / SHRUB
- LW-LAWN
- MPA1-MASS PLANTING | AMENITY MIX - LOW
- MPA2-MASS PLANTING | AMENITY MIX - MEDIUM/HIGH
- MPJ1-MASS PLANTING | JOAL MIX, LOW HEIGHT
- TE-TIMBER EDGING
- TIMBER PILE & LAGGING LANDSCAPE WALL, 0.2-0.5m LEVEL CHANGE
- SW — STORMWATER LINE
- WW — WASTEWATER LINE
- W — WATER LINE
- DETENTION TANK, STEEL

NOTES:

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MILESTONES

A	13/06/2024	RC Submission

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SHEET
GENERAL ARRANGEMENT - OVERVIEW

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L2-00

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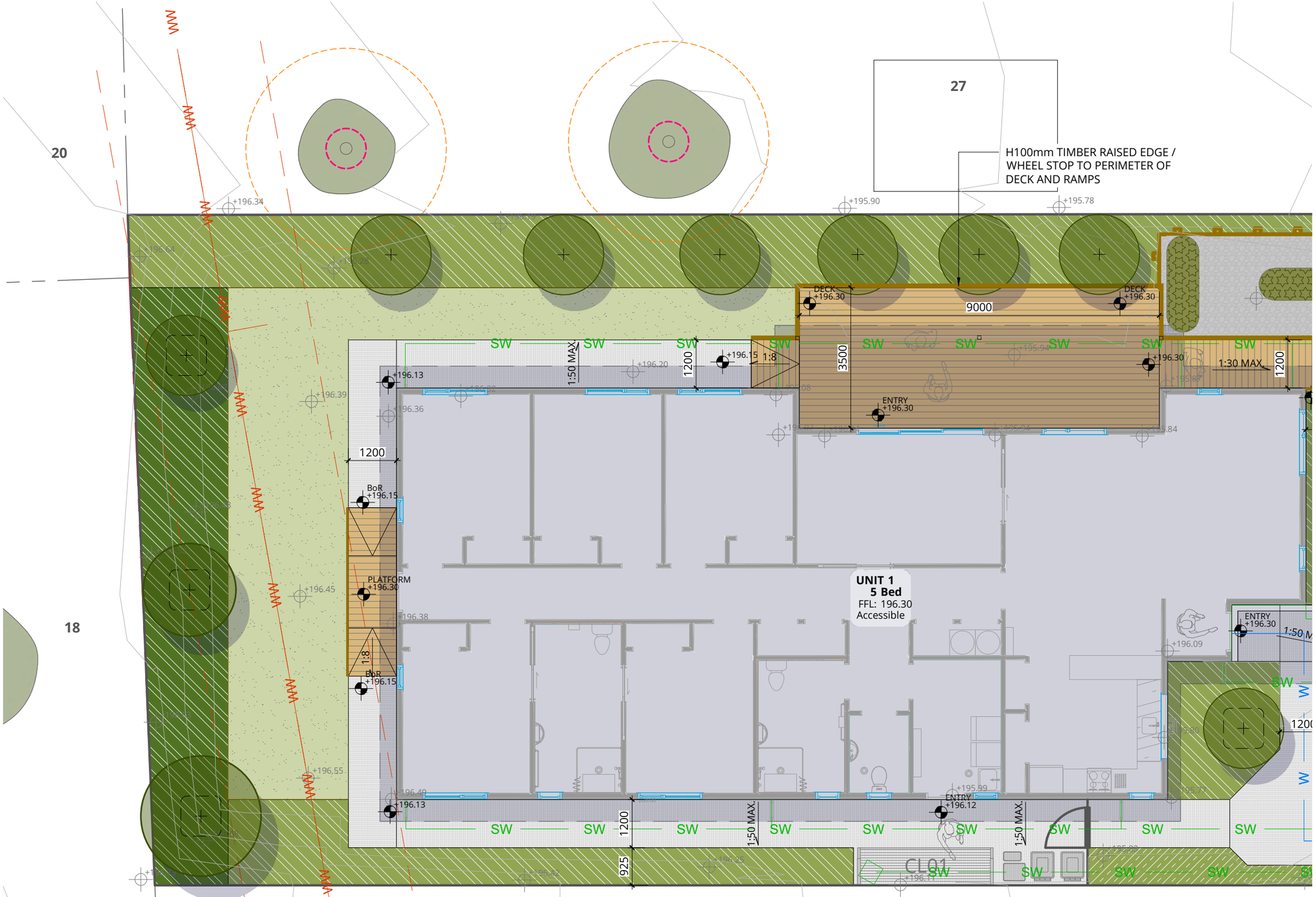

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SHEET
GENERAL ARRANGEMENT - SHEET 1

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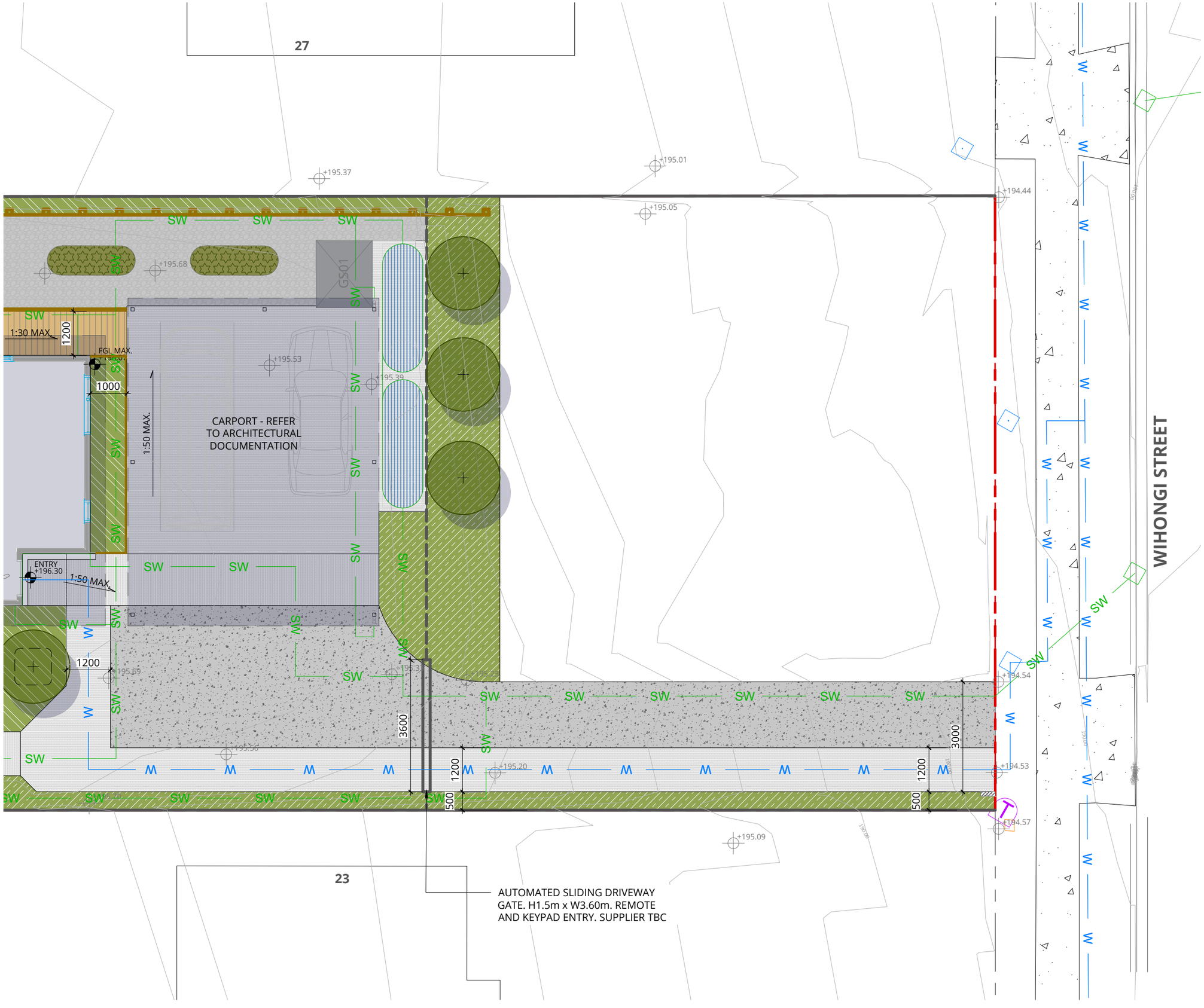

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SHEET
GENERAL ARRANGEMENT - SHEET 2

DRAWING NUMBER
L2-02

DATE OF ISSUE
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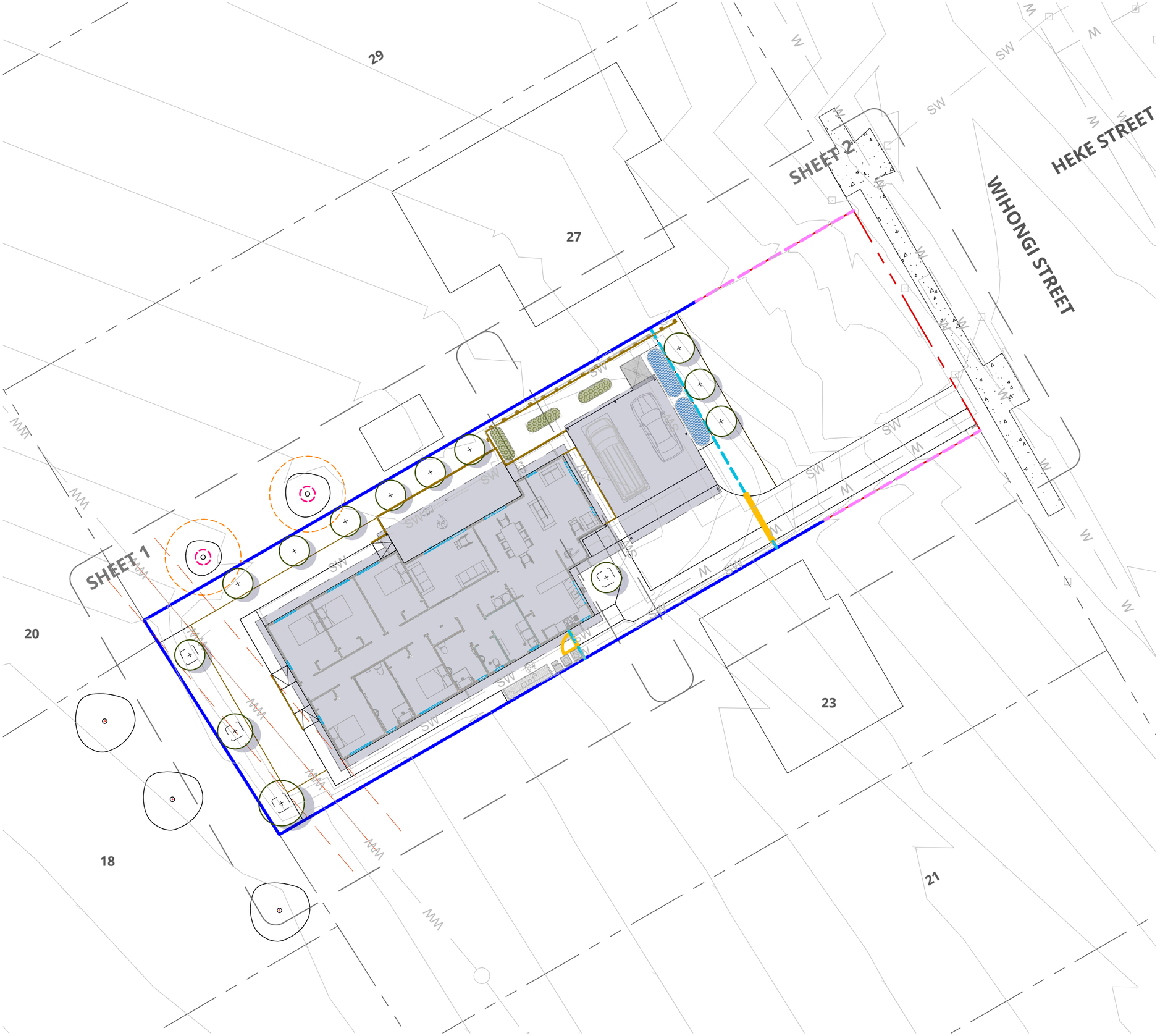

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SHEET
FENCING STRATEGY - OVERVIEW

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L4-00

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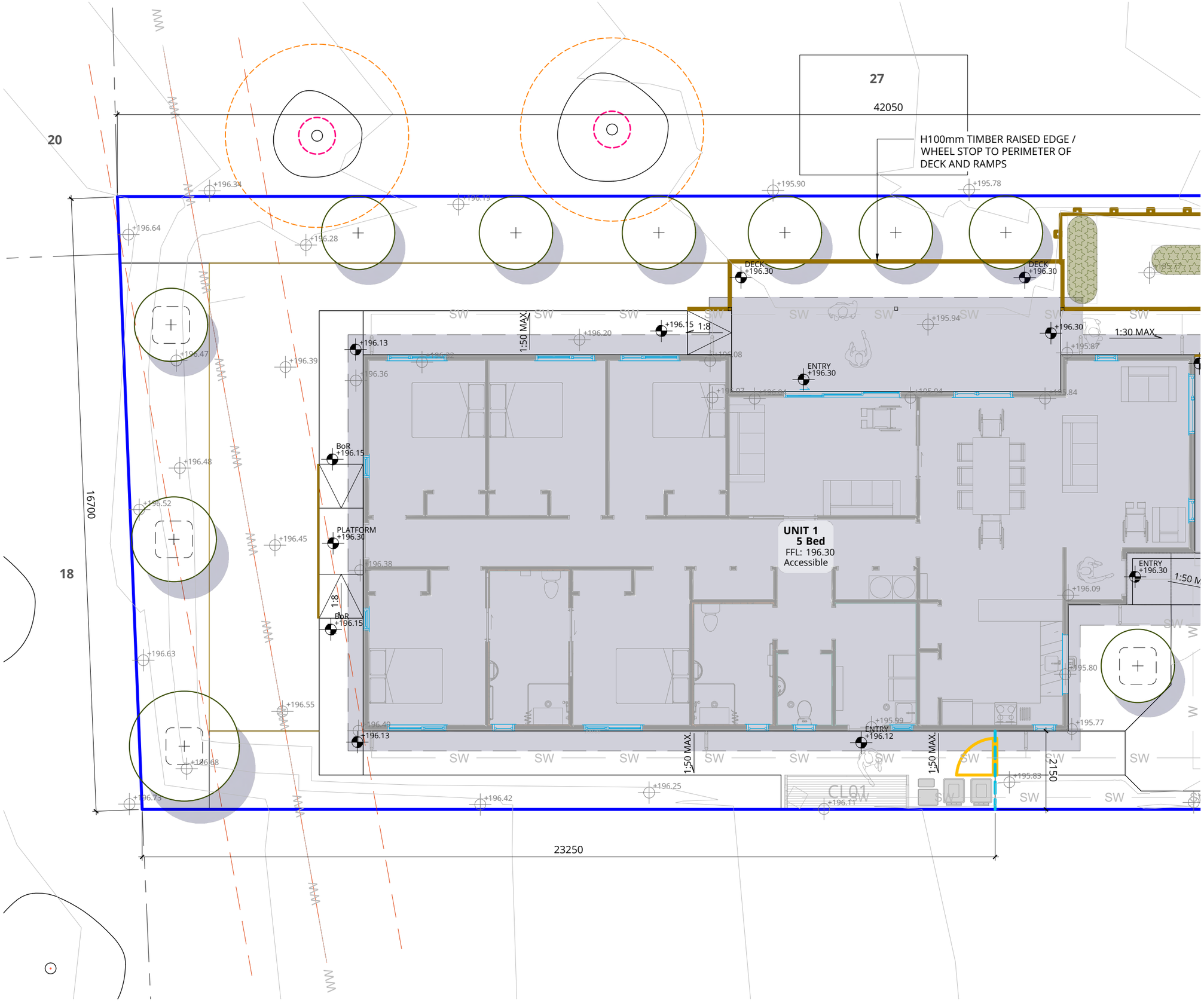

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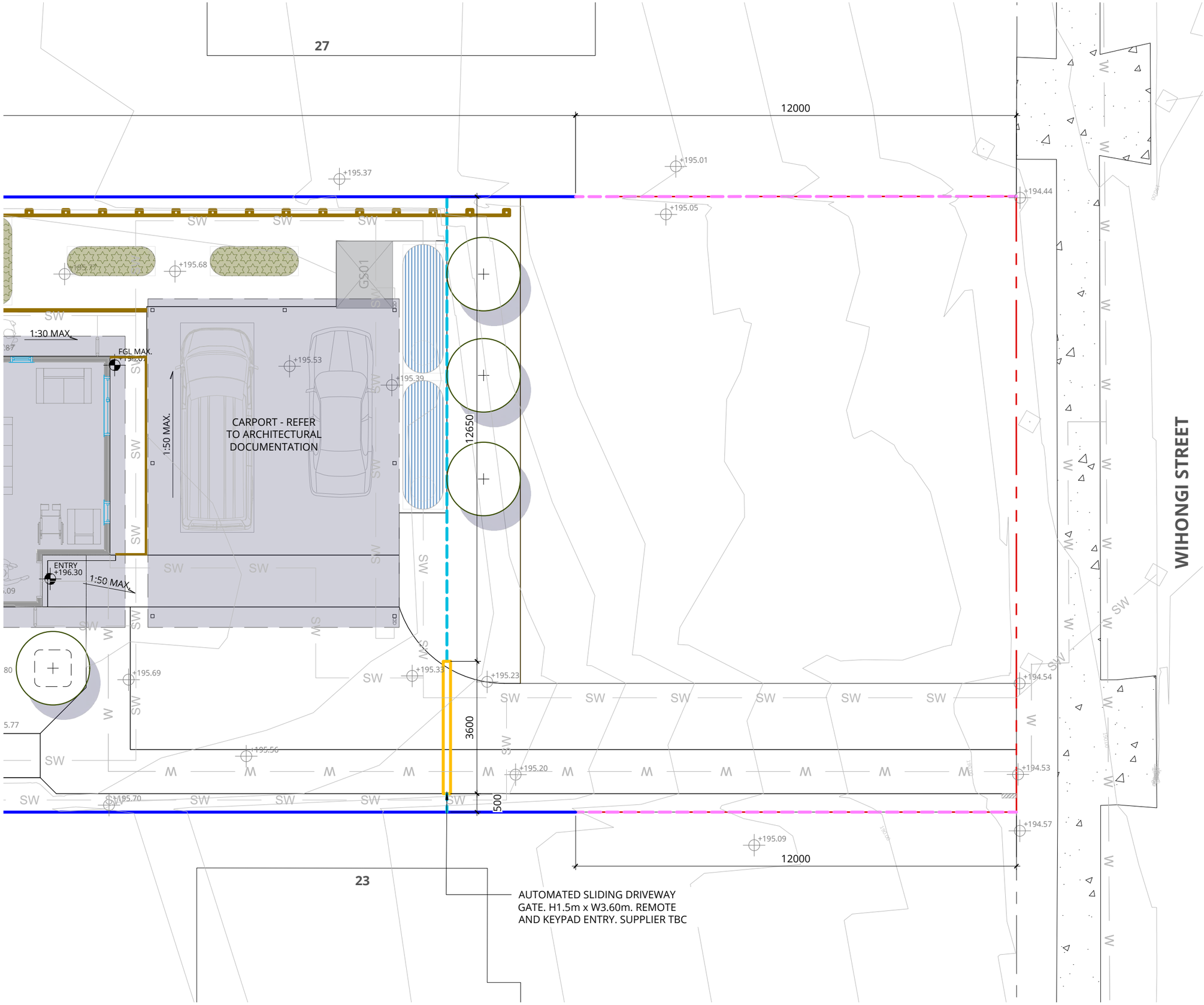

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SHEET
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LEGEND (N.T.S.)

- SITE BOUNDARY
- EXISTING TREE | TO BE RETAINED
- EXISTING TREE | TO BE REMOVED
- TREE PROTECTION ZONE
- STRUCTURAL ROOT ZONE
- PROPOSED TREE | SPECIMEN
- PROPOSED TREE | FRUIT
- PROPOSED TREE | SMALL TREE / LARGE SHRUB
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SHEET
PLANTING PLAN - OVERVIEW

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L7-00

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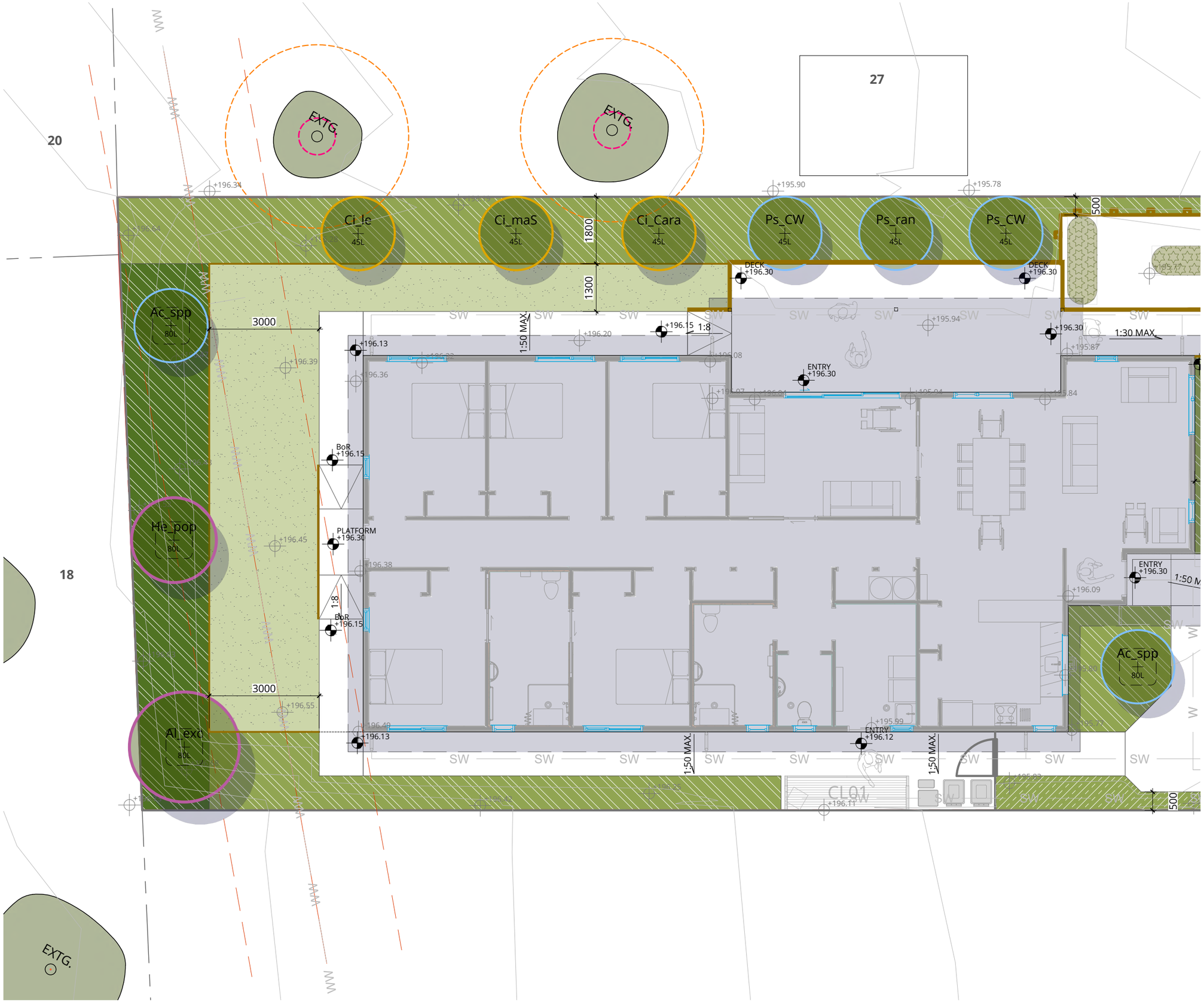

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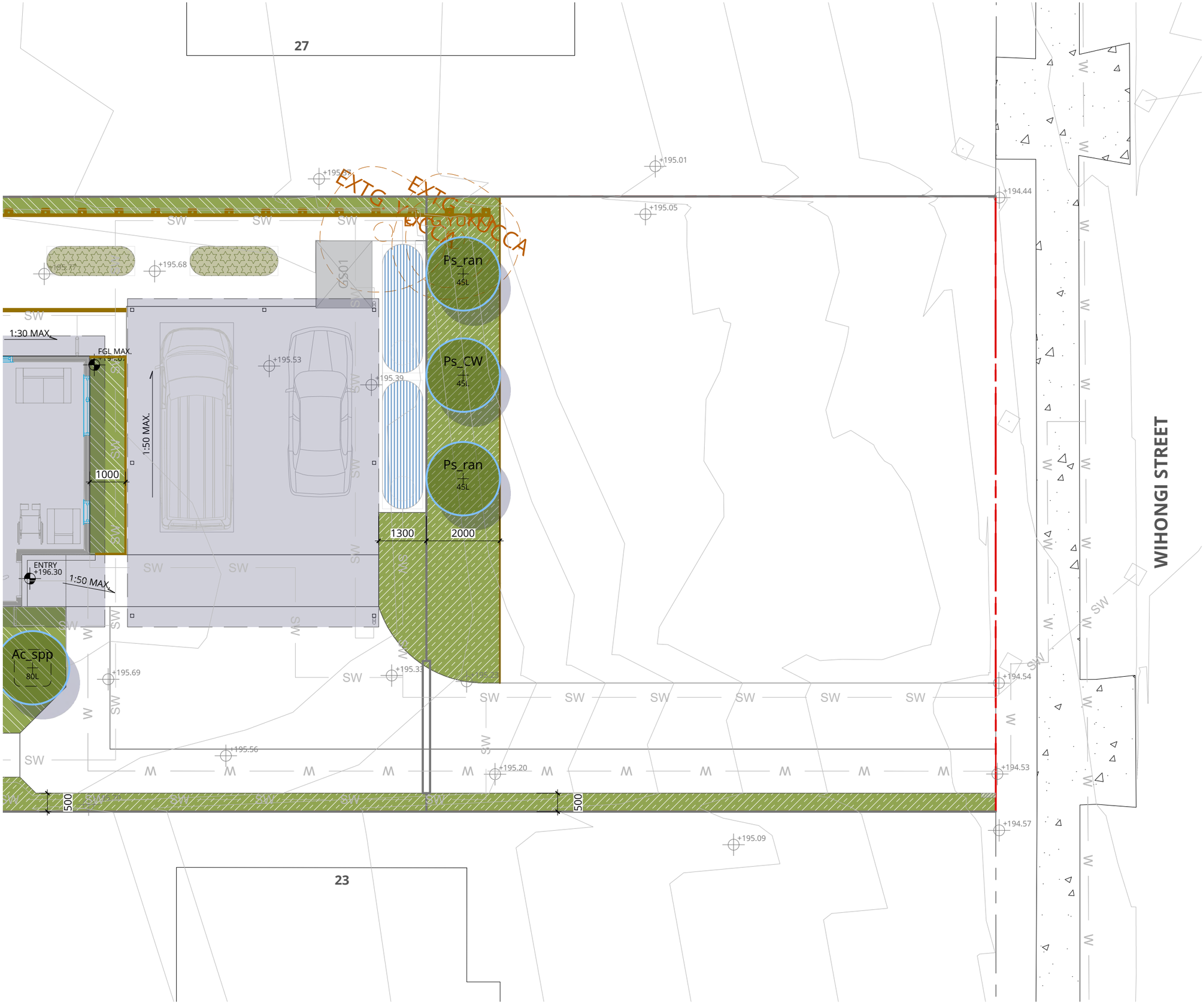

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Code	*Botanical name*	Common name	% of mix	Grade	Centers (m)	Mature Heights (m)	Quantity
MPA1	**AMENITY MIX, LOW HEIGHT**	**TOTAL AREA: 86sq.m**					
Ca_vir	*Carex virgata*	Carex	15%	1L	0.6	0.6	41
Ca_tes	*Carex testacea*	Speckled sedge	25%	1L	0.5	0.5	99
Ph_EG	*Phormium cookianum 'Emerald Gem'*	Whararíki / Emerald Gem (Dwarf)	20%	1L	0.5	0.5	79
Li_ixi	*Libertia ixioides*	Tukauki	20%	1L	0.5	0.5	79
Di_nig	*Dianella nigra*	Tūrutu	20%	1L	0.5	0.4	79
			100%			**TOTAL**	**379**
MPA2	**AMENITY MIX, MEDIUM/HIGH**	**TOTAL AREA: 32sq.m**					
As_ban	*Astelia banksii*	kōwharawhara/ coastal astelia	10%	1L	0.5	0.6	15
Ca_vir	*Carex virgata*	Carex	15%	1L	0.5	0.6	22
Co_PN	*Coprosma 'Poor Knights'*	Coprosma	10%	1L	0.6	0.5	10
Le_sco	*Leptospermum Scoparium*	Mānuka	10%	1L	1.0	0.5	4
Li_gra	*Libertia grandiflora*	Mikoikoi	20%	1L	0.5	0.5	30
So_DG	*Sophora molloyi 'Dragons Gold'*	Kōwhai / Dragons gold	15%	45L	1.0	4.0	6
Ph_EG	*Phormium cookianum 'Emerald Gem'*	Whararíki / Emerald Gem (Dwarf)	20%	1L	0.6	0.5	21
			100%			**TOTAL**	**107**
MPJ1	**JOAL MIX, LOW HEIGHT**	**TOTAL AREA: 48sq.m**					
Ph_EG	*Phormium cookianum 'Emerald Gem'*	Whararíki / Emerald Gem (Dwarf)	25%	1L	0.5	0.5	55
Li_gra	*Libertia grandiflora*	Mikoikoi	25%	1L	0.5	0.5	55
Di_nig	*Dianella nigra*	Tūrutu	25%	1L	0.5	0.5	55
Ca_tes	*Carex testacea*	Speckled sedge	25%	1L	0.5	0.5	55
			100%			**TOTAL**	**222**
	SPECIMEN TREES						
Al_exc	*Alectryon excelsus*	Tītoki		80L	5.0	10.0	1
He_pop	*Hoheria populnea*	Houhere, lacebark		80L	4.0	8.0	1
						TOTAL	**2**
	SMALL TREES / LARGE SHRUBS						
Ac_spp	*Acer spp*	*Acer*		80L	3.0	3.0	2
Ps_ran	*Pseudopanax 'Rangiora'*	*Pseudopanax 'Rangiora'*		45L	3.0	4.0	3
Ps_CW	*Pseudopanax 'Cyril Watson'*	Pseudopanax 'Cyril Watson'		45L	3.0	4.0	3
						TOTAL	**8**
	FRUIT TREES						
Ci_maS	*Citrus mandarin 'Satsuma'*	Mandarin satsuma		45L	3.0	3.0	1
Ci_le	*Citrus lemon 'Lemonade'*	Lemonade		45L	3.0	3.0	1
Ci_Cara	*Citrus orange 'Cara cara'*	Orange 'Cara cara'		45L	4.0	3.0	1
						TOTAL	**3**
	RAISED PLANTERS - INDICATIVE	**TOTAL AREA: 5.4 sq.m**					
Lav_spp	*Lavandula spp.*	Lavender					
Me_off	*Melissa officinalis*	Lemon balm					
Bo_off	*Borago officinalis*	Borage					
Or_spp	*Origanum spp.*	Oregano					
Th_vul	*Thymus vulgaris*	Thyme					
	Vegetable species						
LW	**GRASS LAWN**	**TOTAL AREA: 53sq.m**					
	Hardwearing blend of fescue, rye and browntop seed					**TOTAL**	**53sq.m**

NOTES:

1. LANDSCAPE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ARCHITECTURE AND ENGINEERING DRAWINGS
2. SERVICES AND LEVELS SHOWN ARE INDICATIVE AND SHOULD BE CHECKED AGAINST ARCHITECTURE AND CIVIL ENGINEERING DRAWINGS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER
3. REFER TO L0-01, L0-02 KEYNOTES SHEETS FOR SYMBOL AND KEYCODE LEGENDS

MILESTONES

A 13/06/2024 RC Submission

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Architectural Design
Social Innovation
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PROJECT AR109551
25 Wihongi Street
Kaikohe 0405

CLIENT
Kāinga Ora Homes and Communities

SHEET
PLANT SCHEDULE

DRAWING NUMBER
L7-20

DATE OF ISSUE
13/06/2024

FIRST ISSUED
13/06/2024

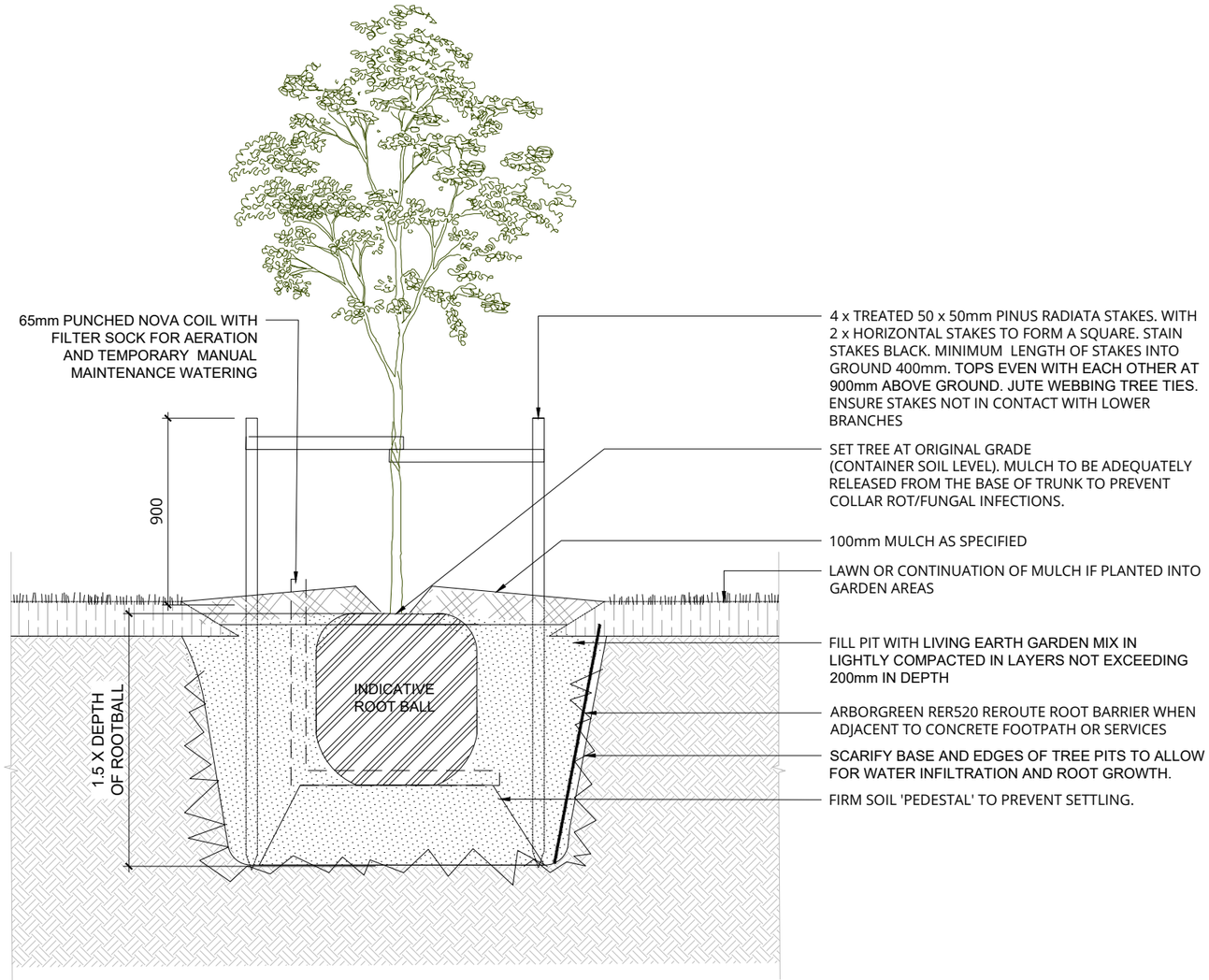
SCALE
N.T.S. @ A3

DRAWN: DS APPROVED: ER
For RESILIO Limited

NOT FOR CONSTRUCTION
RESOURCE CONSENT

CMYK
ORIGINAL DRAWING IN COLOUR

REVISION
A



1 / - 1:25 SECTION DETAIL

TYPICAL TREE PIT

NOTES:

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SHEET
PLANTING DETAILS - SHEET 1

DRAWING NUMBER
L7-50

DATE OF ISSUE
13/06/2024

FIRST ISSUED
13/06/2024

SCALE
1:25 @ A3

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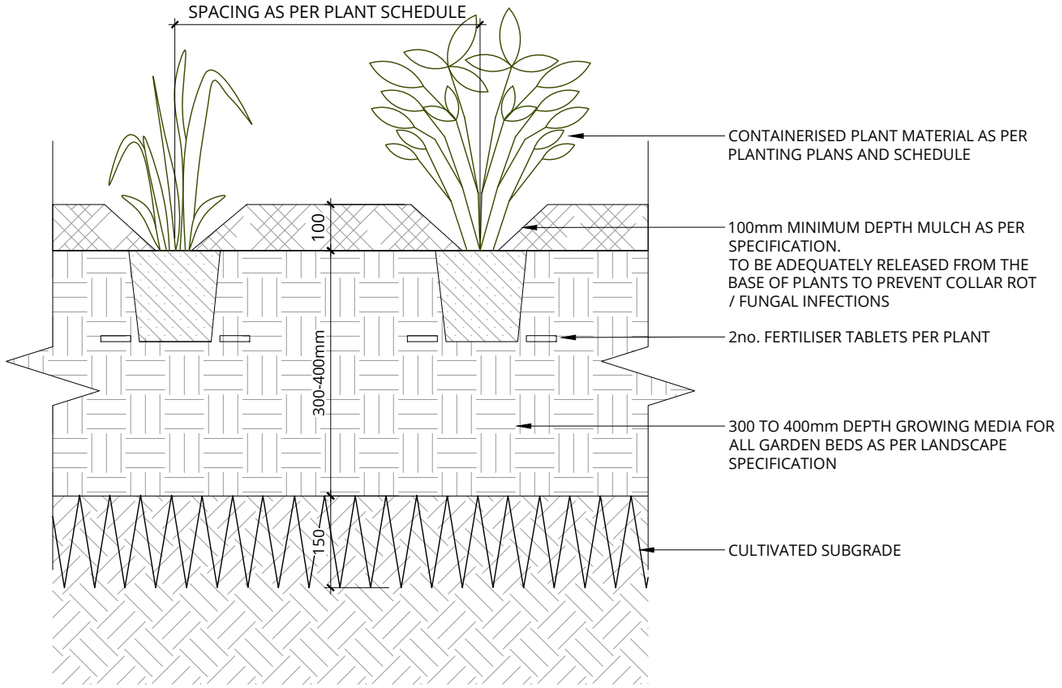
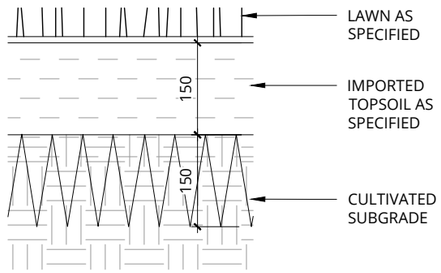


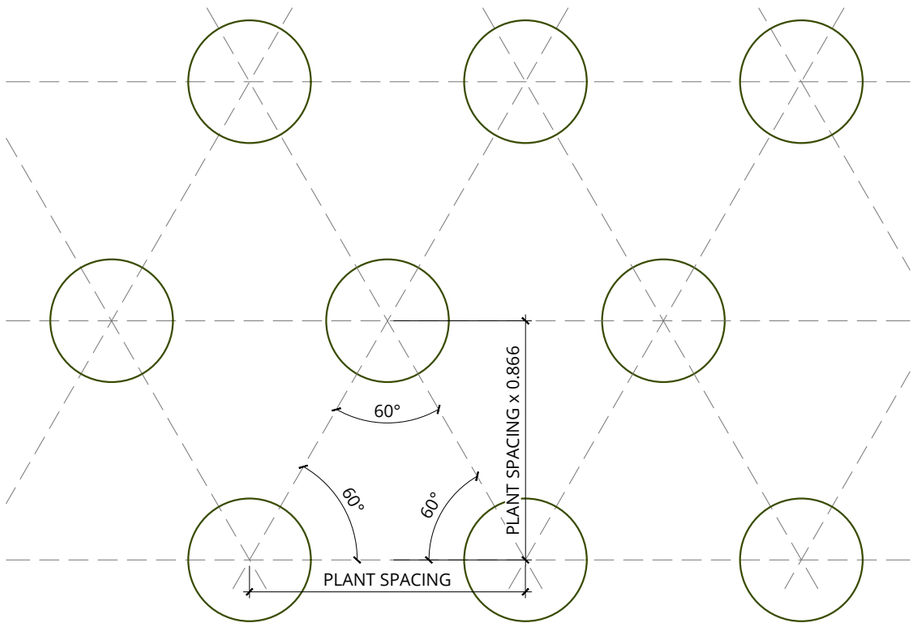
1 - 1:10 SECTION DETAIL

GARDEN BED PLANTING



2 - 1:10 SECTION DETAIL

GRASS LAWN



3 - 1:10 PLAN DETAIL

PLANT SET-OUT FRAMEWORK - ISOMETRIC

NOTES:

1. LANDSCAPE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ARCHITECTURE AND ENGINEERING DRAWINGS
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RESILIO LTD
21 Scanlan Street
Grey Lynn
Auckland 1021

www.resilio.nz

PROJECT AR109551
25 Wihongi Street
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SHEET
PLANTING DETAILS - SHEET 2

DRAWING NUMBER
L7-51

DATE OF ISSUE
13/06/2024

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13/06/2024

SCALE
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www.civix.co.nz
Level 8, 99 Albert St, Auckland

13/06/2024

25 WIHONGI STREET, KAIKOHE, NORTHLAND

INFRASTRUCTURE REPORT

+64 9 303 1113
www.civix.co.nz
Level 8, 99 Albert Street, Auckland
PO Box 5204 Wellesley St, Auckland 1141

Development of 25 Wihongi Street, Kaikohe, Northland | Infrastructure Report

Dear Kāinga Ora,

Thank you for the opportunity for Civix Limited to provide an Infrastructure Report for the Development of 25 Wihongi Street, Kaikohe.

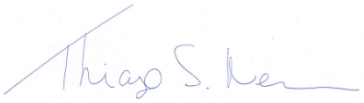
The report and drawings contained in this document show infrastructure details for the Development of 25 Wihongi Street, Kaikohe, in support of Resource Consent lodgement.

Please do not hesitate to contact us if you have any questions on this report.

Written By:

Toby Gentil
Civil Engineer
021 115 9970
toby@civix.co.nz
CIVIX

Reviewed By:



Thiago Neiva
Chartered Civil Engineer (CPENG 2005890)
020 4090 5478
thiago@civix.co.nz

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Contents

Table 1 Drawing Index

Drawing Series	Description
30000	Cut Fill Plan
34000	Erosion and Sediment Control Plan
34000	Erosion and Sediment Control Standard Details
44000	Private Roading Plan
45000	Roading Long Sections
46000	Private Roading Details
47000	Roading Details
50000	Stormwater Plan
53000	Stormwater Storage Details
60000	Wastewater Plan
62000	Wastewater Infrastructure Assessment
62100	Wastewater Capacity Table
70000	Water Supply and Utilities Plan
72000	Water Supply Hydrant Locations
75000	Water Supply Details

Additional Resources accessed via the link here: 25 Wihongi Street, Resource Consent

- Asset Inspection Records: CCTV Videos and Log Sheets
- Asset inspection Records: Topographic Survey and GPR

1. Existing Site Description

The site at 25 Wihongi Street is a flat, rectangular site measuring 900m² in size, it is located 200m to the north of Kaikohe Town Centre, within the Residential Zone. The site is positioned adjacent to the intersection of Wihongi and Heke Street and surrounded by other low density residential sites. There is an existing standalone house and garage located on the property, access to the site is currently provided along the southern-most boundary via an existing vehicle crossing on Wihongi Street.

The legal description of the site is Lot 58 DP 36638. An aerial view of the site is provided in Figure 1 below.

Figure 1 – Aerial view of the development site, taken from Far North District Council 3 Waters Maps

2. Proposed Development

The existing standalone house, garage and associated paved areas will be removed from the site. A new 5-bedroom bespoke single storey home is proposed. The building has a level access due to the nature of the tenants. A carport services the parking for the site to provide cover. The lot has access through the existing vehicle crossing in Wihongi Street. No subdivision is proposed.

3. Earthworks

Earthworks are proposed over the site, including both cut and fill, for the formation of building platforms, living areas and access to the site. The Cut Fill Plan on drawing series 30000 show the extent of the proposed earthworks for the development. Earthworks volumes are also shown in Table 2 below for clarity:

Table 2 Cut Fill Table

EW ID	UNITS	EW001	TOTAL
AREA	m^2	748	748
CUT	m^3	42.5	42.5
BULK TOT. CUT	m^3	42.5	42.5
MAX. CUT DEPTH	m	0.6	0.6
BULK FILL	m^3	153.8	153.8
FILL +15% BF.	m^3	176.9	176.9
BULK TOT. FILL	m^3	153.8	153.8
BULK CUT OFFSITE	m^3	-	0.0
BULK CUT TO FILL	m^3	-	42.5
BULK FILL IMPORT	m^3	-	134.4
BULK TOT. VOL.	m^3	196.3	196.3
MAX. FILL HEIGHT	m	0.8	0.8
BULK TRUCKS	Trucks	-	23
TOPSOIL CLEAN STRIP	m^3	187.0	187.0
TOPSOIL TOT. STRIP	m^3	187.0	187.0
TOPSOIL TOT. PLACE	m^3	65.1	65.1
TOPSOIL TOT. VOL.	m^3	252.1	252.1
TOPSOIL TRUCKS	Trucks	-	43
EW TOT. VOL.	m^3	448.4	448.4
EW TOT. TRUCKS	Trucks	-	66

Existing Surf. assumes topsoil depth of 0.3m

"Proposed Surf. is to Building, Pavement and Grass Subgrade
Proposed topsoil depth of 0.225m"

In accordance with industry best practice, implementation of erosion and sediment controls will be undertaken during the construction works for the development. Erosion and sediment controls will be carried out in accordance with the Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region, June 2016 Guideline Document 2016/005 (GD05).

Works undertaken in accordance with this guideline will act to minimise and/or mitigate any adverse environmental effects of sediment discharge during the works through appropriate use and design of erosion and sediment control techniques and measures. The measures proposed will mitigate the effect of earthworks on downstream properties and the environment.

Drawing series 34000 shows the proposed erosion and sediment controls for the site and drawing series 35000 shows the details of these controls.

Proposed Controls

Stabilised Construction Entrance

A stabilised construction access will be installed as the primary access to the site in the location of the existing vehicle crossing. The stabilised entrance will be maintained during the construction works.

Silt Fences

Silt fences and super silt fences will be installed around the majority of the external perimeter of the development site to control sediment discharges. Perimeter controls will remain in place until adequate stabilisation is achieved over the site.

Site Stabilisation

Progressive site stabilisation, as required, will be undertaken following completion of works and shall compromise:

- 150mm GAP65 aggregate will be placed and compacted over accessway pavement areas as soon as practicable.
- 50mm depth AP20 aggregate will be placed and compacted over the trimmed building platforms.
- Re-topsoiling in conjunction with grass seeding will be undertaken to establish grass cover over lots.

Site stabilisation will reduce the time bare earth is exposed to erosive forces and reduce the ability for generation of sediment laden runoff. Perimeter controls will remain in place until adequate stabilisation is achieved over the site.

4. Flooding

As shown on the Far North District Council Flood Maps, no floodplains or significant overland flow paths (catchment > 4,000m²) are predicted on the site. Beyond the site, there is an overland flow path predicted within the carriageway outside of the site with a total flow of 0.561m³/s (factoring in maximum probable development and climate change). The flow path heads north-east along Heke Street where a 100-year flood plain is predicted. An overland flow path assessment has not been undertaken as the site is not considered at risk from flooding.

Figure 2 – As shown on the FNDC Flood Maps, the 100-year floodplain is located approximately 150m north-east of the site.

5. Access

Vehicle Crossing

The site is positioned adjacent to the intersection of Wihongi and Heke Street. Access to the site is currently provided along the southern-most boundary via an existing vehicle crossing on Wihongi Street. The front of the site and adjacent berm area do not contain any trees or street furniture that would limit access to the development.

The new vehicle crossing shall be constructed in accordance with the Far North District Council (FNDC) Engineering Standard Drawing Sheet 18 – Vehicle Crossing - Residential. The Standard Vehicle Crossing detail from the FNDC is shown on drawing series 47000.

Figure 3 – Existing vehicle crossing and accessway along southern site boundary.

Proposed vehicle turning and gradients within the site comply with the requirements of the FNDC and are shown on drawing series 40000 with long sections and cross-sections provided on drawing series 45000.

The accessway follows the FNDC requirements, with a gentle gradient of 4.4% extending 5 metres into the boundary. A grade of 10.1% is used to get to a reasonable level before beginning a turning and manoeuvring grade at around 5%. The carparking area and accessible area is graded at 1.3% to account for the tenants entering and exiting the dwelling with the nearby carport.

The construction cross section of the accessway is shown on drawing 46000.

6. Stormwater Servicing

Existing

FNDC 3-Waters Maps show that the public stormwater network does not intersect the site. The closest public network to the site is a stormwater catchpit positioned in the location of the existing vehicle crossing at 27 Wihongi

Street. On Google Streetview, an existing stormwater kerb outlet can be seen at the site frontage, this is assumed to be discharging roof runoff from the existing dwelling on site.

CCTV showed the catchpits in the road reserve outside the property to be occupied with sediment and rubbish and requires vacuuming.

Proposed

The following options were considered for stormwater servicing for the site, in order of preference:

1. Detention tanks to restrict flows for the 2-year and 5-year annual rainfall events to a flowrate 80% of pre-development flows connected to kerb discharge.
2. On-site soakage into underlying basalt from findings from Geotech.

The proposed design is to replace the existing kerb discharge outlet, installing a new outlet connected to the 150mm outlet pipe from the property.

As kerb discharge is proposed and the impervious coverage is more than that of the existing scenario, detention tanks to mitigate flows for the 2 and 5-year storm events have been propose to 80% of pre-development flows. Tank sizing and calculations are shown in the below table and on drawing series 53000.

Table 3 Building and JOAL/COAL Tank Allocations

TANK ID	LOTS	SHOWN ON DRAWING	VOLUME
LOT 1 TANKSALOT	LOT 1	53000	2 x 5,130L (10,260L Total)

Offsite Proposed Stormwater Asset Location Assessment:

Figure 4 – Existing public stormwater catchpit located at the end of the vehicle crossing of 27 Wihongi Street.

7. Wastewater Servicing

Existing

Although the FNDC 3 Waters Maps show that the public wastewater network does not intersect the site, during on-site investigations and CCTV, the public wastewater network was found within our site, in the rear of the property. This was further confirmed with hydro excavation, locating the pipe on both sides of the property.

CCTV was unable to find a manhole to access during their investigation, however, the quality of the line leading from the existing dwelling's gully trap was clear. Please find the CCTV video and log sheets uploaded under the link provided in Additional Resources on Page 3.

Proposed

The following options were considered for wastewater servicing for the site, in order of preference:

1. Reuse the existing 100mm wastewater connection.
2. No viable alternative wastewater options were identified.

A wastewater infrastructure assessment was completed for the downstream network to ensure sufficient capacity for the development. The Wastewater infrastructure assessment and capacity tables are shown on drawings 62000-62100.

The proposed servicing approach is to reuse the existing wastewater connection as it is still in good condition. The alignment found during investigation and proposed to be reused is shown on drawing series 60000.

8. Water Supply

Firefighting requirements for the site come from the Standards New Zealand Fire Service Firefighting Water Supplies Code of Practice SNZ 4509:2008 Section 4.4 Tables 1&2.

The water supply classification is a combination of the category and largest fire cell. For a single-family home with a sprinkler system installed to an approved standard, an FW1 classification applies. For an FW1 classification to be met, a single hydrant within 135m of the dwelling must hold a minimum flow rate of 450 L/min (or 7.5 L/s).

The closest hydrants are located outside of 14 Wihongi Street and adjacent to the southern boundary of 20 Wihongi Street on Heke Street. Both hydrants are within 135m of the rear on the development site.

In addition to the sprinkler system, there is a hard standing area within 75m of the dwelling, being able to withstand a laden weight of up to 25 tonnes with an axle load of 8 tonnes and have a minimum access width of 4m and height of 4m.

Truck parking locations are available along Wihongi Street, parking on the road is preferred where possible to avoid specific loading design for the pavement within the site.

Hydrant testing through the FNDC has been engaged and we are expecting results in the coming days.

The FNDC 3 Waters Maps show there is an existing 40mm rider main along the berm at the front of the site. The site has an existing water meter and connection to the rider main, which is proposed to be reused for the development.

9. Power and Telecommunications

The existing dwelling is currently serviced via underground cables. An existing power and telecommunications plinth is located adjacent to the existing vehicle crossing.

It is proposed that the new development is connected via underground cables. The relevant utility companies will be contacted to complete connections once resource consent for the site is granted.

10. Safety in Design

An initial risk found when developing the site was the inaccuracy of the GIS data provided by FNDC. Through site investigation in CCTV and verification through hydro excavation, we were able to find and correctly locate the public wastewater line that traverses our site. The building has been offset by 2-metres from the edge of the wastewater line in order to not produce any load on the pipe, and keep it clear for any necessary maintenance or excavation.

11. Conclusions

- Environmental effects from erosion and sediment during construction can be mitigated.
- The site access design complies with the FNDC standards.
- Water supply can be provided through the existing water meter.
- Stormwater mitigation is proposed to reduce flows to 80% of pre-development and provides detention for both the 2-year and 5-year events.
- The downstream wastewater network has sufficient capacity for the proposed development.
- Telecoms and Power Supply can be provided via new connections.

12. Limitations

- This assessment contains the professional opinion of Civix Limited Staff relating to this development. Civix Limited Staff used their professional judgement and acted in accordance with the standards of care and skill normally exercised by professional engineers providing similar services in similar circumstances. No other express or implied warranty is made as to the professional advice contained in this report.
- We have prepared this report in accordance with the brief provided and following our terms of engagement. The information contained in this report has been prepared by Civix Limited for the client and is exclusively for its client use and reliance. It is not possible to make an assessment of this report without understanding the terms of engagement under which it has been prepared, including the scope of the instructions and directions given to and the assumptions made by Civix Limited. The assessment will not address issues which would need to be considered for another party if that parties' particular circumstances, requirements and experience were known and, further, may make assumptions about matters of which a third party is not aware. No responsibility or liability to any third party is accepted for any loss or damage arising out of the use of or reliance on this assessment by any third party.
- The assessment is also based on information that has been provided to Civix Limited from other sources or by other parties. The assessment has been prepared strictly on the basis that the information that has been provided is accurate, complete, and adequate. To the extent that any information is inaccurate, incomplete or inadequate, Civix Limited takes no responsibility or liability whatsoever for any loss or damage that results from any design and assessment based on information that has been provided to Civix Limited.

ENGINEERING DRAWINGS

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

DATE OF ISSUE: 12/06/24 DRAWING PURPOSE: FOR RESOURCE CONSENT

CIVIX

DATE			12/06/24
ISSUE			FOR RESOURCE CONSENT
REASON			For Resource Consent

DRAWING NAME	LATEST REFERENCE	LATEST REVISION	12/06/24
Cut Fill Plan	30000	A	A
Erosion and Sediment Control Plan	34000	A	A
Erosion and Sediment Control Details	35000-35001	A	A
Private Roading Plan	44000	A	A
Roading Longsections	45000	A	A
Private Roading Details	46000	A	A
Roading Details	47000	A	A
Stormwater Plan	50000	A	A
Storage Design Details	53000	A	A
Wastewater Plan	60000	A	A
Wastewater Infrastructure Assessment	62000	A	A
Wastewater Capacity Table	62100	A	A
Water Supply Plan	70000	A	A
Water Supply Hydrant Distance	72000	A	A
Water Supply Details	75000	A	A

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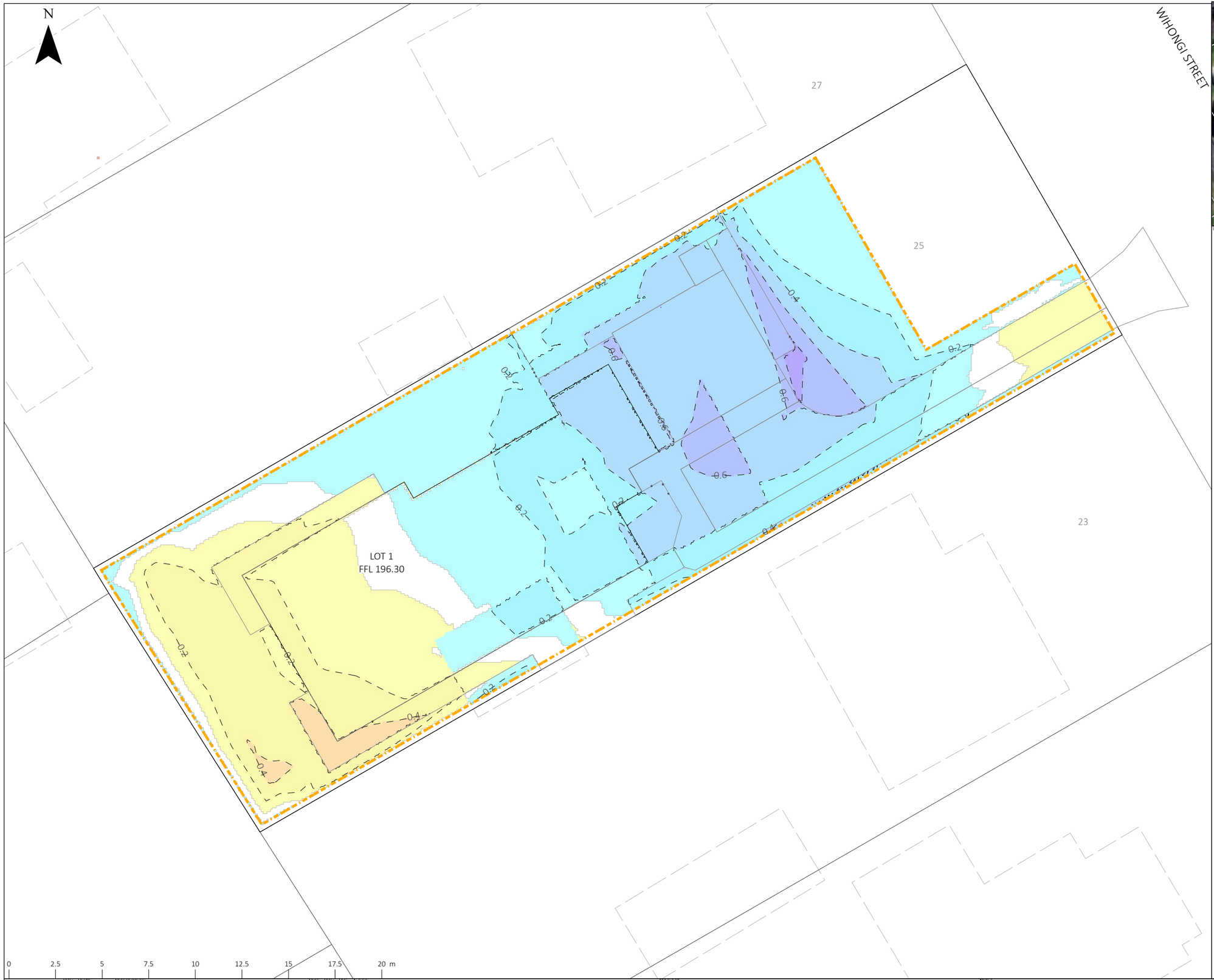

LEGEND:

- EARTHWORKS EXTENT
- PAVEMENT
- BUILDINGS
- NEW PARCELS
- EXISTING PARCELS
- EXISTING KERBLINES
- EXISTING IMPERVIOUS
- EXISTING BUILDINGS

CUTFILL

- -1.00--0.80m
- -0.80--0.60m
- -0.60--0.40m
- -0.40--0.20m
- -0.05--0.20m
- -0.05-0.05m
- 0.05-0.20m
- 0.20-0.40m
- 0.40-0.60m
- 0.60-0.80m
- 0.80-1.00m

EW ID	UNITS	EW001	TOTAL
AREA	**m²**	**748**	**748**
CUT	m³	42.5	42.5
BULK TOT. CUT	**m³**	**42.5**	**42.5**
MAX. CUT DEPTH	**m**	**0.6**	**0.6**
BULK FILL	m³	153.8	153.8
FILL +15% BF.	m³	176.9	176.9
BULK TOT. FILL	**m³**	**153.8**	**153.8**
BULK CUT OFFSITE	m³	-	0.0
BULK CUT TO FILL	m³	-	42.5
BULK FILL IMPORT	m³	-	134.4
BULK TOT. VOL.	**m³**	**196.3**	**196.3**
MAX. FILL HEIGHT	**m**	**0.8**	**0.8**
BULK TRUCKS	Trucks	-	23
TOPSOIL CLEAN STRIP	m³	187.0	187.0
TOPSOIL TOT. STRIP	m³	187.0	187.0
TOPSOIL TOT. PLACE	m³	65.1	65.1
TOPSOIL TOT. VOL.	**m³**	**252.1**	**252.1**
TOPSOIL TRUCKS	Trucks	-	43
EW TOT. VOL.	**m³**	**448.4**	**448.4**
EW TOT. TRUCKS	Trucks	-	66

Existing Surf. assumes topsoil depth of 0.3m
Proposed Surf. is to Building, Pavement and Grass Subgrade
Proposed topsoil depth of 0.225m

NOTES:
1. THIS DRAWING PROVIDES LOCATION AND HEIGHTS ONLY OF RETAINING WALLS. WALL TYPE(S) AND STRUCTURAL DETAILED DESIGN OF RETAINING WALL(S) BY OTHERS.
2. ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERTOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER FOR CLARIFICATION
3. THE CONTRACTOR IS TO PEG INFRASTUCTURE LOCATIONS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS.
4. UNDERFILL DRAINAGE IS TO BE INSTALLED AT THE DIRECTION OF THE ENGINEER. IF THE CONTRACTOR ENCOUNTERS SPRINGS OR OTHER SOURCES OF WATER, THEY ARE TO NOTIFY THE ENGINEER.
5. EARTHWORKS ARE NOT TO BE EXTENDED INTO ADJOINING SITES UNLESS THE ENGINEER HAS ISSUED SPECIFIC INSTRUCTIONS
6. THE CONTRACTOR IS RESPONSIBILE FOR IDENTIFYING AND PROTECTING EXISTING SERVICES AND DRAINAGE ON SITE
7. THE CONTRACTOR SHALL CLARIFY THE AREAS AND EXTENT OF CLEARING WITH THE ENGINEER BEFORE COMMENCEMENT AND CONFIRM THAT ALL NECESSARY CONSENTS ARE IN PLACE.
8. EARTHWORKS TOLERANCES ARE TO BE +-25mm
9. ALL VOLUMES ARE SOLID MEASURE, NO BULKING FACTOR APPLIED
10. RETAINING WALL SETOUT - EXACT SETTING OUT POSITION OF RETAINING WALLS IN RELATION TO LOT BOUNDARIES AND BUILDINGS TO BE OBTAINED FROM ARCHITECT OR STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION COMMENCING.

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A	12/06/24	FOR RESOURCE CONSENT	TG	TN	TN

LOGO: CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: CUT FILL PLAN

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 30000

SCALE:	SIZE:	REVISION:	DATE:
1:200	A3	A	12/06/24

LEGEND:

- SILT FENCE
- CUTFILL ASSESSMENT AREAS
- SOIL STOCKPILE
- STABILISED CONSTRUCTION ENTRANCE
- DRIVEWAY
- BUILDINGS
- PROPOSED CONTOURS
- NEW PARCELS
- EXISTING PARCELS
- EXISTING KERBLINES
- EXISTING BUILDINGS

NOTES:
1. ALL SEDIMENT CONTROL MEASURES MUST BE OPERATIONAL PRIOR TO ANY OTHER WORKS COMMENCING ON SITE AND APPROVED ON SITE BY QUALIFIED COUNCIL PERSONNEL
2. THE CONTRACTOR SHALL ARRANGE FOR AND ATTEND A PRELIMINARY EROSION CONTROL MEETING ON SITE WITH THE ENGINEER
3. ALL EROSION AND SEDIMENT CONTROL STRUCTURES TO BE INSPECTED DAILY AND MAINTAINED IN GOOD WORKING ORDER FOR THE DURATION OF EARTHWORKS
4. CONTOUR DRAINS SHALL BE RE-BUILT AS NECESSARY AT THE END OF EACH WORKING DAY.
5. THE EROSION AND SEDIMENT CONTROL MEASURES DESCRIBED ON THIS PLAN ARE A MINIMUM. FURTHER CONTROL WORKS MAY BE REQUIRED BY THE ENGINEER AS THE PROJECT ADVANCES.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT THE SITE HAS EFFECTIVE EROSION CONTROL AND SEDIMENT RETENTION MEASURES OPERATION AT ALL TIMES.
7. ALL CLEAN WATER RUNOFF FROM CATCHMENT AREAS ABOVE THE SITE SHALL BE DIVERTED AWAY FROM THE EARTHWORKS AREA VIA STABILISED SYSTEMS.
8. RECORDS OF INSPECTION TIMES AND INSPECTOR TO BE TAKEN
9. STOCKPILES TO BE COVERED WITH IMPERVIOUS SHEET
10. DEVICES TO BE CONSTRUCTED IN ACCORDANCE WITH GD05
11. SEDIMENT AND EROSION CONTROL MEASURES SHOULD BE CHECKED POST STORMS
12. A COPY OF THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE KEPT ON SITE AT ALL TIMES. ALL PERSONNEL, INCLUDING SUB-CONTRACTORS, SHALL BE FAMILIAR WITH ALL RELEVANT REQUIREMENTS.

REFER TO THE CUT FILL PLAN FOR EARTHWORKS DETAILS AND VOLUMES

IMAGERY CREDITS:
Esri Community Maps Contributors, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, LINZ

0 2.5 5 7.5 10 12.5 15 17.5 20 m

REV:	DATE:	DESCRIPTION:	DES:	REV.:	REL.:
A	12/06/24	FOR RESOURCE CONSENT	TG	TN	TN

SCAN FOR 3D:

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LOGO: CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: EROSION AND SEDIMENT CONTROL PLAN

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 34000

SCALE:	SIZE:	REVISION:	DATE:
1:200	A3	A	12/06/24

GD05 F1.3 SILT FENCES

KEY DESIGN CRITERIA

KEY DESIGN CRITERIA FOR SILT FENCES ARE OUTLINED BELOW:

- ENSURE SILT FENCE HEIGHT IS 600 MM ABOVE GROUND LEVEL AND 200 MM BELOW GROUND LEVEL
- MAXIMUM SLOPE LENGTHS, SPACING OF RETURNS AND ANGLES FOR SILT FENCES ARE SHOWN IN TABLE 12
- LOCATE SUPPORTING POSTS/WARATAHS FOR SILT FENCES 2-4 M APART WITH SUPPORT PROVIDED BY A TENSIONED WIRE (2.5 MM HT) ALONG THE TOP OF THE SILT FENCE
- WHERE A STRONG WOVEN FABRIC IS USED IN CONJUNCTION WITH A WIRE SUPPORT, THE DISTANCE BETWEEN POSTS CAN BE UP TO 4 M. DOUBLE THE SILT FENCE FABRIC OVER AND FASTEN TO THE WIRE WITH SILT FENCE CLIPS AT 500 MM SPACINGS
- ENSURE SUPPORTING POSTS/WARATAHS ARE EMBEDDED A MINIMUM OF 400 MM INTO THE GROUND
- ALWAYS INSTALL SILT FENCES ALONG THE CONTOUR (AT A BREAK IN SLOPE). WHERE THIS IS NOT POSSIBLE, OR WHERE THERE ARE LONG SECTIONS OF SILT FENCE, INSTALL SHORT SILT FENCE RETURNS (REFER FIGURE 82) PROJECTING UP-SLOPE FROM THE SILT FENCE TO MINIMISE THE CONCENTRATION OF FLOWS. SILT FENCE RETURNS SHOULD BE A MINIMUM 2 M IN LENGTH, AND CAN INCORPORATE A TIE BACK. THEY ARE GENERALLY CONSTRUCTED BY CONTINUING THE SILT FENCE AROUND THE RETURN AND DOUBLING BACK, ELIMINATING JOINS
- JOIN LENGTHS OF SILT FENCE BY DOUBLING OVER FABRIC ENDS AROUND A WARATAH OR BY STAPLING THE FABRIC ENDS TO A BATTEN AND BUTTING THE TWO BATTENS TOGETHER AS SHOWN IN FIGURE 82
- INSTALL SILT FENCE RETURNS AT EITHER END OF THE SILT FENCE, PROJECTING UP-SLOPE TO A SUFFICIENT HEIGHT TO PREVENT OUTFLANKING
- IN CATCHMENTS OF MORE THAN 0.3 HA, USE OF SILT FENCES REQUIRES CAREFUL CONSIDERATION OF SPECIFIC SITE MEASURES, AND OTHER CONTROL MEASURES MAY BE BETTER, SUCH AS A SUPER SILT FENCE (REFER SECTION F1.4).

Table 12: Silt fence design criteria

Slope steepness %	Slope length (m) (maximum)	Spacing of returns (m)	Silt fence length (m) (maximum)
Flatter than 2%	Unlimited	N/A	Unlimited
2 – 10%	40	60	300
10 – 20%	30	50	230
20 – 33%	20	40	150
33 – 50%	15	30	75
> 50%	6	20	40

- WHERE WATER MAY POND REGULARLY BEHIND THE SILT FENCE, PROVIDE EXTRA SUPPORT FOR THE SILT FENCE WITH TIE BACKS FROM THE SILT FENCE TO A CENTRAL STABLE POINT ON THE UPWARD SIDE. EXTRA SUPPORT CAN ALSO BE PROVIDED BY STRINGING WIRE BETWEEN SUPPORT STAKES AND CONNECTING THE FILTER FABRIC TO THIS WIRE.
- AS A MINIMUM, THE SILT FENCE CLOTH MUST MEET THE FOLLOWING CRITERIA FOR GEOTEXTILE FABRIC:
  - GRAB TENSILE STRENGTH: >440N (ASTM D4632)
  - TENSILE MODULUS: 0.140 PA (MINIMUM)
  - APPARENT OPENING SIZE: 0.1 – 0.5MM (ASTM D4751).

CONSTRUCTION

- USE SILT FENCE MATERIAL APPROPRIATE TO THE SITE CONDITIONS AND IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS
- ALWAYS INSTALL SILT FENCES ALONG THE CONTOUR (REFER FIGURE 85)
- EXCAVATE A TRENCH A MINIMUM OF 100 MM WIDE AND 200 MM DEEP ALONG THE PROPOSED LINE OF THE SILT FENCE
- USE WARATAHS AT LEAST 1.5 M IN LENGTH
- INSTALL THE SUPPORT WARATAHS ON THE DOWN-SLOPE EDGE OF THE TRENCH AND SILT FENCE FABRIC ON THE UP-SLOPE SIDE OF THE SUPPORT WARATAHS TO THE FULL DEPTH OF THE TRENCH, THEN BACKFILL THE TRENCH WITH COMPACTED SOIL
- INSTALL THE WARATAHS SO THAT THEY ARE AS FLAT AS POSSIBLE AGAINST THE SILT FENCE. IF THE WARATAH EDGE IS AGAINST THE SILT FENCE, IT WILL RUB AND EVENTUALLY RIP AGAINST THE WARATAH
- USE CORRECT SILT FENCE CLIPS (REFER FIGURE 86) TO SECURE THE SILT FENCE MATERIAL TO THE TOP WIRE. WIRE TIES AND STAPLES RIP THE SILT FENCE MATERIAL WHEN THE WEIGHT OF THE IMPOUNDED WATER PUSHES AGAINST THE SILT FENCE AND ARE NOT TO BE USED
- REINFORCE THE TOP OF THE SILT FENCE FABRIC WITH A SUPPORT MADE OF HIGH TENSILE 2.5 MM DIAMETER GALVANISED WIRE. TENSION THE WIRE USING PERMANENT WIRE STRAINERS ATTACHED TO ANGLED WARATAHS AT THE END OF THE SILT FENCE
- WHERE ENDS OF SILT FENCE FABRIC COME TOGETHER, ENSURE THEY ARE OVERLAPPED, FOLDED AND STAPLED/ SCREWED TO PREVENT SEDIMENT BYPASS.

MAINTENANCE

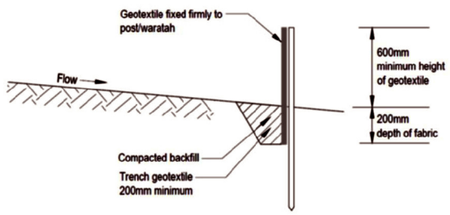
TO MAINTAIN SILT FENCES:

- INSPECT SILT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL
- CHECK FOR DAMAGE INCLUDING RIPS, TEARS, BULGES IN THE FABRIC, BROKEN SUPPORT WIRES, LOOSE WARATAHS, OVERTOPPING, OUTFLANKING, UNDERCUTTING, AND LEAKING JOINS IN FABRIC
- MAKE ANY NECESSARY REPAIRS AS SOON AS IDENTIFIED
- AS THE GEOTEXTILE MATERIAL BECOMES CLOGGED WITH SEDIMENTS, THIS WILL RESULT IN INCREASED DURATION OF PONDING. THEREFORE, CAREFUL CLEANING OF THE SILT FENCE GEOTEXTILE WITH A LIGHT BROOM OR BRUSH MAY BE APPROPRIATE
- REMOVE SEDIMENT WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHES 20% OF THE FABRIC HEIGHT
- REMOVE SEDIMENT DEPOSITS AS NECESSARY (PRIOR TO 20% OF FABRIC HEIGHT) TO CONTINUE TO ALLOW FOR ADEQUATE SEDIMENT STORAGE AND REDUCE PRESSURE ON THE SILT FENCE
- DISPOSE OF SEDIMENT TO A SECURE AREA TO ENSURE THAT IT DOES NOT DISCHARGE TO THE RECEIVING ENVIRONMENT.

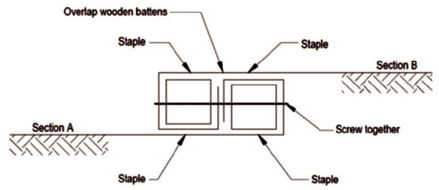
DECOMMISSIONING

WHEN DECOMMISSIONING A SILT FENCE:

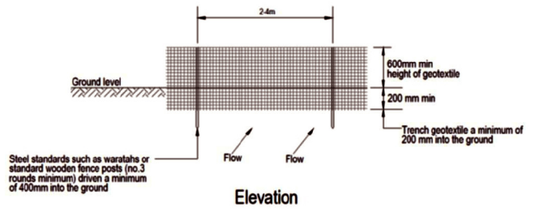
- DO NOT REMOVE SILT FENCE AND ACCUMULATED SEDIMENT UNTIL THE CATCHMENT AREA HAS BEEN APPROPRIATELY STABILISED
- REMOVE AND CORRECTLY DISPOSE OF ACCUMULATED SEDIMENT
- BACKFILL TRENCH, RE-GRADE AND STABILISE THE DISTURBED AREA.



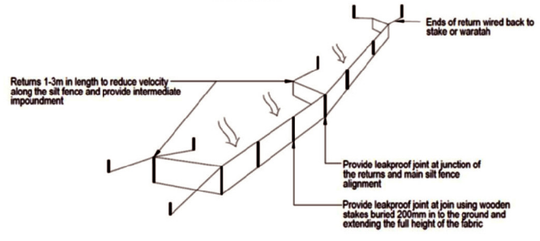
Cross - section



Standard fabric joint



Elevation



Silt fence with returns and support wire

Figure 82: Schematic of a silt fence

STEP 1

Dig a 200mm deep trench

STEP 2

Hammer in 1m waratahs or wooden fence post 200mm into the trench, therefore 400mm below original ground level

STEP 3

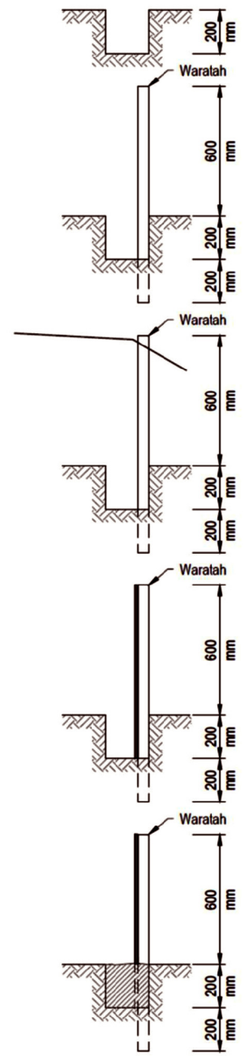
Install single galvanised wire and tension it at 50m intervals

STEP 4

Install single layer of geotextile fabric hard against the side of the trench (800mm total height)

STEP 5

Back fill and compact well (critical)



step installation of a silt fence

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A	12/06/24	FOR RESOURCE CONSENT	TG	TN	TN

LOGO: CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: EROSION AND SEDIMENT CONTROL DETAILS

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 35000

SCALE:	SIZE:	REVISION:	DATE:
NTS	A3	A	12/06/24

GD05 E2.6 STABILISED ENTRANCEWAYS

KEY DESIGN CRITERIA

FORMAL DESIGN OF STABILISED ENTRANCEWAYS IS GENERALLY NOT REQUIRED; ALTHOUGH THE FOLLOWING DESIGN PRINCIPLES ARE REQUIRED FOR THEM TO BE AN EFFECTIVE PRACTICE:

- STABILISED ENTRANCEWAYS SHOULD BE LOCATED AT THE PERMANENT SITE ENTRY/EXIT POINT
- LOCATE ALL STABILISED ENTRANCE WAYS SO THAT VEHICLES CANNOT BYPASS THESE DEVICES. PERIMETER SILT FENCES OR BUNDS MAY ASSIST IN ACHIEVING THIS REQUIREMENT
- MINIMISE THE NUMBER OF SITE EXIT POINTS
- SHOW THE LOCATIONS OF ALL SITE EXITS POINTS IN THE ESC PLAN
- ENSURE THE STABILISED ENTRANCE DRAINS BACK ONTO SITE. A SPEED HUMP CAN BE USED FOR THIS PURPOSE
- CONSIDER THE LENGTH OF TIME THE SITE ENTRY/EXIT WILL BE IN PLACE AND THE EXPECTED TRAFFIC VOLUMES AND TYPES. FOR PROJECTS WITH LONGER DURATIONS OR LARGE NUMBERS OF VEHICLE MOVEMENTS ON AND OFF THE SITE, IT IS OFTEN MORE COST EFFICIENT TO SEAL THE EXITS FROM THE START OF THE PROJECT, RATHER THAN MANAGE THE CONSTANT MAINTENANCE OFTEN ASSOCIATED WITH A SITE EXIT
- USE THE SPECIFICATIONS IN TABLE 8 AND FIGURE 35 TO DESIGN STABILISED ENTRANCEWAYS. ACHIEVING THE SPECIFICATIONS DETAILED BELOW ON A SMALL SITE MAY BE DIFFICULT. FOR SMALL SITES' GUIDANCE REFER TO SECTION G2.0.

Table 8 Stabilised entranceway specifications

Design parameter	Specification
Aggregate size	50 – 150 mm washed aggregate
Minimum thickness	150mm
Minimum length	10 m
Minimum width	4 m

A SHAKER RAMP COULD BE IN THE FORM OF A SERIES OF PREFABRICATED "CATTLE STOPS" (REFER FIGURES 36 AND 37). WHEN STABILISED ENTRANCEWAYS ARE USED WITH A SHAKER RAMP, APPLY THE FOLLOWING CRITERIA:

- DESIGN SHAKER RAMPS A MINIMUM OF 5 M LONG TO ALLOW AT LEAST ONE FULL REVOLUTION OF A TRUCK TYRE
- WHERE USING CATTLE STOPS, USE TWO CATTLE STOPS PLACED ONE IN FRONT OF THE OTHER TO PROVIDE ADEQUATE LENGTH
- ENSURE THE 'TEETH' OF THE SHAKER RAMP ARE DEEP ENOUGH SO THAT MATERIAL DROPPED FROM ONE VEHICLE IS NOT PICKED UP BY THE NEXT
- STABILISE WITH ROCK THE SECTION OF ACCESS ROAD BETWEEN THE SHAKER RAMP AND THE SEALED PAVEMENT
- ENSURE THE RUNOFF FROM THE SHAKER RAMP AREA AND/OR WHEEL-WASH SYSTEMS PASSES THROUGH AN APPROPRIATE SEDIMENT RETENTION DEVICE
- NOTE: SHAKER RAMPS ARE ONLY EFFECTIVE FOR MINOR VOLUMES OF DRY MATERIAL. WHERE THE MATERIAL TO BE REMOVED IS WET AND OR IS LOCATED WITHIN THE TYRE TREADS, WHEEL WASHING WILL TYPICALLY BE REQUIRED TO REMOVE THIS MATERIAL.

WHEN STABILISED ENTRANCEWAYS ARE USED WITH A WHEEL WASH, APPLY THE FOLLOWING CRITERIA:

- ENSURE THAT A WATER COLLECTION AND DISPOSAL METHODOLOGY (SUCH AS WATER RECIRCULATION) IS PROVIDED
- DIRECT WHEEL-WASH RUNOFF TO AN APPROPRIATE SEDIMENT RETENTION FACILITY WITHIN THE SITE.

CONSTRUCTION AND OPERATION

FOR CONSTRUCTION AND OPERATION OF STABILISED ENTRANCEWAYS:

- ONCE A SUITABLE LOCATION HAS BEEN DETERMINED, CLEAR THE AREA OF UNSUITABLE MATERIAL AND GRADE THE BASE TO A SMOOTH FINISH
- PLACE WOVEN GEOTEXTILE OVER THIS AREA AND ENSURE THIS IS APPROPRIATELY PINNED AND OVERLAPPED AS NECESSARY
- PLACE AGGREGATE FROM THE CONSTRUCTION SITE BOUNDARY EXTENDING FOR AT LEAST 10 M ACCORDING TO THE SPECIFICATIONS (FIGURE 35) AND CONTOUR THE AGGREGATE TO SUIT THE ENTRANCE POINT (NOTE: CONTOURING CAN INCLUDE A HIGHPOINT TO ACT AS A BARRIER TO WATER FLOWING OUT OF THE SITE.)
- PROVIDE DRAINAGE FROM THE STABILISED ENTRANCEWAY TO AN APPROPRIATE DISCHARGE POINT (THIS MAY REQUIRE A SEDIMENT RETENTION MEASURE IF A WHEEL WASH IS INSTALLED.)
- CONSIDER THE LENGTH OF TIME THE SITE ENTRY/EXIT WILL BE IN PLACE AND THE EXPECTED TRAFFIC VOLUMES AND TYPES
- FOR PROJECTS WITH LONGER DURATIONS OR LARGE NUMBER OF VEHICLE MOVEMENTS ON AND OFF THE SITE, IT IS OFTEN MORE COST EFFICIENT TO SEAL THE EXITS AT THE COMMENCEMENT OF WORKS THAN TO MANAGE THE CONSTANT MAINTENANCE OFTEN ASSOCIATED WITH A SITE EXIT.

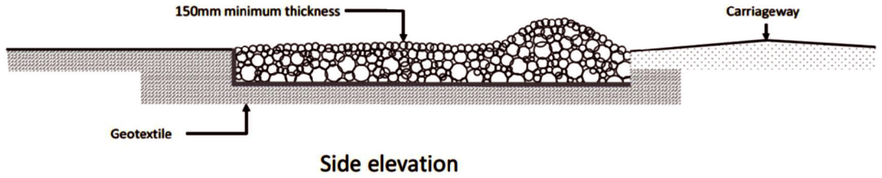
MAINTENANCE

KEY ITEMS TO CHECK AS PART OF THE REGULAR INSPECTION INCLUDE:

- INSPECT WEEKLY AND AFTER EACH RAINFALL EVENT FOR GENERAL MAINTENANCE REQUIREMENTS
- MAINTAIN THE STABILISED ENTRANCEWAY IN A CONDITION TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION SITE (THIS MAY REQUIRE SEVERAL APPLICATIONS OF NEW AGGREGATE DURING THE LIFE OF THE PRACTICE.)
- AFTER EACH RAINFALL, INSPECT ANY STRUCTURE USED TO TRAP RUNOFF FROM THE STABILISED ENTRANCEWAY AND CLEAN OUT AS NECESSARY
- WHEN WHEEL WASHING IS ALSO REQUIRED, ENSURE THIS IS DONE ON AN AREA STABILISED WITH AGGREGATE/ HOTMIX WHICH DRAINS TO AN APPROVED SEDIMENT RETENTION FACILITY (NOTE: THIS SEDIMENT RETENTION DEVICE SHOULD BE ISOLATED FROM ADDITIONAL SURFACE FLOWS AND/OR BE SPECIFICALLY DESIGNED TO INCLUDE THE ADDITIONAL FLOWS FROM THE WHEEL WASH.)
- ADD FURTHER AGGREGATE AS NECESSARY WHEN MUD BLOCKAGE BECOMES EVIDENT OR WHEN AGGREGATE THICKNESS IS NOT TO SPECIFICATION
- REMOVE SEDIMENT FROM SEALED PAVEMENTS BY SWEEPING OR VACUUMING AS NECESSARY
- DO NOT WASH ANY SEDIMENT INTO THE STORMWATER SYSTEM OR ANY WATERCOURSE
- SUPPLEMENTARY STREET SWEEPING ON ADJACENT ROADS MAY STILL BE REQUIRED IN ASSOCIATION WITH STABILISED ENTRANCEWAYS, AT REGULAR INTERVALS.

DECOMMISSIONING

IN DECOMMISSIONING STABILISED ENTRANCEWAYS, REMOVE AGGREGATE AND GEOTEXTILE, AND STABILISE THE AREA. ENSURE THAT TRAFFIC IS KEPT OFF THE AREA UNTIL PERMANENT STABILISATION IS EFFECTIVE.



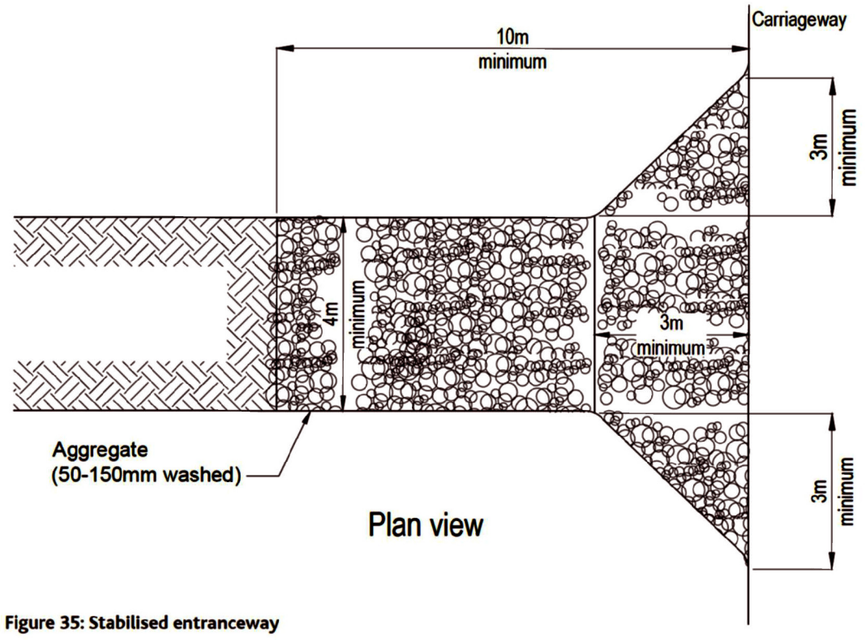


Figure 35: Stabilised entranceway

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A	12/06/24	FOR RESOURCE CONSENT	TG	TN	TN	

CIVIX

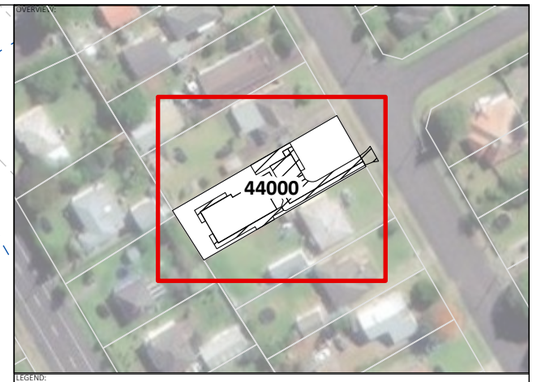
PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: EROSION AND SEDIMENT CONTROL DETAILS

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 35001

SCALE:	SIZE:	REVISION:	DATE:
NTS	A3	A	12/06/24



LEGEND:

- CENTRELINE
- PROPOSED CONTOURS
- NEW SLOT DRAIN
- NEW DISH CHANNEL
- LANDSCAPE WALL
- NEW PARCELS
- BUILDINGS
- CONC EX AGG
- GRAVEL
- CONC BROOM
- DECK
- VEGETATION
- GRASS
- EXISTING PARCELS
- EXISTING KERBLINES
- EXISTING BUILDINGS
- SW CATCHPIT
- SW OUTLET
- NEW SERVICE TRENCH

IMAGERY CREDITS:
LINZ

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LOGO: CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: PRIVATE ROADING PLAN

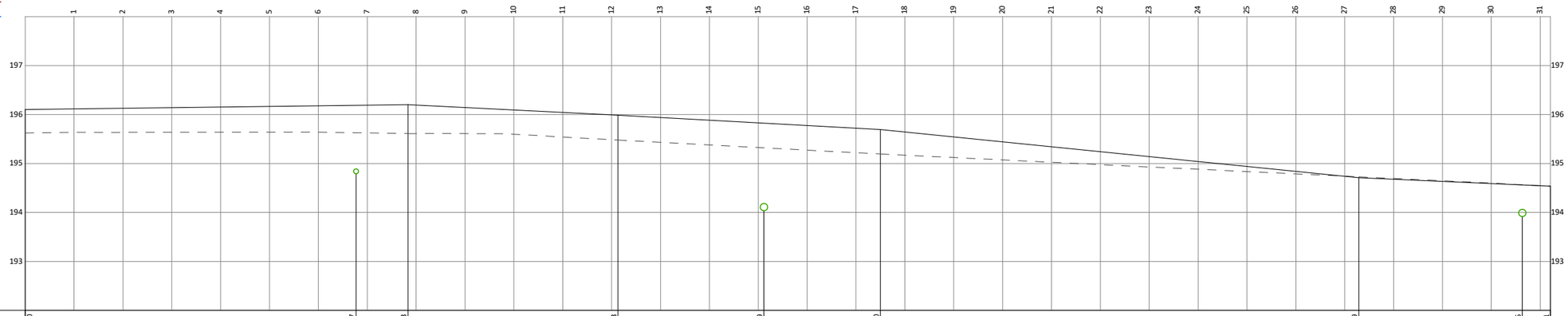
STATUS: FOR RESOURCE CONSENT

DRAWING NO: 44000

SCALE:	SIZE:	REVISION:	DATE:
1:200	A3	A	12/06/24

KEY:

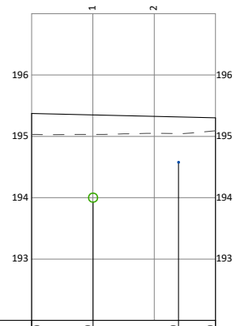
EXISTING SURFACE
PROPOSED SURFACE
STORMWATER
WASTEWATER
WATER SUPPLY



CHAINAGE	0.00						6.77			7.83					12.13			2.99			17.50					27.29			3.35		31.21
DESIGN LEVEL	196.10						SW PVT.			196.20					195.99			SW PVT.			195.69					194.71			SW PVT.		194.54
CUT(-)/FILL(+)	0.48						DIA. 0.100			0.59					0.51			DIA. 0.150			0.50					-0.02			DIA. 0.150		0.00
EXISTING LEVEL	195.62						CVR. 1.31			195.61					195.48			CVR. 1.63			195.20					194.73			CVR. 0.49		194.54
GRADIENT	-1.3% (1/79.0)									6.3%	5.0% (1/19.9)				0.4%	5.5% (1/18.3)					4.6%	10.1% (1/9.9)					-5.7%	4.4% (1/22.8)			
DESCRIPTION																															

DW SECTION LS01

H 1:100 V 1:100, REFER DWGNone



CHAINAGE	0.00		1.00		2.40	3.00
DESIGN LEVEL	195.37	SW PVT.		WS PVT.		195.30
CUT(-)/FILL(+)	0.34	DIA. 0.150		DIA. 0.025		0.21
EXISTING LEVEL	195.03	CVR. 1.25		CVR. 0.70		195.09
GRADIENT	2.3% (1/43.1)					
DESCRIPTION						

DW SECTION XS01

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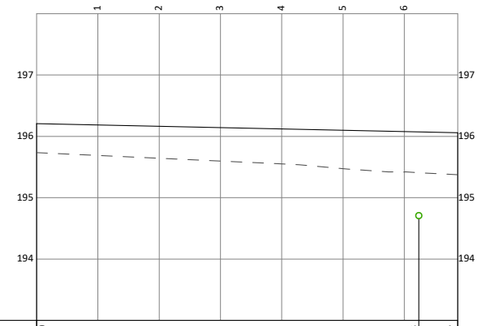

CHAINAGE	0.00	6.23	6.87
DESIGN LEVEL	196.21	SW PVT.	196.06
CUT(-)/FILL(+)	0.47	DIA. 0.100	0.68
EXISTING LEVEL	195.73	CVR. 1.31	195.37
GRADIENT	2.2% (1/46.0)		
DESCRIPTION			

DW SECTION XS02

H 1:100 V 1:100, REFER DWGNone

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LOGO: CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: ROADING LONGSECTIONS

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 45000

SCALE:	SIZE:	REVISION:	DATE:
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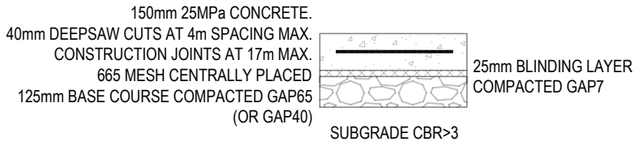
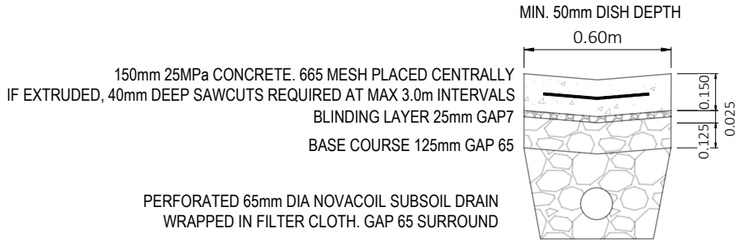
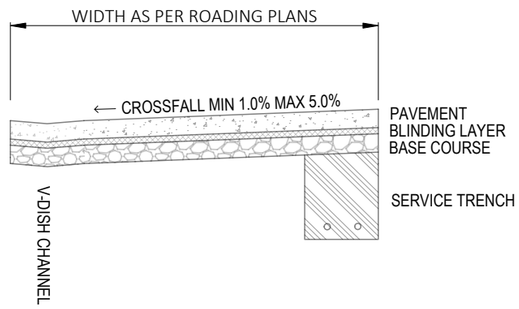


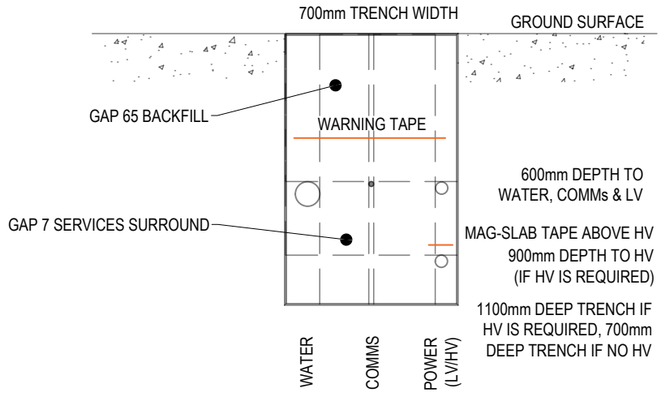
CONCRETE DRIVEWAY DETAIL
SCALE 1:25 (A3)



V-DISH CHANNEL DETAIL
SCALE 1:25 (A3)



CONCRETE DRIVEWAY TYPICAL CROSS SECTION
SCALE 1:50 (A3)



TYPICAL UTILITY SERVICE TRENCH DETAIL (NO GAS)
SCALE 1:25 (A3)

REVISION	AMENDMENT	BY
A	FOR RESOURCE CONSENT	TG
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED: TG
DRAWN: TG
RELEASED: TN

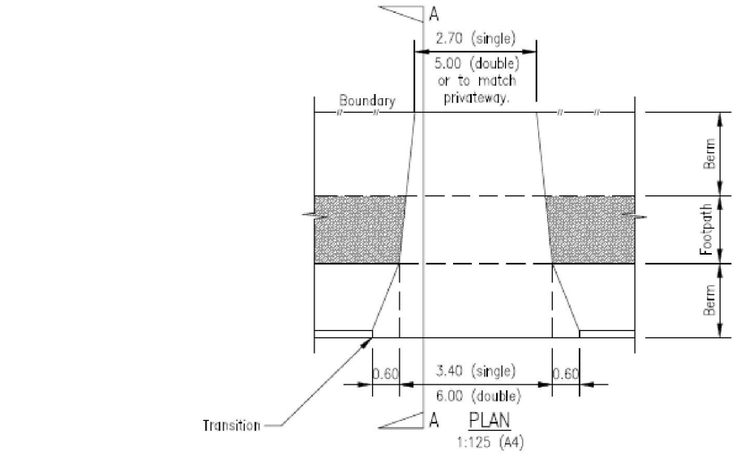
CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

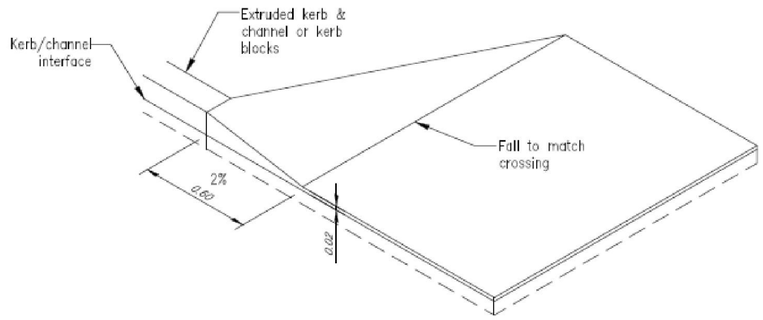
TITLE: PRIVATE ROADING DETAILS

STATUS: FOR RESOURCE CONSENT
DRAWING NO: 46000
SCALE & SIZE: - A3
REV: A

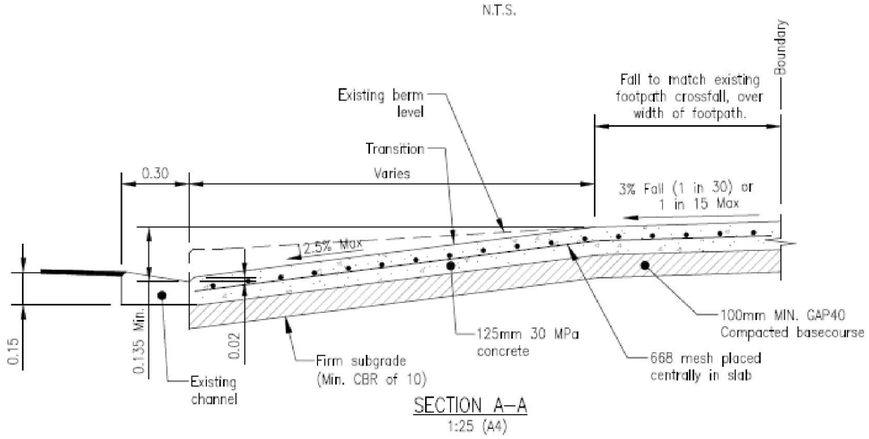
Sheet 18 Vehicle Crossing - Residential



PLAN
1:125 (A4)



DETAIL OF KERB TRANSITION AT CROSSING
N.T.S.



SECTION A–A
1:25 (A4)

For further notes refer to Sheet 22

VEHICLE CROSSING – RESIDENTIAL

FAR NORTH DISTRICT COUNCIL
ENGINEERING STANDARDS

Date:	JAN 2021
Revision:	0.1
Scale:	AS SHOWN
SHEET No.	18

REVISION	AMENDMENT	BY
A	FOR RESOURCE CONSENT	

DESIGNED: TG
DRAWN: TG
RELEASED: TN

CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: ROADING DETAILS

STATUS: FOR RESOURCE CONSENT
DRAWING NO: 47000
SCALE & SIZE: - A3
DATE: 12/06/2024

N

EX. PUB CP 675x475 KN_SWP0662
LL193.96 IL192.93

EX. PUB KN_SWL
CONCRETE 225mm
13.6m @ 2.49%

HEKE STREET

WIHONGI STREET

NEW PVT OUTLET SWN-1-0
LL194.28 IL193.63
FOR KERB DISCHARGE

NEW PVT CP 675x475 SWN-12-1
LL194.56 BASE IL 193.46 OUT IL 193.91

NEW PVT THIN TANK LOT 1 TANKSALOT
2x5,310L, HGT 1.48
GL 196.01-196.07

NEW PVT SWL-1-1
uPVC SN16 150mm
27.4m @ 1.86% 10Y=5L/s

DISH CHANNEL

LOT 1
899m²
SLOT DRAIN

NEW PVT SWL-1-2
uPVC SN16 100mm
35.3m @ 2.21%

LOT 1
FFL 196.30

NEW PVT SWL-6-1
uPVC SN16 100mm
36.0m @ 1.14%

NEW PVT SWL-13-1
uPVC SN16 100mm
23.8m @ 5.63% 10Y=2L/s

NEW PVT CP 300x300 SWN-13-1
LL196.03 BASE IL 194.93 OUT IL 195.38

27
25
23
21

0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25 m

LEGEND:
- SW NEW CATCHPIT
- SW NEW INLET/OUTLET
- SW NEW PRIVATE THIN TANK
- SW EX. CATCHPIT
- SW NEW PVT PIPE
- NEW SLOT DRAIN
- NEW DISH CHANNEL
- SW EX PUB PIPE
- WW (REFER TO WW DRAWINGS)
- WS (REFER TO WS DRAWINGS)
- BUILDINGS
- NEW PARCELS
- IMPERMEABLE PAVEMENT
- DECK
- LANDSCAPE
- EXISTING PARCELS
- EXISTING BUILDINGS

GENERAL NOTES:
1.1 PIPES AND MANHOLES MUST BE CONSTRUCTED IN THE LOCATIONS SHOWN, DWG FILES OF THE DESIGN WILL BE PROVIDED ON REQUEST.
1.2 HORIZONTAL AND VERTICAL CONSTRUCTION TOLERANCES ARE 50mm. ANY CHANGES TO THE DESIGN BY MORE THAN THE TOLERANCE ARE TO BE SUBMITTED TO THE ENGINEER IN WRITING. NO ASSETS ARE TO BE CONSTRUCTED ON SITE OUTSIDE OF TOLERANCE WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
1.3 IN ADDITION TO 1.2, WHERE THE DESIGN UTILISES MINIMUM GRADES/MINIMUM FALLS THROUGH MANHOLES FOLLOWING THE RELEVANT COP DOCUMENTS, NO REDUCTION IN GRADE OR FALL THROUGH MANHOLE IS PERMITTED.
1.4. ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERATOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER IN WRITING FOR CLARIFICATION
1.5. THE CONTRACTOR IS TO PEG AND MEASURE INFRASTUCTURE AND UTILITY LOCATIONS, LEVELS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS. ANY CONFLICT BETWEEN THE LEVELS MEASURED ON SITE AND THE ENGINEERING PLANS IS TO BE SUBMITTED TO THE ENGINEER IN WRITING PRIOR TO THE ORDERING OF MATERIALS.
1.6 CONTRACTOR TO COMPLY WITH HEALTH AND SAFETY AT WORK ACT (HSWA) 2015
1.7 BOTH CONTRACTORS AND CONSULTANTS ARE TO TAKE ALL NECESSARY CARE AND PRECAUTION AT THE CONSTRUCTION SITE TO AVOID ACCIDENT AND INJURY FROM FALLING INTO EXCAVATIONS, CRUSHING BY SUBSIDING EXCAVATIONS AND THE MOVEMENT OF PLANT AND MATERIALS ON THE SITE.
1.8 VERTICAL LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946
1.9 WHERE PIPES CROSS, IF CROSSOVER OF PIPES IS LESS THAN 500mm, USE POLYSTYRENE BETWEEN PIPES, OTHERWISE HARDFILL TO BE PLACED IN TRENCH BETWEEN PIPES WHERE DRAINAGE LINES CROSS. EXTEND 0.5m EACH SIDE OF PIPE REGARDLESS OF SEPARATION DISTANCE.
1.10 APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS AND VEHICLE CROSSINGS.
1.11 HEAVY DUTY TRAFFICABLE MANHOLE LIDS AND FRAMES TO BE USED IN ALL AREAS.
1.12 PIPES THAT DO NOT TERMINATE IN A MANHOLE MUST BE TERMINATED WITH A LONDON JUNCTION AND CAP.
1.13 ALL LINES TO BE ABANDONDED SHALL BE SEALED AT EACH END. TIMING OF ALL SEALING TO BE COORDINATED WITH COUNCIL STAFF.
1.14 ALL LOT CONNECTIONS ARE 100mm uPVC SN16 UNLESS OTHERWISE SPECIFIED.
1.15 BENDS ON PRIVATE INFRASTRUCTURE TO BE LONG RADIUS BENDS UNLESS OTHERWISE SPECIFIED.
1.16 FOR RETAINING WALL DRAINAGE DETAILS, PLEASE REFER TO STRUCTURAL ENGINEERING DESIGN OF WALLS
1.17 ALL INFRASTRUCTURE TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS, ANY DEVIATION FROM THIS TO BE NOTIFIED TO THE ENGINEER IN WRITING PRIOR TO CONSTRUCTION.
1.18 UNDERGROUND TANK LOCATIONS SHOULD BE ASSESSED BY A STRUCTURAL ENGINEER TO ENSURE ADJACENT STRUCTURES DO NOT APPLY LOADINGS TO THE TANKS THAT EXCEED MANUFACTURER REQUIREMENTS.

IMAGERY CREDITS:
Esri Community Maps Contributors, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, LINZ

REV:	DATE:	DESCRIPTION:	DES:	REV:	REL:
A	12/06/24	FOR RESOURCE CONSENT	TG	TN	TN

SCAN FOR 3D:

allsite.ai

LOGO: CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: STORMWATER PLAN

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 50000

SCALE:	SIZE:	REVISION:	DATE:
1:200	A3	A	12/06/24

ORIFICE SUMMARY

ORIFICE	UNITS	ORF. 1	ORF. 2	TOTAL
DIAMETER	mm	32	12	
HEIGHT	m	0.000	1.012	
NO. OF ORF.		1	1	
2 YR HEAD	m	1.012	0.000	
2 YR FLOW	m³/s	0.0021	-	0.0021
5 YR HEAD	m	1.415	0.404	
5 YR FLOW	m³/s	0.0025	0.0002	0.0027

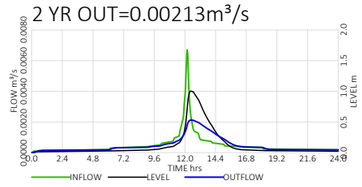
PEAK FLOW MITIGATION CALCULATIONS

CATCHMENT	UNITS	EXISTING	NON-MIT	LOT 1	EXISTING	NON-MIT	LOT 1
STORM		2 YR	2 YR	2 YR	5 YR	5 YR	5 YR
PERMEABLE AREA[1]	m²	672	433	0	672	433	0
IMPERMEABLE AREA[1]	m²	227	140	326	227	140	326
TOTAL AREA	m²	899	573	326	899	573	326
EVENT DEPTH (INCL. CC)	mm	123.0	123.0	123.0	162.0	162.0	162.0
PERMEABLE INITIAL ABSTRACTION	mm	5.0	5.0	5.0	5.0	5.0	5.0
PERMEABLE CURVE NUMBER[2]		74	74	74	74	74	74
POTENTIAL MAXIMUM RETENTION	mm	66.7	67.4	0.0	66.7	67.4	0.0
RUNOFF DEPTH	mm	80	79.6	118	114.4	114	157
RUNOFF VOLUME	m³	71.92	45.64	38.48	102.88	65.34	51.17
CHANNELISATION FACTOR		1.0	1.0	1.0	1.0	1.0	1.0
CATCHMENT LENGTH	km	0.045	0.045	0.014	0.045	0.045	0.014
CATCHMENT SLOPE	m/m	0.100	0.100	0.125	0.100	0.100	0.125
TIME OF CONCENTRATION	hr	0.17	0.17	0.17	0.17	0.17	0.17
PEAK FLOW	m³/s	0.0133	0.0084	0.0066	0.0189	0.0120	0.0087
PEAK RUNOFF RATE	mm/hr	53.1	52.9	73.1	75.8	75.6	96.6
FLOW TARGET FOR ALL SITES	m³/s			0.01064			0.01512
FLOW BYPASSING TANKS	m³/s			0.00840			0.01200
FLOW TARGET FOR ALL TANKS	m³/s			0.00224			0.00312
CATCHMENT PORTION FOR THIS TANK	%			100.0%			100.0%
FLOW TARGET FOR THIS TANK	m³/s			0.00224			0.00312

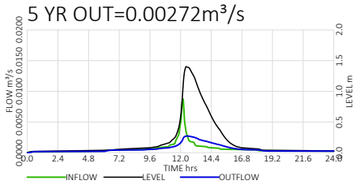
[1]PROPOSED AREAS BASED DEVELOPMENT LAYOUT

[2]CURVE NUMBERS BASED ON AUCKLAND COUNCIL INFILTRATION SHAPEFILE

2 YR OUT=0.00213m³/s



5 YR OUT=0.00272m³/s



VOLUME SUMMARY

ITEM	UNITS	DISCR.	CUMUL.
2 YR STORAGE	m³	7.79	7.79
5 YR STORAGE	m³	3.11	10.90
TOTAL VOLUME REQUIRED	m³	-	10.90
TOTAL VOLUME PROVIDED	m³	-	11.06

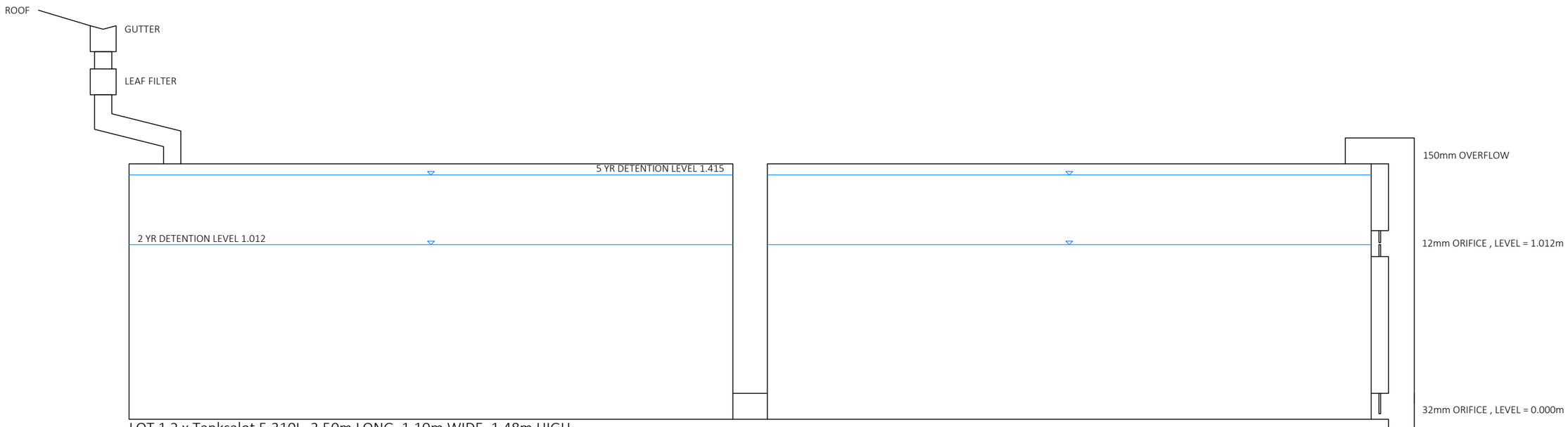
SITEWIDE SUMMARY

STORM	SYSTEM COUNT	TOT. VOL.	2 YR	5 YR
UNITS	-	m³	m³/s	m³/s
BYPASS	-	-	0.00840	0.01200
LOT 1	1	11.06	0.00213	0.00272
TOTAL	1	11.06	0.01053	0.01472
TARGET	-		0.01064	0.01512
OK?	-	-	OK	OK

DESIGN METHODOLOGY

The methodology used for tank design is below. The design is providing 2 Year and 5 Year Peak Flow Control to address downstream network capacity issues.

1. The target flow rate is set based on 80% of the existing site condition. Rainfall depths are from NIWA HIRDS under the 2080-2100 RCP6.0 Scenario to adjust for climate change.
2. To determine the appropriate tank design, the target flow was determined using the methods outlined in the following steps. To find a tank and orifice combinations that met all the design targets, a 24hr, 1 minute timestep analysis was completed for each design storm. Inflow into the tank was generated using the SCS Curve method in TP108. The water level in the tank was calculated based on inflow, outflow and the tank geometry. Outflow was determined based orifice geometry and head. Tank sizes and orifice designs were varied iteratively to find the optimal tank design that met all requirements.
3. The target flow rate for the site in the 2 YR event is shown in the Peak Flow Calculations Table for the EXISTING catchment, the analysis found a peak flow rate of 0.01330 m³/s. This flow rate was reduced to 80% of the EXISTING catchment, resulting in an adjusted target flowrate of 0.01064 m³/s.
4. In the post development scenario, some of the site is not draining through tanks. The bypass catchment analysis for the 2 YR event is shown in the Peak Flow Calculations Table for the NON-MIT catchment, this analysis found a peak flow rate of 0.00840 m³/s.
5. The target flow for all tanks from the site in the 2 YR event is the target flow minus the bypass flow which is 0.01064 m³/s - 0.00840 m³/s = 0.00224 m³/s.
6. The modelling results shown in the adjacent graph for the 2 YR event give a peak flow of 0.00213 m³/s which meets the design requirements as it is less than the target flow of 0.00224 m³/s. The peak water level reached in the 2 YR simulation was 1.012m.
7. The target flow rate for the site in the 2 YR event is shown in the Peak Flow Calculations Table for the EXISTING catchment, the analysis found a peak flow rate of 0.01890 m³/s. This flow rate was reduced to 80% of the EXISTING catchment, resulting in an adjusted target flowrate of 0.01512 m³/s.
8. In the post development scenario, some of the site is not draining through tanks. The bypass catchment analysis for the 5 YR event is shown in the Peak Flow Calculations Table for the NON-MIT catchment, this analysis found a peak flow rate of 0.01200 m³/s.
9. The target flow for all tanks from the site in the 5 YR event is the target flow minus the bypass flow which is 0.01512 m³/s - 0.01200 m³/s = 0.00312 m³/s.
10. The modelling results shown in the adjacent graph for the 5 YR event give a peak flow of 0.00272 m³/s which meets the design requirements as it is less than the target flow of 0.00312 m³/s. The peak water level reached in the 5 YR simulation was 1.415m.
11. In conclusion, the analysis shows the tank design meets all requirements.



LOT 1 2 x Tanksalot 5,310L, 3.50m LONG, 1.10m WIDE, 1.48m HIGH

REVISION	AMENDMENT	BY
A	FOR RESOURCE CONSENT	TG
_	_	_
_	_	_
_	_	_
_	_	_

DESIGNED: TG
DRAWN: TG
RELEASED: JA

CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: STORAGE DESIGN DETAILS

STATUS: FOR RESOURCE CONSENT
DRAWING NO: 53000
SCALE & SIZE: - A3
REV: 12/06/2024

LEGEND:

- WW EX MANHOLE
- WW NEW PVT PIPE
- WW EX PUB PIPE
- BUILDINGS
- IMPERMEABLE PAVEMENT
- NEW PARCELS
- DECK
- LANDSCAPE
- EXISTING PARCELS
- EXISTING BUILDINGS
- SW (REFER TO SW DRAWINGS)
- WS (REFER TO WS DRAWINGS)

LOT 1
FFL 196.30

CONNECTION TO MAIN @ 1.48m DTI
FOUND DURING CCTV INVESTIGATION
LOT CONNECTION TO BE RE-USED

NEW PVT-WWL-A-1
UPVC SN16 100mm
40.1m @ 1.70%

EX. PUB SL1666_1657
CON 150mm
63.9m @ 1.74% PWWF=1L/s
SECTION DWG-

EX. PUB MH SP1201
1,050mm LL196.51 IL195.43

FROM ESTIMATE

EX. PUB SL1667_1658
CON 150mm
77.9m @ 0.36% PWWF=1L/s
SECTION DWG-

0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25 m

GENERAL NOTES:
1.1 PIPES AND MANHOLES MUST BE CONSTRUCTED IN THE LOCATIONS SHOWN, DWG FILES OF THE DESIGN WILL BE PROVIDED ON REQUEST.
1.2 HORIZONTAL AND VERTICAL CONSTRUCTION TOLERANCES ARE 50mm. ANY CHANGES TO THE DESIGN BY MORE THAN THE TOLERANCE ARE TO BE SUBMITTED TO THE ENGINEER IN WRITING. NO ASSETS ARE TO BE CONSTRUCTED ON SITE OUTSIDE OF TOLERANCE WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
1.3 IN ADDITION TO 1.2, WHERE THE DESIGN UTILISES MINIMUM GRADES/MINIMUM FALLS THROUGH MANHOLES FOLLOWING THE RELEVANT COP DOCUMENTS, NO REDUCTION IN GRADE OR FALL THROUGH MANHOLE IS PERMITTED.
1.4. ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERATOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER IN WRITING FOR CLARIFICATION
1.5. THE CONTRACTOR IS TO PEG AND MEASURE INFRASTUCTURE AND UTILITY LOCATIONS, LEVELS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS. ANY CONFLICT BETWEEN THE LEVELS MEASURED ON SITE AND THE ENGINEERING PLANS IS TO BE SUBMITTED TO THE ENGINEER IN WRITING PRIOR TO THE ORDERING OF MATERIALS.
1.6 CONTRACTOR TO COMPLY WITH HEALTH AND SAFETY AT WORK ACT (HSWA) 2015
1.7 BOTH CONTRACTORS AND CONSULTANTS ARE TO TAKE ALL NECESSARY CARE AND PRECAUTION AT THE CONSTRUCTION SITE TO AVOID ACCIDENT AND INJURY FROM FALLING INTO EXCAVATIONS, CRUSHING BY SUBSIDING EXCAVATIONS AND THE MOVEMENT OF PLANT AND MATERIALS ON THE SITE.
1.8 VERTICAL LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946
1.9 WHERE PIPES CROSS, IF CROSSOVER OF PIPES IS LESS THAN 500mm, USE POLYSTYRENE BETWEEN PIPES, OTHERWISE HARDFILL TO BE PLACED IN TRENCH BETWEEN PIPES WHERE DRAINAGE LINES CROSS. EXTEND 0.5m EACH SIDE OF PIPE REGARDLESS OF SEPARATION DISTANCE.
1.10 APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS AND VEHICLE CROSSINGS.
1.11 HEAVY DUTY TRAFFICABLE MANHOLE LIDS AND FRAMES TO BE USED IN ALL AREAS.
1.12 PIPES THAT DO NOT TERMINATE IN A MANHOLE MUST BE TERMINATED WITH A LONDON JUNCTION AND CAP.
1.13 ALL LINES TO BE ABANDONED SHALL BE SEALED AT EACH END. TIMING OF ALL SEALING TO BE COORDINATED WITH COUNCIL STAFF.
1.14 BENDS ON PRIVATE INFRASTRUCTURE TO BE LONG RADIUS BENDS UNLESS OTHERWISE SPECIFIED.
1.15 FOR RETAINING WALL DRAINAGE DETAILS, PLEASE REFER TO STRUCTURAL ENGINEERING DESIGN OF WALLS
1.16 ALL INFRASTRUCTURE TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS, ANY DEVIATION FROM THIS TO BE NOTIFIED TO THE ENGINEER IN WRITING PRIOR TO CONSTRUCTION.
1.17 UNDERGROUND TANK LOCATIONS SHOULD BE ASSESSED BY A STRUCTURAL ENGINEER TO ENSURE ADJACENT STRUCTURES DO NOT APPLY LOADINGS TO THE TANKS THAT EXCEED MANUFACTURER REQUIREMENTS.

WASTEWATER NETWORK NOTES:
2.1. PROPOSED PUBLIC WW PIPE AND CONNECTIONS SHALL BE uPVC SN16 IF OPEN TRENCHED OR PE100 SDR17 IF DIRECTIONALLY DRILLED.
2.2. WORKS OVER APPROVAL SHALL BE APPLIED FOR BEFORE BUILDING CONSENT WHERE BUILDINGS ARE WITHIN 2.0m OF THE SANITARY NETWORK
2.3. WW CONNECTIONS SHALL COMPLY WITH PUBLIC NETWORK OPERATOR STANDARDS
2.4. MANHOLE COVERS AND SAFETY GRILLS SHALL COMPLY WITH PUBLIC NETWORK OPERATOR STANDARDS

WATER SUPPLY NETWORK NOTES
3.1 WATER METERS TO BE INSTALLED OUSIDE OF PAVED DRIVEWAY TRAFFICED AREA.
3.2 ALL PROPOSED WATER SUPPLY PIPES ARE 25mm ODPE UNLESS OTHERWISE SPECIFIED
3,3 ANY SECTIONS OF PUBLIC WATER MAIN TO BE UPGRADED SHALL INCLUDE PROVISION TO CONNECT EXISTING CONNECTIONS TO THE NEW LINE AND ABANDONING THE EXISTING MAIN.

IMAGERY CREDITS:
Esri Community Maps Contributors, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, LINZ

SCAN FOR 3D:

allsite.ai

REV:	DATE:	DESCRIPTION:	DES:	REV:	REL:
A	12/06/24	FOR RESOURCE CONSENT	TG	TN	TN

LOGO: CIVIX

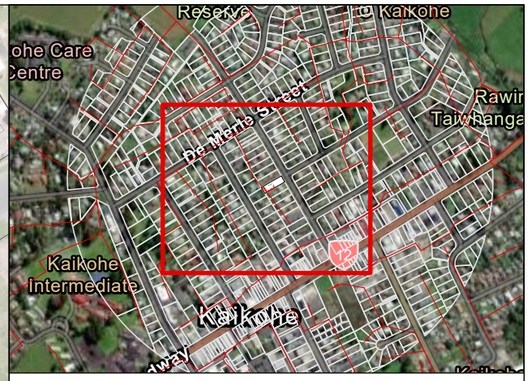
PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: WASTEWATER PLAN

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 60000

SCALE:	SIZE:	REVISION:	DATE:
1:200	A3	A	12/06/24



- WW NODE
- WW NODE ASSESSED
- WW LINK
- WW LINK ASSESSED
- PROPOSED
- EXISTING
- CATCHMENT
- BUILDINGS
- NEW PARCELS
- EXISTING PARCELS
- EXISTING KERBLINES
- EXISTING IMPERVIOUS
- EXISTING BUILDINGS

IMAGERY CREDITS:
ESRI COMMUNITY MAPS CONTRIBUTORS, LINZ, STATS NZ, ESRI, TOMTOM, GARMIN, FOURSQUARE, METI/NASA, USGS, EAGLE TECHNOLOGY, LAND INFORMATION NEW ZEALAND,

REV:	DATE:	DESCRIPTION:	DES:	REV:	REL:
A	12/06/24	FOR RESOURCE CONSENT	TG	TN	TN

SCAN FOR 3D:

allsite.ai

LOGO: CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: WASTEWATER INFRASTRUCTURE ASSESSMENT

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 62000

SCALE:	SIZE:	REVISION:	DATE:
1:1,500	A3	A	12/06/24

WASTEWATER CAPACITY ASSESSMENT		Units			
Pipe Info.	Pipe ID		SL1666_1657	SL1643_1634	SL1644_1635
	Pipe Status		existing	existing	existing
	Upstream Invert Level	RL m	195.63	194.27	193.74
	Downstream Invert Level	RL m	194.32	193.79	192.89
	Pipe Length	m	63.85	48.06	62.87
	Pipe Internal Diameter	mm	150	150	150
	Pipe Material		CONCRETE	CONCRETE	CONCRETE
	Pipe Slope	%	2.05	1.00	1.35
Land-Use:					
Existing Catchment	Residential	3-bed dwellings	17	22	27
		4-bed dwellings	0	0	0
		5-bed dwellings	0	0	0
	Hospital	beds	0	0	0
		staff	0	0	0
	School	Primary School Students	0	0	0
		Secondary School Students	0	0	0
	Wet Retail	floor area m2	0	0	0
	Dry Retail	floor area m2	0	0	0
	Office	floor area m2	0	0	0
	Day Care	Children	0	0	0
		Staff			
	Hotels/Motels	Guests	0	0	0
		Staff	0	0	0
Proposed Catchment	Residential	Change in 3-bed dwellings	0	0	0
		Change in 4-Bed Dwellings	0	0	0
		Change in 5-Bed Dwellings	1	1	1
Design Flow Calculations:					
Design Flow Outputs	Average Dry Weather Flow	L/s	0.130	0.164	0.199
	Self-Cleansing Design Flow	L/s	0.390	0.494	0.598
	Peak Wet Weather Flow	**L/s**	**0.648**	**0.822**	**0.995**
Capacity Flow Calculation:					
Capacity Check	Colebrooke White Roughness ks	mm	1.5	1.5	1.5
	Proposed Velocity (Pipe Full, HGL Equals Pipe Slope)	m/s	1.26	0.87	1.02
	Capacity With HGL At Grade	**L/s**	**22.197**	**15.456**	**18.000**
	Is Pipe Capacity Sufficient?		YES	YES	YES

Wastewater Design Flow Allowances								
Residential	3-bed dwellings:	Assumed People Per Dwelling:	3	L/person/Day	200	Peak Design Flow Peaking Factor:	5	Peaking Factor For Self-Cleansing Design Flow: 3
	4-Bed Dwellings:		3		200		5	3
	5-Bed Dwellings:		5		200		5	3
Hospital	Patients per Bed		1	L/Patient/Day	280		5	2
	staff			L/Staff/Day	45		5	2
School	Primary School Students			L/Student/Day	15		6.7	2
	Secondary School Students			L/Student/Day	20		6.7	2
	Students Per Each Staff Member		20	L/Staff/Day	45		6.7	2
Wet Retail	L/Day/m2 floor area				15		6.7	2
Dry Retail	People Per 50m2		1	L/Person/Day	65		5	2
Office	People Per 15m2		1	L/Person/Day	65		5	2
Day Care	Children			L/Child/Day	42		6.7	2
	Staff			L/Employee/Day	45		6.7	2
Hotels/Motels	Guest Rooms			L/Room/Day	180		6.7	3
	Staff			L/Employee/Day	45		6.7	3

REVISION	AMENDMENT	BY
A	FOR RESOURCE CONSENT	

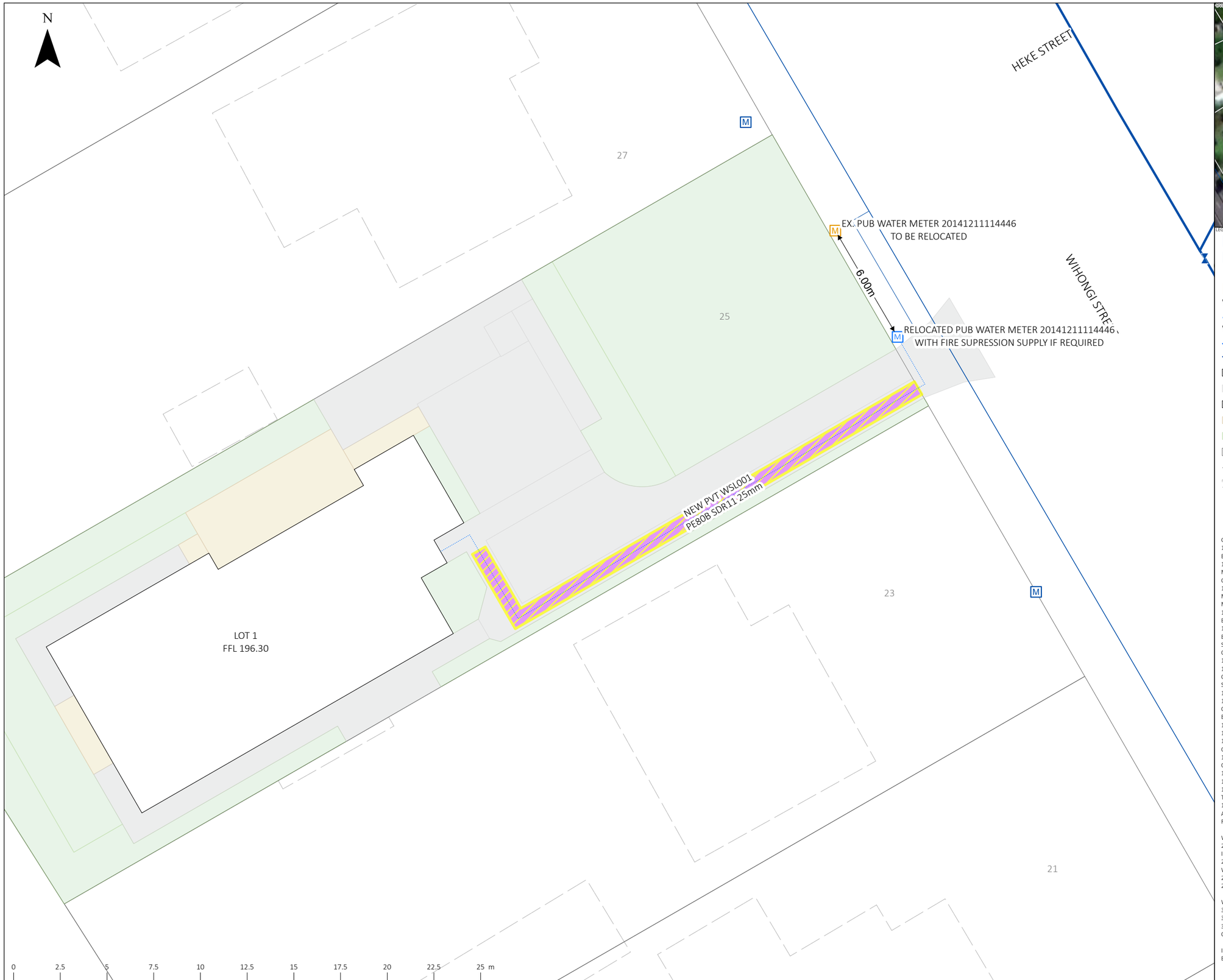
DESIGNED: TG
DRAWN: TG
RELEASED: TN

CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: WASTEWATER CAPACITY TABLE

STATUS: FOR RESOURCE CONSENT
DRAWING NO: 62000
SCALE & SIZE: - A3
DATE: 12/06/2024



LEGEND:

- WS NEW METER
- WS EX METER
- WS EX VALVE
- METER TO BE RELOCATED
- WS NEW PVT PIPE
- WS NEW PUB PIPE
- WS EX PUB PIPE
- BUILDINGS
- IMPERMEABLE PAVEMENT
- NEW PARCELS
- DECK
- LANDSCAPE
- EXISTING PARCELS
- EXISTING KERBLINES
- EXISTING BUILDINGS

GENERAL NOTES:
1.1 PIPES AND MANHOLES MUST BE CONSTRUCTED IN THE LOCATIONS SHOWN, DWG FILES OF THE DESIGN WILL BE PROVIDED ON REQUEST.
1.2 HORIZONTAL AND VERTICAL CONSTRUCTION TOLERANCES ARE 50mm. ANY CHANGES TO THE DESIGN BY MORE THAN THE TOLERANCE ARE TO BE SUBMITTED TO THE ENGINEER IN WRITING. NO ASSETS ARE TO BE CONSTRUCTED ON SITE OUTSIDE OF TOLERANCE WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
1.3 IN ADDITION TO 1.2, WHERE THE DESIGN UTILISES MINIMUM GRADES/MINIMUM FALLS THROUGH MANHOLES FOLLOWING THE RELEVANT COP DOCUMENTS, NO REDUCTION IN GRADE OR FALL THROUGH MANHOLE IS PERMITTED.
1.4. ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERATOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER IN WRITING FOR CLARIFICATION
1.5. THE CONTRACTOR IS TO PEG AND MEASURE INFRASTUCTURE AND UTILITY LOCATIONS, LEVELS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS. ANY CONFLICT BETWEEN THE LEVELS MEASURED ON SITE AND THE ENGINEERING PLANS IS TO BE SUBMITTED TO THE ENGINEER IN WRITING PRIOR TO THE ORDERING OF MATERIALS.
1.6 CONTRACTOR TO COMPLY WITH HEALTH AND SAFETY AT WORK ACT (HSWA) 2015
1.7 BOTH CONTRACTORS AND CONSULTANTS ARE TO TAKE ALL NECESSARY CARE AND PRECAUTION AT THE CONSTRUCTION SITE TO AVOID ACCIDENT AND INJURY FROM FALLING INTO EXCAVATIONS, CRUSHING BY SUBSIDING EXCAVATIONS AND THE MOVEMENT OF PLANT AND MATERIALS ON THE SITE.
1.8 VERTICAL LEVELS ARE IN TERMS OF AUCKLAND VERTICAL DATUM 1946
1.9 WHERE PIPES CROSS, IF CROSSOVER OF PIPES IS LESS THAN 500mm, USE POLYSTYRENE BETWEEN PIPES, OTHERWISE HARDFILL TO BE PLACED IN TRENCH BETWEEN PIPES WHERE DRAINAGE LINES CROSS. EXTEND 0.5m EACH SIDE OF PIPE REGARDLESS OF SEPARATION DISTANCE.
1.10 APPROVED HARDFILL IS TO BE USED IN BACKFILLING OF ALL ROAD CROSSINGS AND VEHICLE CROSSINGS.
1.11 HEAVY DUTY TRAFFICABLE MANHOLE LIDS AND FRAMES TO BE USED IN ALL AREAS.
1.12 PIPES THAT DO NOT TERMINATE IN A MANHOLE MUST BE TERMINATED WITH A LONDON JUNCTION AND CAP.
1.13 ALL LINES TO BE ABANDONDED SHALL BE SEALED AT EACH END. TIMING OF ALL SEALING TO BE COORDINATED WITH COUNCIL STAFF.
1.14 BENDS ON PRIVATE INFRASTRUCTURE TO BE LONG RADIUS BENDS UNLESS OTHERWISE SPECIFIED.
1.15 FOR RETAINING WALL DRAINAGE DETAILS, PLEASE REFER TO STRUCTURAL ENGINEERING DESIGN OF WALLS
1.16 ALL INFRASTRUCTURE TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS, ANY DEVIATION FROM THIS TO BE NOTIFIED TO THE ENGINEER IN WRITING PRIOR TO CONSTRUCTION.
1.17 UNDERGROUND TANK LOCATIONS SHOULD BE ASSESSED BY A STRUCTURAL ENGINEER TO ENSURE ADJACENT STRUCTURES DO NOT APPLY LOADINGS TO THE TANKS THAT EXCEED MANUFACTURER REQUIREMENTS.

WASTEWATER NETWORK NOTES:
2.1. PROPOSED PUBLIC WW PIPE AND CONNECTIONS SHALL BE uPVC SN16 IF OPEN TRENCHED OR PE100 SDR17 IF DIRECTIONALLY DRILLED.
2.2. WORKS OVER APPROVAL SHALL BE APPLIED FOR BEFORE BUILDING CONSENT WHERE BUILDINGS ARE WITHIN 2.0m OF THE SANITARY NETWORK
2.3. WW CONNECTIONS SHALL COMPLY WITH PUBLIC NETWORK OPERATOR STANDARDS
2.4. MANHOLE COVERS AND SAFETY GRILLS SHALL COMPLY WITH PUBLIC NETWORK OPERATOR STANDARDS

WATER SUPPLY NETWORK NOTES
3.1 WATER METERS TO BE INSTALLED OUSIDE OF PAVED DRIVEWAY TRAFFICED AREA.
3.2 ALL PROPOSED WATER SUPPLY PIPES ARE 25mm ODPE UNLESS OTHERWISE SPECIFIED
3,3 ANY SECTIONS OF PUBLIC WATER MAIN TO BE UPGRADED SHALL INCLUDE PROVISION TO CONNECT EXISTING CONNECTIONS TO THE NEW LINE AND ABANDONING THE EXISTING MAIN.

IMAGERY CREDITS:
Esri Community Maps Contributors, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, LINZ

SCAN FOR 3D:

allsite.ai

REV:	DATE:	DESCRIPTION:	DES:	REV:	REL:
A	12/06/24	FOR RESOURCE CONSENT	TG	TN	TN

LOGO: CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: WATER SUPPLY PLAN

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 70000

SCALE:	SIZE:	REVISION:	DATE:
1:200	A3	A	12/06/24

N

DISTANCE TO HYDRANT 119m

HEKE STREET

DISTANCE TO TRUCK PARKING 54m

DISTANCE TO HYDRANT 117m

WIHONGI STREET

22 20 31 29 27 25 23 21 19 18 16 14

- TRUCK DISTANCE
- FIRE TRUCK PARKING
- WS DISTANCE
- BUILDINGS
- NEW PARCELS
- PAVEMENT
- DECK
- LANDSCAPE
- EXISTING PARCELS
- EXISTING PARCELS
- EXISTING KERBLINES
- EXISTING BUILDINGS
- METER
- METER
- METER
- WS EX HYDRANT
- WS EX VALVE

WS NEW PVT PIPE

- WS NEW PUB PIPE
- WS EX PUB PIPE

IMAGERY CREDITS:
Esri Community Maps Contributors, LINZ, Stats NZ, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS, Maxar

0 5.5 11 16.5 22 27.5 33 38.5 44 49.5 55 m

SCAN FOR 3D:

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REV:	DATE:	DESCRIPTION:	DES:	REV:	REL:
A	12/06/24	FOR RESOURCE CONSENT	TG	TN	TN

LOGO: CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

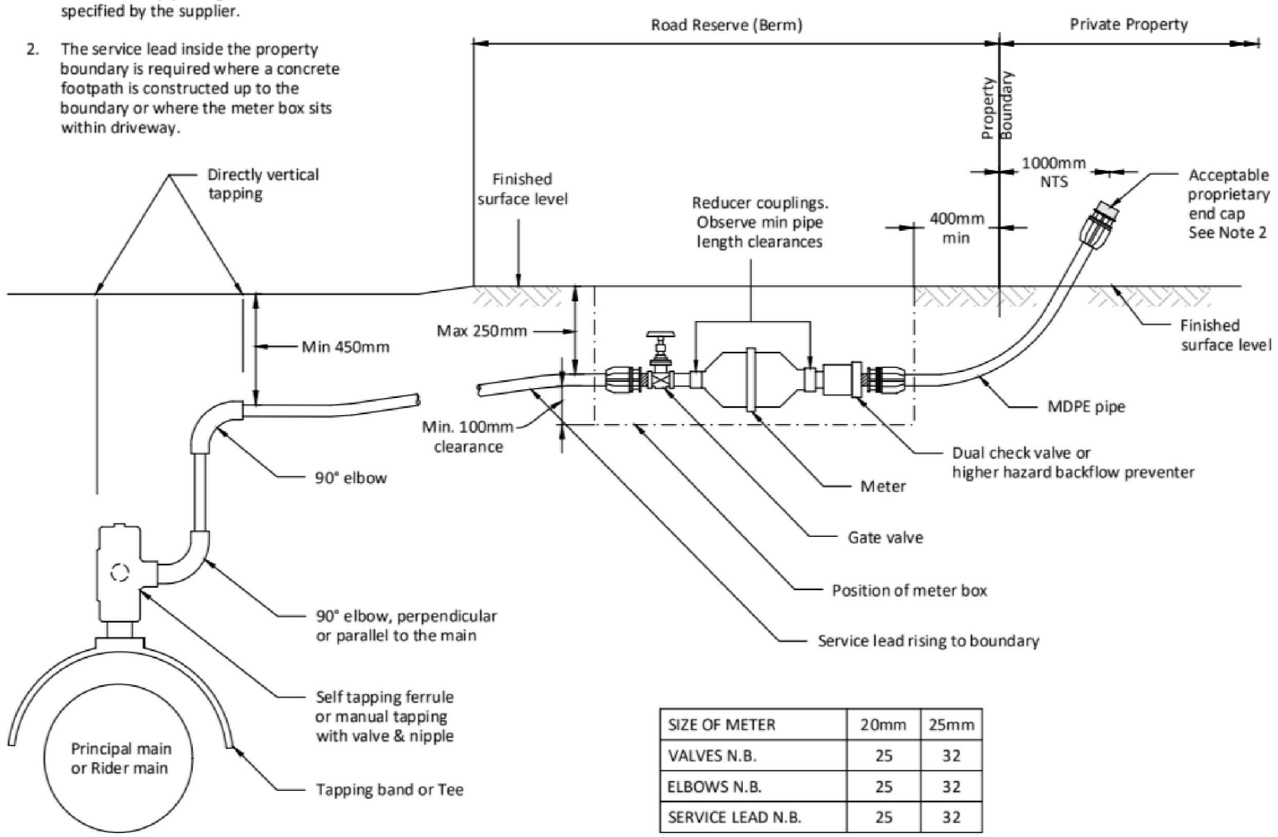
TITLE: WATER SUPPLY HYDRANT DISTANCE

STATUS: FOR RESOURCE CONSENT

DRAWING NO: 72000

SCALE:	SIZE:	REVISION:	DATE:
1:400	A3	A	12/06/24

Note:
1. Water meter pipe length clearances as specified by the supplier.
2. The service lead inside the property boundary is required where a concrete footpath is constructed up to the boundary or where the meter box sits within driveway.



SIZE OF METER	20mm	25mm
VALVES N.B.	25	32
ELBOWS N.B.	25	32
SERVICE LEAD N.B.	25	32

NOTE:
1. All fittings to be in accordance with FNDC Water Services Approved Materials List.
2. Backflow preventers shall be provided.
3. Box to bedded on stable material (compacted metal/fines) below pipe work as not to put pressure on pipe work.
4. In high traffic areas, cast iron box and cover is to be used.
5. Meter boxes cast into paved areas shall have cast iron framed lids, mounted on minimum of 2 x concrete surrounds if the meter are outside the property boundary but in an area that is likely to be concreted e.g. may become a footpath then the same shall apply.

SINGLE METER BOX CONNECTION
(FOR ALL ENVIRONMENTS)

FAR NORTH DISTRICT COUNCIL
ENGINEERING STANDARDS

Date: FEB 2022
Revision: 0.2
SHEET No. 46

REVISION	AMENDMENT	BY
A	FOR RESOURCE CONSENT	

DESIGNED: TG
DRAWN: TG
RELEASED: TN

CIVIX

PROJECT: 25 WIHONGI STREET, KAIKOHE, NORTHLAND

TITLE: WATER SUPPLY STANDARD DETAILS

STATUS: FOR RESOURCE CONSENT
DRAWING NO: 75000
SCALE & SIZE: - A3
DATE: 12/06/2024

Young and Richards Ltd

4d Edwin Street
Mt Eden
Auckland
1024
Tel: +64 9 520 6444
Fax: +64 9 520 6443
Web: www.youngrichards.com

Young+
Richards+

Document and Drawing Issue Register

Project
240052 - KO HDS-25 Wihongi St

PLEASE ACKNOWLEDGE RECEIPT OF DRAWINGS

Reasons: AB - As Built, AN - For Application, AP - For Approval,

BC - For Building Consent, CM - For Comment, CO - For Construction,

IN - For Information, PL - For Proposal, PR - For Pricing,

RC - For Resource Consent, TN - For Tender, MU - Multiple

ISSUE NO.	4
ISSUED BY	AH
DAY	10
MONTH	6
YEAR	24
ISSUE REASON	RC

DRG NO.	DRAWING/DOCUMENT TITLE	SIZE	SCALE	
A2-00-0000	COVER	A3	None	A
A2-00-0001	DRAWING INDEX	A3	None	A
A2-00-0005	VICINITY & LOCATION & PROJECT INFORMATION	A3	None	A
A2-00-0060	EXTERIOR COLOUR SCHEME	A3	None	A
A2-00-2001	EXISTING SITE PLAN	A3	1:250	A
A2-00-2200	SITE PLAN - GROUND FLOOR	A3	1:250	A
A2-00-2203	SITE PLAN - ROOF	A3	1:250	A
A2-00-2500	SITE DEVELOPMENT CONTROLS PLAN	A3	1:500	A
A2-00-2600	HIRB PLAN & DIAGRAMS	A3	1:250	A
A2-00-2601	HIRB DIAGRAMS	A3	1:100	A
A2-01-2300	GROUND FLOOR CONTEXT PLAN	A3	1:150	A
A2-01-2302	ROOF CONTEXT PLAN	A3	1:150	A
A2-01-2303	SITE ELEVATIONS	A3	1:200	A
A2-01-2304	SITE ELEVATIONS	A3	1:200	A
A2-01-4020	ELEVATIONS	A3	1:100	A
A2-01-4021	ELEVATIONS	A3	1:100	A
DISTRIBUTION				DH - Download and Hardcopy, DL - By Download, E - Extranet Issue, EH - Email and Hardcopy, EM - Email, EX - Extranet, HC - Hardcopy, US - CD, MU - Multiple
Babbage Consultants				
	Luke Paanakker			EX
ELECTRONIC FORMATS				
	pdf			x

DOCUMENT AND DRAWING ISSUE REGISTER

V220808

Young+ Richards+

25 WIHONGI STREET

Kāinga Ora
Homes and Communities

Proposal for:

Kāinga Ora - Homes and Communities

240052

25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
120 Tennyson St Napier 4110 NZ +64 6 929 9945
info@youngrichards.com www.youngrichards.com

SURVEYOR

McKenzie & Co
Level 6, 41 Shortland Street
Auckland 1010
joash.naidoo@mckenzieandco.co.nz
+64 21 460 285
Joash Naidoo

LANDSCAPE DESIGNER

Resilio Studio Limited
21 Scanlan St
Auckland 1021
dean@resilio.nz
+64 9 360 0884
Dean Stewart

PLANNER

Babbage Consultants Limited
Level 4, Quay Park Health Building, 68 Beach Road
Auckland
jacob.turnbull@babbage.co.nz
+64 9 367 4916
Jacob Turnbull

CIVIL ENGINEER

Civix Limited
Level 8, 99 Albert St
Auckland 1010
toby@civix.co.nz
+64 21 115 9970
Toby Gentil

CLIENT

Kāinga Ora - Homes and Communities
PO Box 74598
107 Carlton Gore, Newmarket, Auckland 1023
+64 21 197 5465
ashleigh.haszard@kaingaora.govt.nz
Ashleigh Haszard

STRUCTURAL ENGINEER

Beca Group Limited
21 Pitt Street
Auckland 1010
ken.hu@beca.com
+64 9 300 9295
Ken Hu

TRAFFIC ENGINEER

Traffic Planning Consultants
Level 1, 400 Titirangi Road
Titirangi Village 0604
peter@trafficplanning.co.nz
+64 21 212 9644
Peter Kelly

STAMP

10/06/2024

RESOURCE CONSENT

A

THE FINE PRINT

- ALL WORK SHALL COMPLY WITH THE NZ RESOURCE MANAGEMENT ACT, NZ BUILDING ACT, RELEVANT STANDARDS, ORDINANCES, RULES, AND REGULATIONS OF THE TERRITORIAL AUTHORITY GOVERNING THE WORK. REFER TO NZ BUILDING ACT, SECTION 17.
- BUILDINGS NOT TO BE CONSTRUCTED, ALTERED, DEMOLISHED, OR REMOVED WITHOUT AN APPROVED AND VALID BUILDING CONSENT AND AN APPROVED AND VALID RESOURCE CONSENT WHERE APPLICABLE. REFER TO NZ BUILDING ACT, SECTION 40.
- FOR ALL RESTRICTED BUILDING WORK (RBW) THIS DRAWING IS NOT VALID FOR CONSTRUCTION UNLESS STAMPED BY THE RELEVANT BUILDING CONSENT AUTHORITY AS PART OF AN APPROVED AND VALID BUILDING CONSENT. CONSENTED DOCUMENTATION TAKES PRECEDENCE.
- FOR BUILDER'S RESPONSIBILITIES REFER TO NZ BUILDING ACT, SECTION 14E.
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SHEET NAME
COVER

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE
NONE

SHEET SIZE
A3=100%

PRINT IN COLOUR

SHEET NUMBER
A2-00-0000

REVISION
A

Plotted: 10/06/2024 3:48:03 pm File: Autodesk Docs://220107-YR HDS - 2024/240052-KO HDS-25 Wihongi St.rvt

V220808

Sheet Number	Sheet Name	Current Revision	Current Revision Date	Current Revision Description
A2-00-0000	COVER	A	10/06/2024	RESOURCE CONSENT
A2-00-0001	DRAWING INDEX	A	10/06/2024	RESOURCE CONSENT
A2-00-0005	VICINITY & LOCATION & PROJECT INFORMATION	A	10/06/2024	RESOURCE CONSENT
A2-00-0060	EXTERIOR COLOUR SCHEME	A	10/06/2024	RESOURCE CONSENT
A2-00-2001	EXISTING SITE PLAN	A	10/06/2024	RESOURCE CONSENT
A2-00-2200	SITE PLAN - GROUND FLOOR	A	10/06/2024	RESOURCE CONSENT
A2-00-2203	SITE PLAN - ROOF	A	10/06/2024	RESOURCE CONSENT
A2-00-2500	SITE DEVELOPMENT CONTROLS PLAN	A	10/06/2024	RESOURCE CONSENT
A2-00-2600	HIRB PLAN & DIAGRAMS	A	10/06/2024	RESOURCE CONSENT
A2-00-2601	HIRB DIAGRAMS	A	10/06/2024	RESOURCE CONSENT
A2-01-2300	GROUND FLOOR CONTEXT PLAN	A	10/06/2024	RESOURCE CONSENT
A2-01-2302	ROOF CONTEXT PLAN	A	10/06/2024	RESOURCE CONSENT
A2-01-2303	SITE ELEVATIONS	A	10/06/2024	RESOURCE CONSENT
A2-01-2304	SITE ELEVATIONS	A	10/06/2024	RESOURCE CONSENT
A2-01-4020	ELEVATIONS	A	10/06/2024	RESOURCE CONSENT
A2-01-4021	ELEVATIONS	A	10/06/2024	RESOURCE CONSENT
Grand total: 16				

Plotted: 10/06/2024 3:48:03 pm File: Autodesk Docs://220107-YR HDS - 2024/240052-KO HDS-25 Wihongi St.rvt

Young+ Richards+

4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
120 Tennyson St Napier 4110 NZ +64 6 929 9945
info@youngrichards.com www.youngrichards.com

CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
240052

KEY PLAN

STAMP

THE FINE PRINT

- ALL WORK SHALL COMPLY WITH THE NZ RESOURCE MANAGEMENT ACT, NZ BUILDING ACT, RELEVANT STANDARDS, ORDINANCES, RULES, AND REGULATIONS OF THE TERRITORIAL AUTHORITY GOVERNING THE WORK. REFER TO NZ BUILDING ACT, SECTION 17.
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SHEET NAME
DRAWING INDEX

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE
NONE

SHEET SIZE
A3=100%

PRINT IN COLOUR

SHEET NUMBER
A2-00-0001

REVISION
A

V220808

VICINITY MAP

LOCATION MAP

AERIAL PHOTO

A3-A00-0002 - LEGAL DESCRIPTION

CATEGORY	DESCRIPTION	REFERENCE
SITE ADDRESS	25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405	FAR NORTH DISTRICT MAPS
TERRITORIAL AUTHORITY	FAR NORTH DISTRICT COUNCIL	FAR NORTH DISTRICT MAPS
LOT	LOT 58	CERTIFICATE OF TITLE
DEPOSITED PLAN	DP 36638	CERTIFICATE OF TITLE
CERTIFICATE OF TITLE	NA977/266	CERTIFICATE OF TITLE
SITE AREA	900 M²	CERTIFICATE OF TITLE
ZONE	GENERAL RESIDENTIAL ZONE	FAR NORTH DISTRICT MAPS
WIND ZONE	MEDIUM	BECA LTD
EXPOSURE ZONE	ZONE B	BRANZ
EARTHQUAKE ZONE	ZONE 1	BRANZ

PLANNING CONTROLS (GENERAL RISIDENTIAL ZONE)

OPERATIVE DISTRICT PLAN

	PERMITTED STANDARD	CONTROLLED/RESTRICTED DISCRETIONARY CONSENT STANDARD
RESIDENTIAL INTENSITY		
EACH RESIDENTIAL UNIT FOR A SINGLE HOUSEHOLD SHALL HAVE AVAILABLE TO IT A MINIMUM NET SITE AREA OF:	SEWERED SITES: 600M² UNSEWERED SITES: 3,000M²	SEWERED SITES: 300M² UNSEWERED SITES: 2,000M²
	NOTES: • THIS MINIMUM NET SITE AREA MAY BE FOR THE EXCLUSIVE USE OF THE RESIDENTIAL UNIT, OR AS PART OF LAND HELD ELSEWHERE ON THE PROPERTY, PROVIDED THAT A RATIO OF ONE RESIDENTIAL UNIT PER MINIMUM NET SITE AREA (AS STATED ABOVE) IS NOT EXCEEDED.	
BUILDING HEIGHT		
	THE MAXIMUM HEIGHT OF ANY BUILDING SHALL BE 8M	THE MAXIMUM HEIGHT OF ANY BUILDING SHALL BE 9M
SUNLIGHT		
	A 45 DEGREE RECESSION PLANE AS MEASURED INWARDS FROM ANY POINT 2M VERTICALLY ABOVE GROUND LEVEL ON ANY SITE BOUNDARY, EXCEPT THAT: (A) A BUILDING MAY EXCEED THIS STANDARD FOR A MAXIMUM DISTANCE OF 10M ALONG ANY ONE BOUNDARY OTHER THAN A ROAD BOUNDARY, PROVIDED THAT THE MAXIMUM HEIGHT OF ANY BUILDING WHERE IT EXCEEDS THE STANDARD IS 2.7M; AND (B) WHERE A SITE BOUNDARY ADJOINS A LEGALLY ESTABLISHED ENTRANCE STRIP, PRIVATE WAY, ACCESS LOT, OR ACCESS WAY SERVING A REAR SITE, THE MEASUREMENT SHALL BE TAKEN FROM THE FARTHEST BOUNDARY OF THE ENTRANCE STRIP, PRIVATE WAY, ACCESS LOT, OR ACCESS WAY.	A 45 DEGREE RECESSION PLANE AS MEASURED INWARDS FROM ANY POINT 3M VERTICALLY ABOVE GROUND LEVEL ON ANY SITE BOUNDARY
	NOTES: SITE BOUNDARY INCLUDES THE ROAD BOUNDARY. BUILDING DEFINITION INCLUDES "ANY FENCE OR BOUNDARY RETAINING WALL OR COMBINATION THEREOF EXCEEDING 2M IN HEIGHT MEASURED FROM THE LOWEST ADJACENT GROUND LEVEL, AND ANY RETAINING WALL MORE THAN 1.5M ABOVE GROUND LEVEL "	
STORMWATER MANAGEMENT		
	THE MAXIMUM PROPORTION OF THE GROSS SITE AREA COVERED BY BUILDINGS AND OTHER IMPERMEABLE SURFACES SHALL BE: 50%	60% OR 600M², WHICHEVER IS THE LESSER. ADDITIONALLY, A REPORT MUST BE PREPARED TO DEMONSTRATE THE LIKELY EFFECTS OF THE ACTIVITY ON STORMWATER RUN-OFF AND THE MEANS OF MITIGATING RUN-OFF TO NO MORE THAN THE LEVELS THAT WOULD RESULT FROM THE PERMITTED THRESHOLD OF BUILDINGS AND OTHER IMPERMEABLE SURFACE COVERAGE IN RULE 7.6.5.1.6
BUILDING SETBACKS		
	• THE MINIMUM BUILDING SETBACK FROM ROAD BOUNDARIES SHALL BE: 3M • THE MINIMUM SET-BACK FROM ANY BOUNDARY OTHER THAN A ROAD BOUNDARY SHALL BE: 1.2M EXCEPT THAT NO SET-BACK IS REQUIRED FOR A MAXIMUM TOTAL LENGTH OF 10M ALONG ANY ONE SUCH BOUNDARY	N/A
FRONT YARD LANDSCAPING	NOT LESS THAN 50% OF THAT PART OF THE SITE BETWEEN THE ROAD BOUNDARY AND A PARALLEL LINE 2M THERE FROM SHALL BE LANDSCAPED	

Young+ Richards+

4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
120 Tennyson St Napier 4110 NZ +64 6 929 9945
info@youngrichards.com www.youngrichards.com

CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
240052

KEY PLAN

STAMP

THE FINE PRINT

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SHEET NAME
VICINITY & LOCATION & PROJECT INFORMATION

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE
NONE

SHEET SIZE
A3=100%

PRINT IN COLOUR

SHEET NUMBER
A2-00-0005

REVISION
A

File: Autodesk Docs://220107-YR HDS - 2024/240052-KO HDS-25 Wihongi St.rvt
Plotted: 10/06/2024 3:48:04 pm

V220808

Barge Boards, Fascia Boards

Resene Spanish White

Barge&Ridge Flashing

match colour Colorsteel Gull Grey

Gutters & Downpipes

White @Marley uPVC

Slab Edge Insulation

Resene Joss

Window Trim Work/Facings

Resene Spanish White

ENTRY DOOR

Matt Titania

JOINERY

Interpon Surfmist Matt

ROOFING

COLORSTEEL

TSR: 30%
LRV: 12%

Thunder Grey

HORIZONTAL CLADDING

RGB: 222 209 183

APPROX. LRV: 71

Resene Spanish White

VERTICAL CLADDING

RGB: 185 168 150

APPROX. LRV: 48

Resene Joss

NOTES:

1. Aluminium Canopy & Aluminium Screen colour to match joinery colour
2. Entry Roof Post to match light cladding colour
3. Soffit colour to match light cladding colour
4. Exterior entry stair balustrade colour to match light cladding colour
5. Aluminium Window shrouds to match joinery colour
6. Inter Floor Cladding Flashing powder coated colour to match cladding colour
7. Staircase and deck side panel to match dark cladding colour

SCALE: NONE

EXTERIOR COLOUR SCHEME

Young+ Richards+

4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
120 Tennyson St Napier 4110 NZ +64 6 929 9945
info@youngrichards.com www.youngrichards.com

CLIENT

Kāinga Ora Homes and Communities

PROJECT NAME

25 WIHONGI STREET

PROJECT ADDRESS

25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER

240052

KEY PLAN

STAMP

THE FINE PRINT

- ALL WORK SHALL COMPLY WITH THE NZ RESOURCE MANAGEMENT ACT, NZ BUILDING ACT, RELEVANT STANDARDS, ORDINANCES, RULES, AND REGULATIONS OF THE TERRITORIAL AUTHORITY GOVERNING THE WORK. REFER TO NZ BUILDING ACT, SECTION 17.
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SHEET NAME

EXTERIOR COLOUR SCHEME

PROJECT STATUS

RESOURCE CONSENT

SHEET SCALE **NONE**

SHEET SIZE **A3=100%**

PRINT IN COLOUR

SHEET NUMBER **A2-00-0060**

REVISION **A**

Plotted: 10/06/2024 3:48:06 pm File: Autodesk Docs://220107-YR HDS - 2024/240052-KO HDS-25 Wihongi St.rvt

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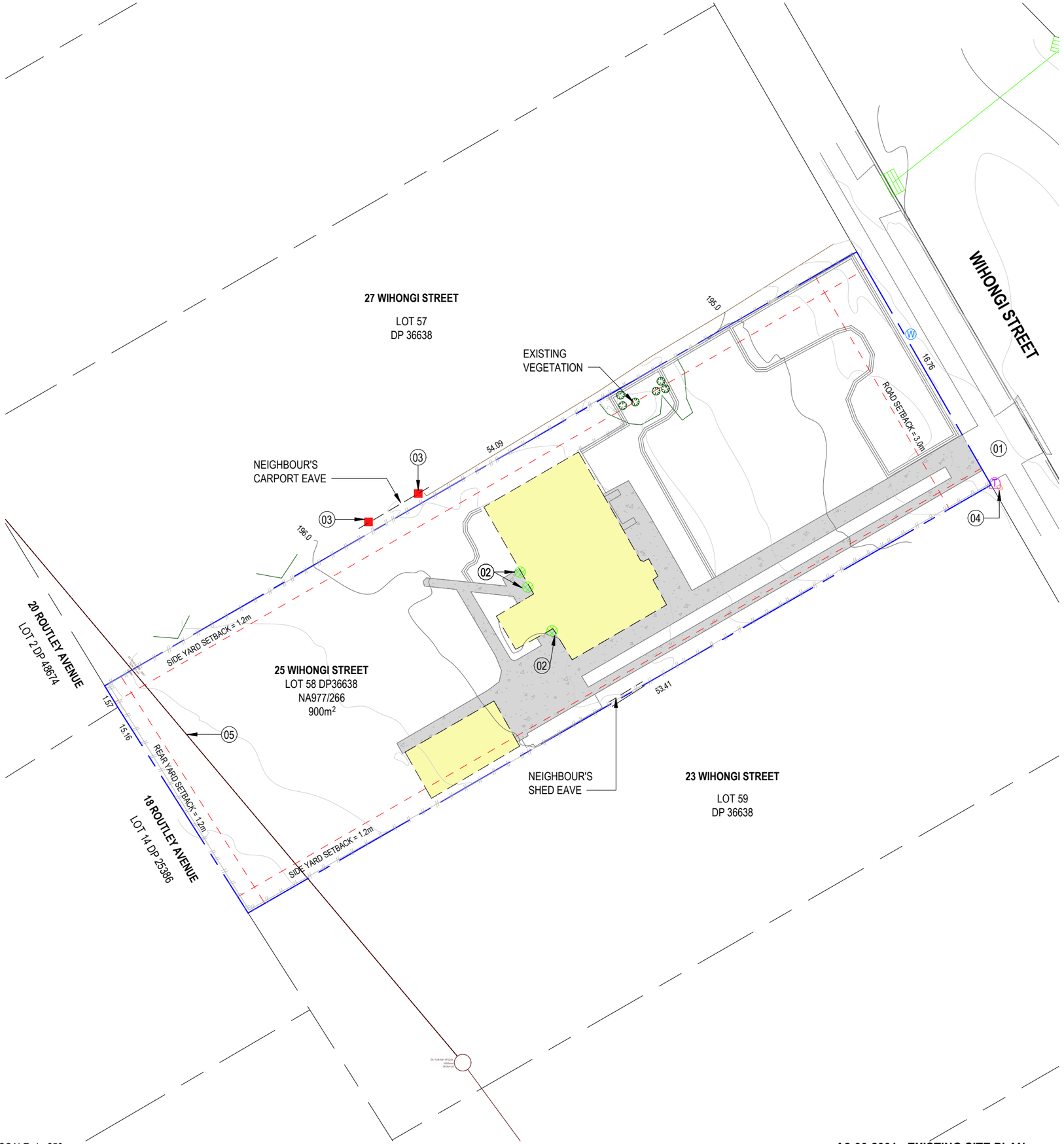

KEY NOTES

01 EXISTING VEHICLE CROSSING TO BE UPGRADED
02 EXISTING GULLY TRAPS
03 EXISTING NEIGHBOUR'S POSTS
04 POWER BOX
05 EXISTING WASTEWATER LINE

SHEET NOTES

- SITE SURVEY INFORMATION AS PROVIDED BY MCKENZIE & CO (APRIL 2024).

LEGEND

- EXISTING PROPERTY BOUNDARY
- PROPERTY BOUNDARY
- YARD SETBACK
- EXISTING BUILDING TO BE DEMOLISHED
- EXISTING PAVED AREAS TO BE DEMOLISHED
- EXISTING FENCE
- EXISTING WATER METER
- TELECOM PILLAR
- CATCHPIT

SCALE: 1 : 250

A2-00-2001 - EXISTING SITE PLAN 01

Young+ Richards+

4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
120 Tennyson St Napier 4110 NZ +64 6 929 9945
info@youngrichards.com www.youngrichards.com

CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
240052

KEY PLAN

STAMP

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N

SHEET NAME
EXISTING SITE PLAN

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE
1 : 250

SHEET SIZE
A3=100%

PRINT IN COLOUR

SHEET NUMBER
A2-00-2001

REVISION
A

File: Autodesk Docs://220107-YR HDS - 2024/240052-KO HDS-25 Wihongi St.rvt
Plotted: 10/06/2024 3:48:08 pm

KEY NOTES

01 EXISTING VEHICLE CROSSING TO BE UPGRADED
02 EXISTING VEGETATION TO RETAIN
03 EXISTING WASTEWATER LINE
04 PROPOSED CARPORT - REFER TO BECA STRUCTURAL DRAWINGS FOR DESIGN

SHEET NOTES

- SITE SURVEY INFORMATION AS PROVIDED BY MCKENZIE & CO. (APRIL 2024)
- LANDSCAPE PLAN AS PROVIDED BY RESILIO LTD. (JUNE 2024)
- REFER TO CIVIL INFRASTRUCTURE REPORT FOR PROPOSED SERVICES.
- LEVELS SHOWN ARE INDICATIVE AND SHOULD BE CHECKED AGAINST LANDSCAPE AND CIVIL ENGINEERING DRAWINGS.

LEGEND

- PROPOSED PROPERTY BOUNDARY
- YARD SETBACK
- DECK - REFER TO STRUCTURAL ENGINEER
- CONCRETE PAVEMENT - REFER TO LANDSCAPE DESIGN BY RESILIO STUDIO
- GRAVEL COVER - REFER TO LANDSCAPE DESIGN BY RESILIO STUDIO
- CHANNEL DRAIN
- DIM DIMENSION FROM BOUNDARY TO FACE OF CLADDING
- DIM GENERAL DIMENSION
- PROPOSED GATED FENCE - REFER TO LANDSCAPE DESIGN BY RESILIO STUDIO
- PROPOSED STORMWATER
- PROPOSED WASTEWATER
- PROPOSED MAINS WATER
- ALTERNATIVE SERVICE TRENCH - REFER TO CIVIL ENGINEER

SCALE: 1 : 250

PROPOSED SITE PLAN 01

Young+ Richards+

4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
120 Tennyson St Napier 4110 NZ +64 6 929 9945
info@youngrichards.com www.youngrichards.com

CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
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PROJECT ADDRESS
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PROJECT NUMBER
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KEY PLAN

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SHEET NAME
SITE PLAN - GROUND FLOOR

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE
1 : 250

SHEET SIZE
A3=100%

PRINT IN COLOUR

SHEET NUMBER
A2-00-2200

REVISION
A

V220808
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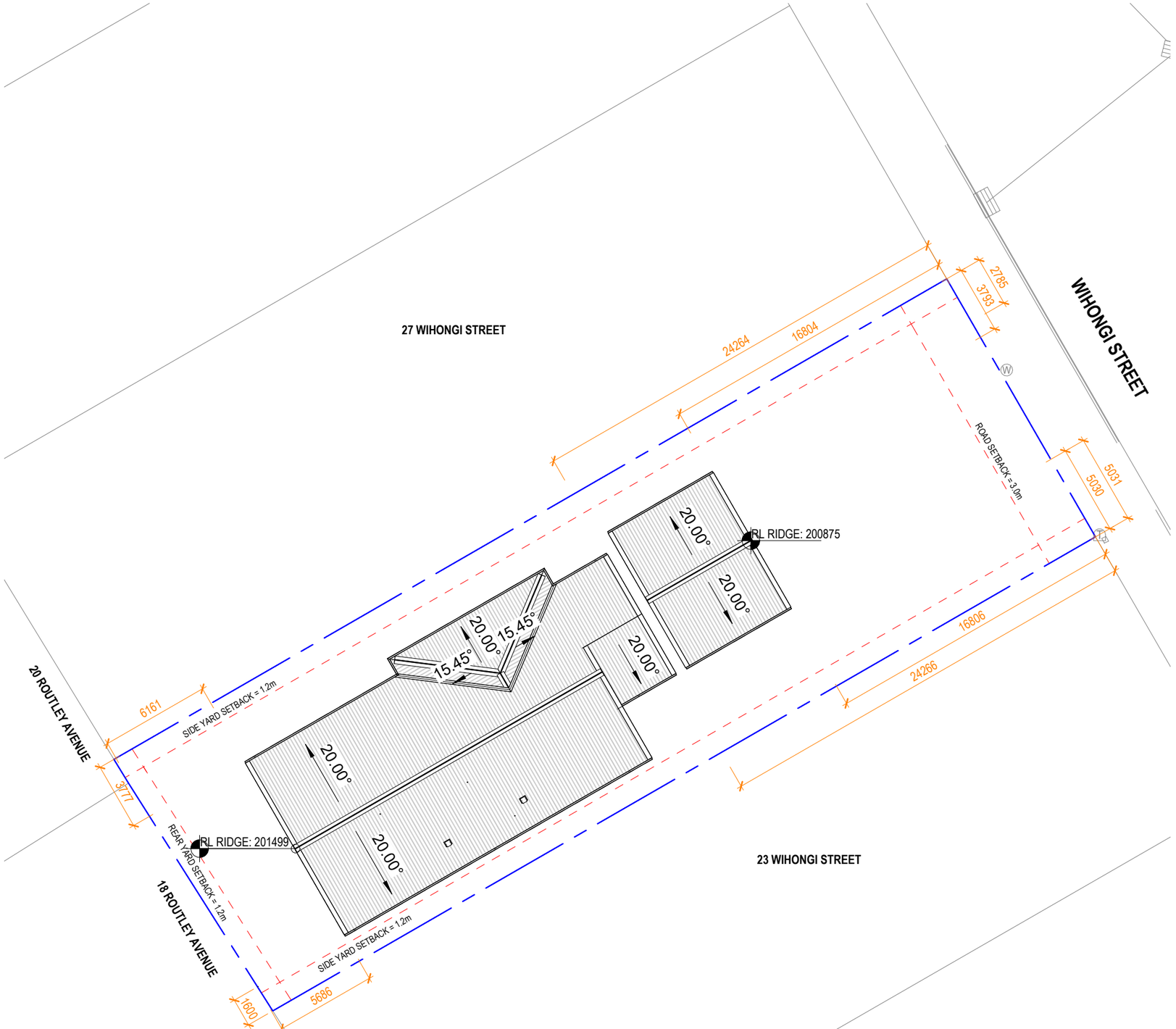

KEY NOTES

SHEET NOTES

- SITE SURVEY INFORMATION AS PROVIDED BY MCKENZIE & CO. (APRIL 2024)

LEGEND

- PROPOSED PROPERTY BOUNDARY
- YARD SETBACK
- PROFILED METAL ROOFING
- DIM — DIMENSION FROM BOUNDARY TO EDGE OF GUTTER/BARGE

SCALE: 1 : 250

01 / A2-01-2303

PROPOSED OVERALL ROOF PLAN **01**

Young+ Richards+

4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
120 Tennyson St Napier 4110 NZ +64 6 929 9945
info@youngrichards.com www.youngrichards.com

CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
240052

KEY PLAN

STAMP

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SHEET NAME
SITE PLAN - ROOF

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE **1 : 250**
SHEET SIZE **A3=100%**
PRINT IN COLOUR

SHEET NUMBER **A2-00-2203**
REVISION **A**

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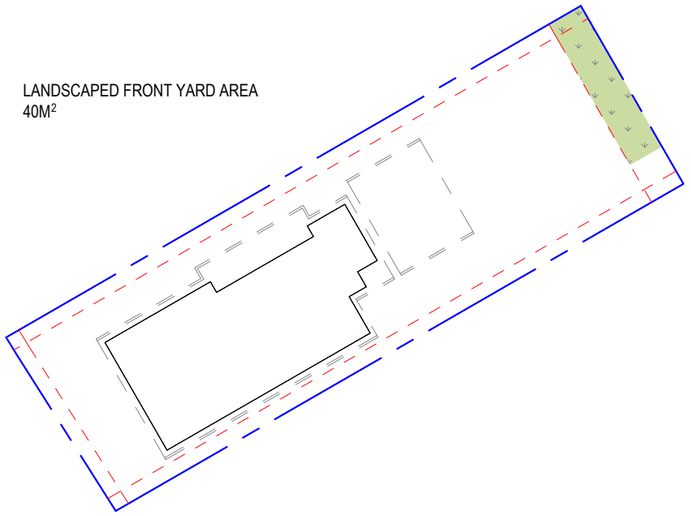
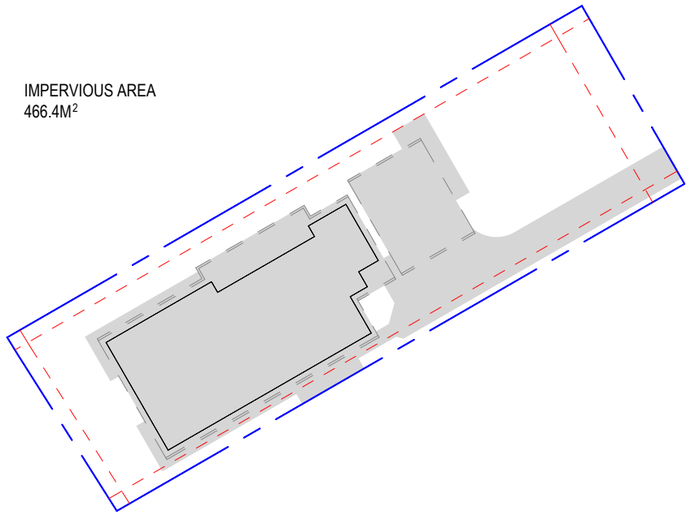


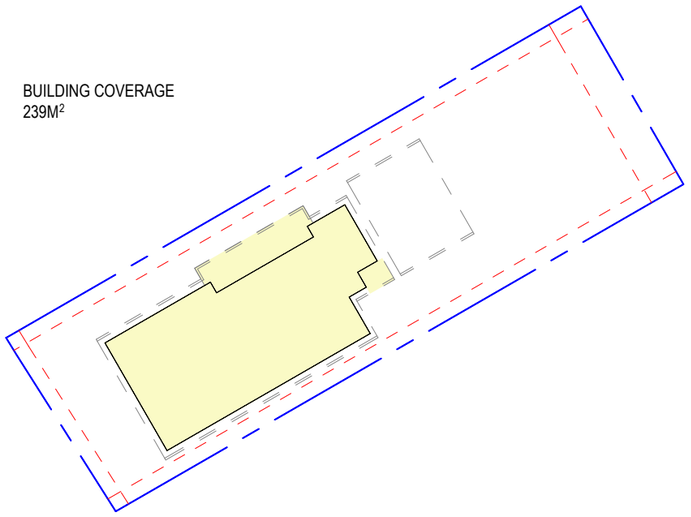
SCALE: 1 : 500
01 / A2-01-2303

LANDSCAPED FRONT YARD **04**



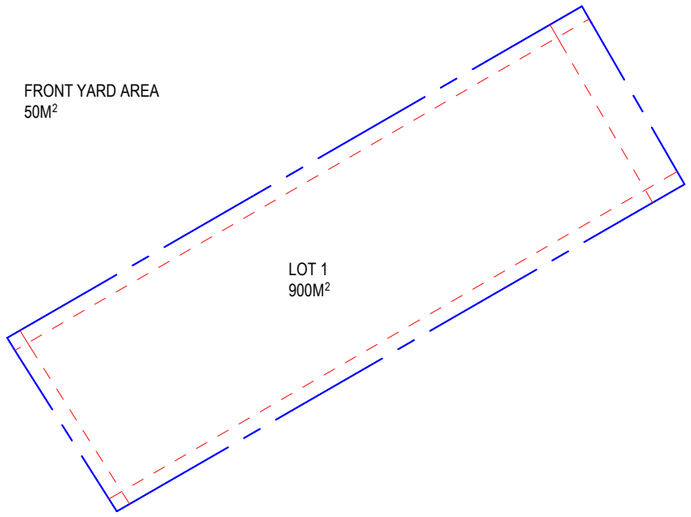
SCALE: 1 : 500
01 / A2-01-2303

IMPERVIOUS AREA **02**



SCALE: 1 : 500
01 / A2-01-2303

BUILDING COVERAGE **03**



SCALE: 1 : 500
01 / A2-01-2303

PROPOSED SCHEME PLAN **01**

SITE COVERAGE CALCULATIONS					
GROSS SITE AREA	900M²				
	AREA	COVERAGE %	MAX.	MIN.	COMPLIANCE
IMPERVIOUS AREA	466.4M²	51.8%	50%	-	NO
BUILDING COVERAGE	239M²	26.5%	45%	-	YES
FRONT YARD AREA	50M²		-	-	
LANDSCAPED FRONT YARD AREA	40M²	80.0%	-	50%	YES

KEY NOTES

SHEET NOTES

- SITE SURVEY INFORMATION AS PROVIDED BY MCKENZIE & CO. (MAY 2024)

LEGEND

- PROPERTY BOUNDARY
- YARD SETBACK
- OUTLINE OF BUILDING FOOTPRINT
- OUTLINE OF BUILDING
- BUILDING COVERAGE
- IMPERVIOUS AREA
- LANDSCAPED FRONT YARD AREA

Young+ Richards+

4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
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info@youngrichards.com www.youngrichards.com

CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
240052

KEY PLAN

STAMP

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SHEET NAME
SITE DEVELOPMENT CONTROLS PLAN

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE **1 : 500**
SHEET SIZE **A3=100%**
PRINT IN COLOUR

SHEET NUMBER **A2-00-2500**
REVISION **A**

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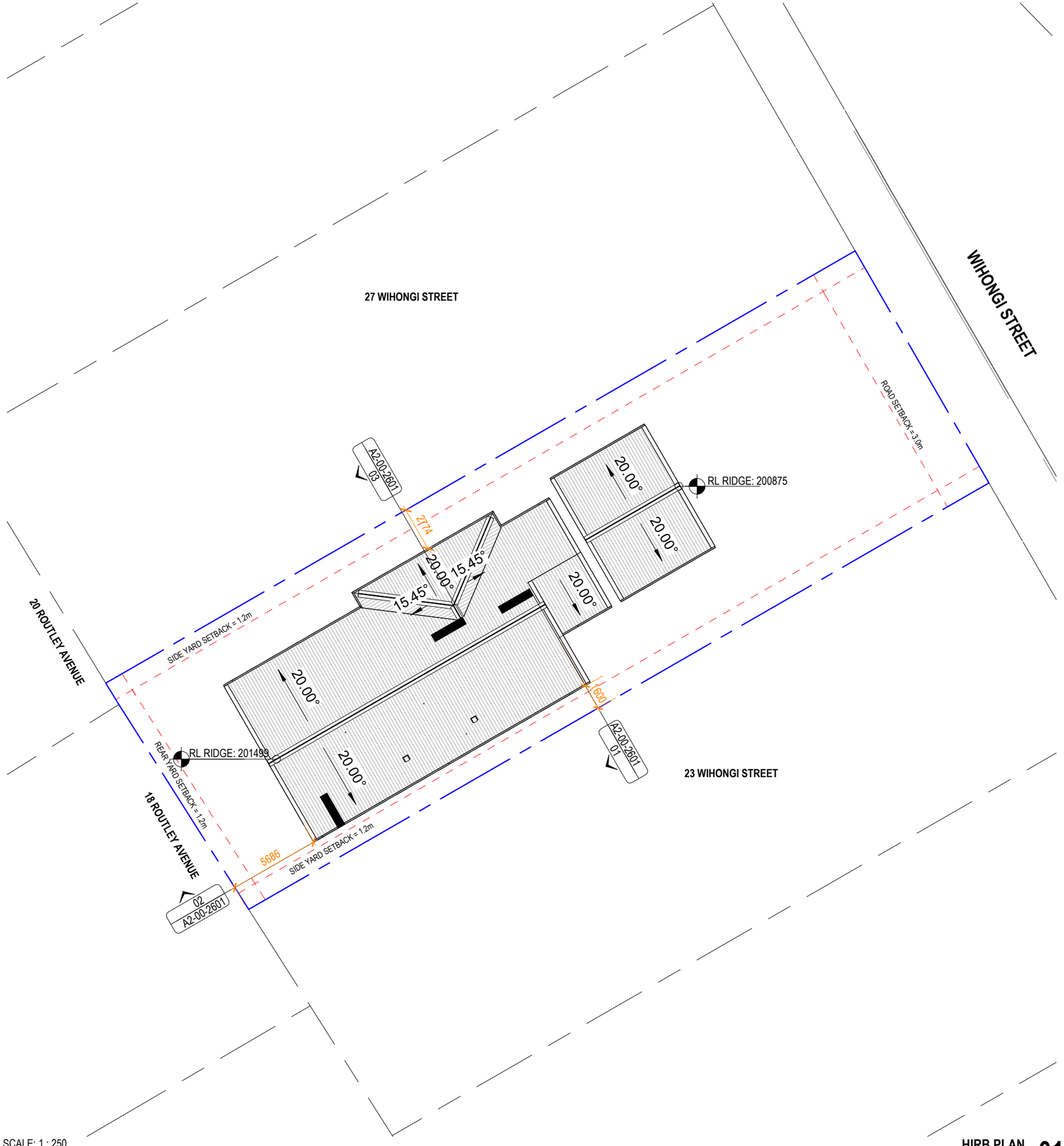

KEY NOTES

SHEET NOTES

- SITE SURVEY INFORMATION AS PROVIDED BY MCKENZIE & CO. (APRIL 2024)
- SUBDIVISION AS PROVIDED BY MCKENZIE & CO.

LEGEND

- PROPOSED PROPERTY BOUNDARY
- YARD SETBACK
- PROFILED METAL ROOFING
- DIM — DIMENSION FROM BOUNDARY TO EDGE OF GUTTER/BARGE

SCALE: 1 : 250

01 / A2-01-2303

HIRB PLAN 01

Young+ Richards+

4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
120 Tennyson St Napier 4110 NZ +64 6 929 9945
info@youngrichards.com www.youngrichards.com

CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
240052

KEY PLAN

STAMP

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SHEET NAME
HIRB PLAN & DIAGRAMS

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE **1 : 250**
SHEET SIZE **A3=100%**
PRINT IN COLOUR

SHEET NUMBER **A2-00-2600**
REVISION **A**

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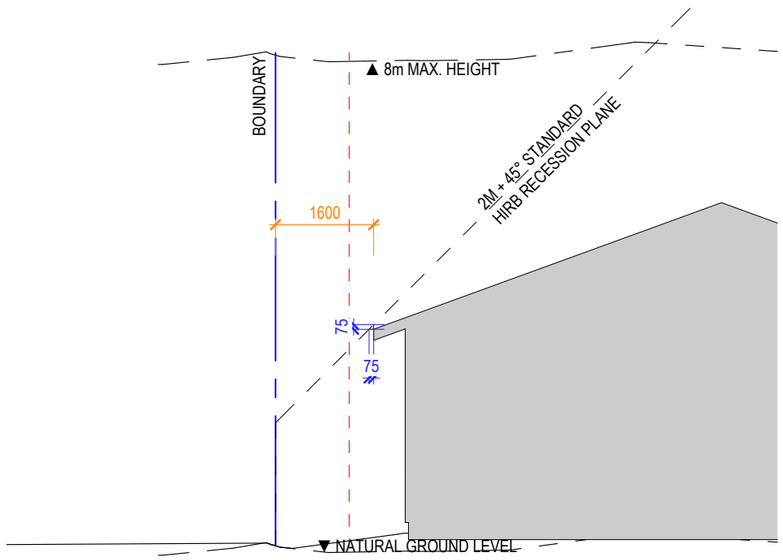
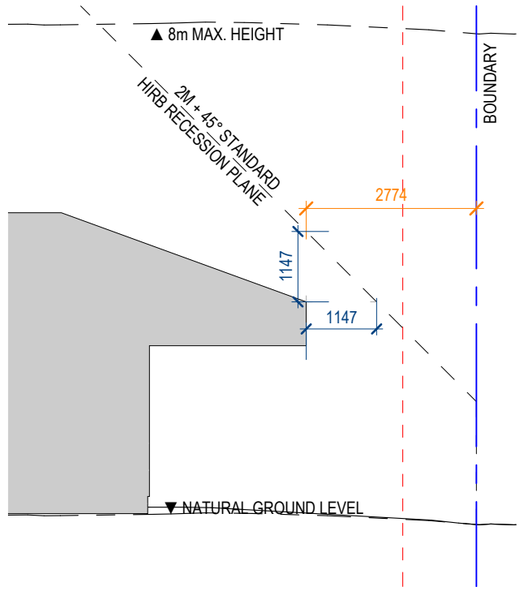


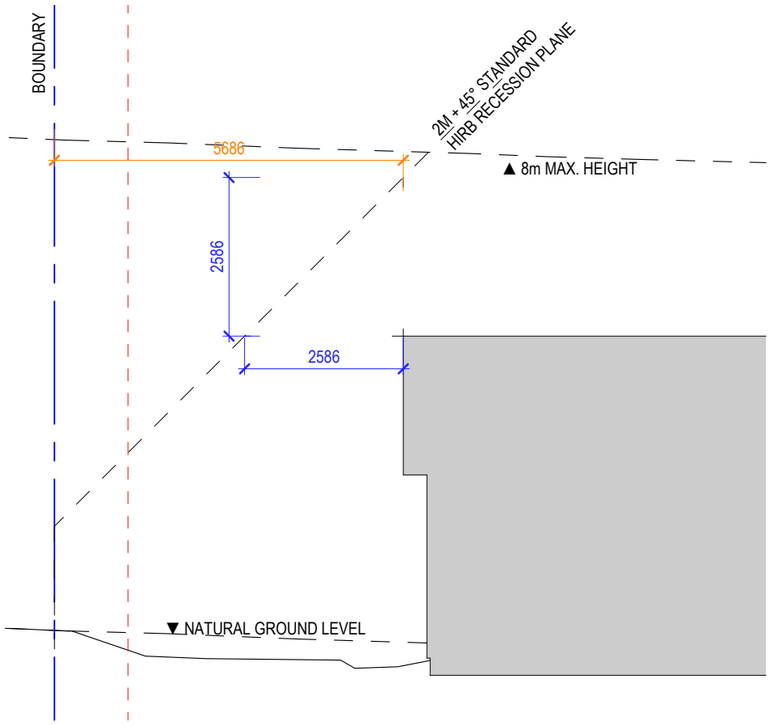
SCALE: 1 : 100
1 / A1-00-2200

HIRB SECTION 1
SECTION **01**



SCALE: 1 : 100
1 / A1-00-2200

HIRB SECTION 3
SECTION **03**



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1 / A1-00-2200

HIRB SECTION 2
SECTION **02**

KEY NOTES

SHEET NOTES

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- SUBDIVISION AS PROVIDED BY MCKENZIE & CO.

LEGEND

- PROPOSED PROPERTY BOUNDARY
- YARD SETBACK
- DIM — DIMENSION FROM BOUNDARY TO EDGE OF GUTTER/BARGE
- 1200 — GENERAL DIMENSION

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PROJECT ADDRESS
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PROJECT NUMBER
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SHEET NAME
HIRB DIAGRAMS

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE
1 : 100

SHEET SIZE
A3=100%

PRINT IN COLOUR

SHEET NUMBER
A2-00-2601

REVISION
A

File: Autodesk Docs://220107-YR HDS - 2024/240052-KO HDS-25 Wihongi St.rvt
Plotted: 10/06/2024 3:48:14 pm

KEY NOTES

01 PROPOSED REFUSE AREA
02 PROPOSED CLOTHESLINE
03 PROPOSED UTILITY AREA
04 EXISTING VEGETATION
05 PROPOSED CARPORT - REFER TO BECA STRUCTURAL DRAWINGS FOR DESIGN
06 PROPOSED TANK (REFER TO CIVIL)
07 EXISTING WASTEWATER LINE

SHEET NOTES

- SITE SURVEY INFORMATION AS PROVIDED BY MCKENZIE & CO. (MAY 2024)
- LANDSCAPE PLAN AS PROVIED BY RESILIO STUDIO (MAY 2024)
- REFER TO CIVIL INFRASTRUCTURE REPORT FOR PROPOSED SERVICES

LEGEND

DIM GENERAL DIMENSION
DIM BOUNDARY FROM FACE OF CLADDING DIMENSION
PROPERTY BOUNDARY
YARD SETBACK
DECK - REFER TO STRUCTURAL ENGINEER
CONCRETE PAVEMENT - REFER TO LANDSCAPE DESIGN BY RESILIO STUDIO
GRAVEL COVER - REFER TO LANDSCAPE DESIGN BY RESILIO STUDIO
CHANNEL DRAIN
PROPOSED GATED FENCE - REFER TO LANDSCAPE DESIGN BY RESILIO STUDIO
PROPOSED STORMWATER
PROPOSED WASTEWATER
PROPOSED MAINS WATER
ALTERNATIVE SERVICE TRENCH - REFER TO CIVIL ENGINEER

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4d Edwin St Mt Eden Auckland 1024 NZ +64 9 520 6444
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info@youngrichards.com www.youngrichards.com

CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
240052

KEY PLAN

STAMP

THE FINE PRINT

- ALL WORK SHALL COMPLY WITH THE NZ RESOURCE MANAGEMENT ACT, NZ BUILDING ACT, RELEVANT STANDARDS, ORDINANCES, RULES, AND REGULATIONS OF THE TERRITORIAL AUTHORITY GOVERNING THE WORK. REFER TO NZ BUILDING ACT, SECTION 17.
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SHEET NAME
GROUND FLOOR CONTEXT PLAN

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE
1 : 150

SHEET SIZE
A3=100%

PRINT IN COLOUR

SHEET NUMBER
A2-01-2300

REVISION
A

V220808
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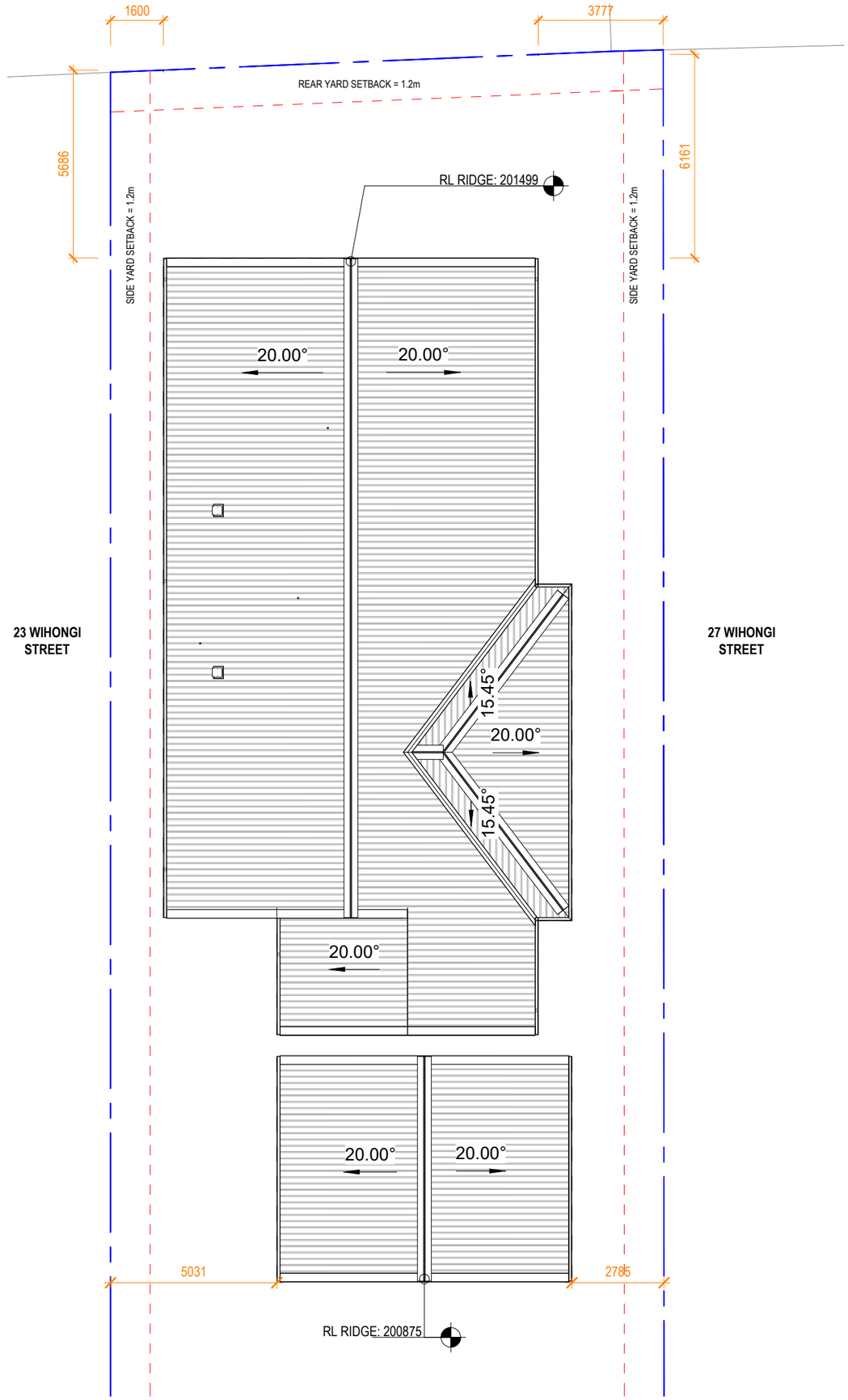

KEY NOTES

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- LANDSCAPE PLAN AS PROVIED BY RESILIO STUDIO (MAY 2024)
- REFER TO CIVIL INFRASTRUCTURE REPORT FOR PROPOSED SERVICES

LEGEND

- DIM — GENERAL DIMENSION
- DIM — BOUNDARY FROM FACE OF CLADDING DIMENSION
- PROPERTY BOUNDARY
- YARD SETBACK

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CLIENT
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PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
240052

KEY PLAN

STAMP

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SHEET NAME
ROOF CONTEXT PLAN

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE
1 : 150

SHEET SIZE
A3=100%

PRINT IN COLOUR

SHEET NUMBER
A2-01-2302

REVISION
A

V220808

File: Autodesk Docs://220107-YR HDS - 2024/240052-KO HDS-25 Wihongi St.rvt

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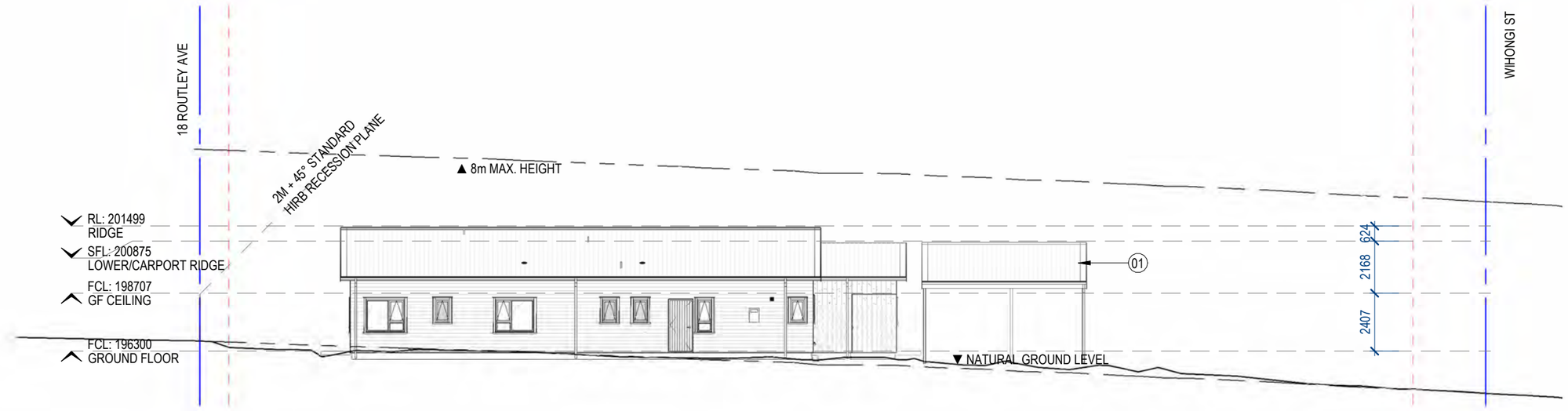

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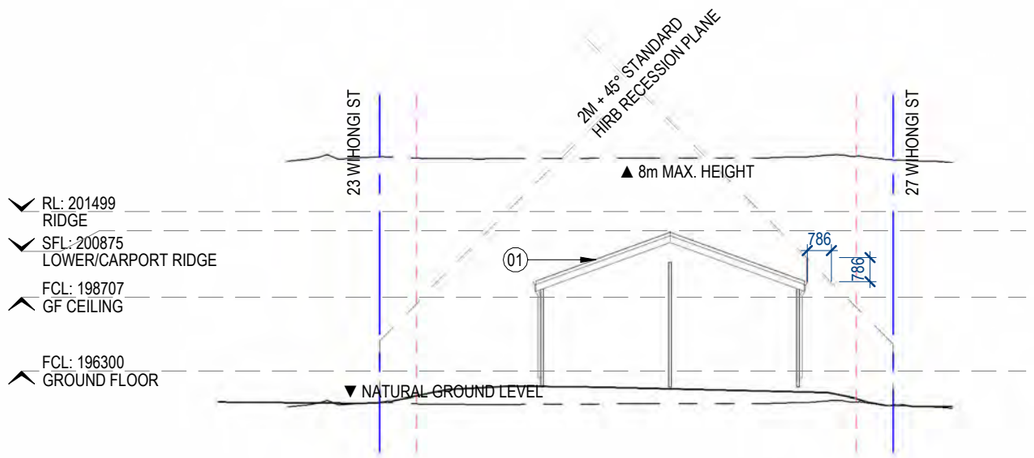
SITE ELEVATION - SIDE **01**



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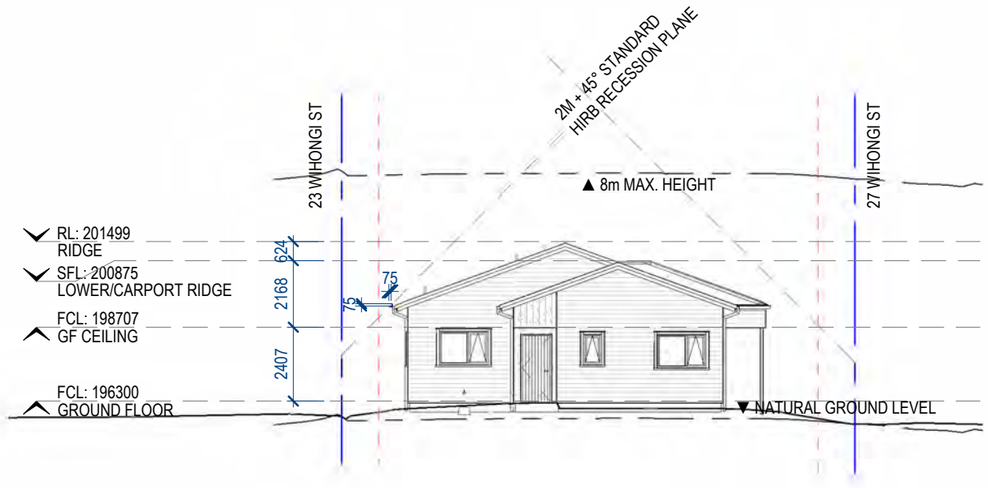
SITE ELEVATION - CARPORT **03**



SCALE: 1 : 200
1 / A1-00-2200

SITE ELEVATION - STREET **02**

KEY NOTES

(01) PROPOSED CARPORT - REFER TO BECA STRUCTURAL DRAWINGS FOR DESIGN

SHEET NOTES

- SITE SURVEY INFORMATION AS PROVIDED BY MCKENZIE & CO. (APRIL 2024)
- LANDSCAPE PLAN AS PROVIDED BY RESILIO LTD. (JUNE 2024)
- REFER TO CIVIL INFRASTRUCTURE REPORT FOR PROPOSED SERVICES.
- LEVELS SHOWN ARE INDICATIVE AND SHOULD BE CHECKED AGAINST LANDSCAPE AND CIVIL ENGINEERING DRAWINGS.

LEGEND

- PROPOSED PROPERTY BOUNDARY
- YARD SETBACK
- DIM — GENERAL DIMENSION
- PROFILED METAL ROOFING
- HORIZONTAL TIMBER WEATHERBOARD - 150MM
- METAL FLASHING
- VERTICAL FIBRE CEMENT WEATHERBOARD - 200MM

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info@youngrichards.com www.youngrichards.com

CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
240052

KEY PLAN

STAMP

THE FINE PRINT

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SHEET NAME
SITE ELEVATIONS

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE **1 : 200**
SHEET SIZE **A3=100%**
PRINT IN COLOUR

SHEET NUMBER **A2-01-2303**
REVISION **A**

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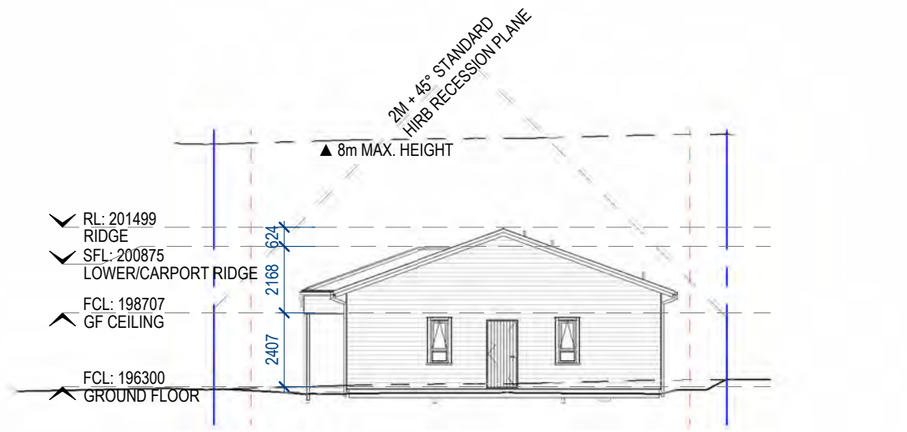
V220808

SCALE: 1 : 200
1 / A1-00-2200

SITE ELEVATION - SIDE **01**



SCALE: 1 : 200
1 / A1-00-2200

SITE ELEVATION - BACK **02**

KEY NOTES

(01) PROPOSED CARPORT - REFER TO BECA STRUCTURAL DRAWINGS FOR DESIGN

SHEET NOTES

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LEGEND

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- YARD SETBACK
- DIM GENERAL DIMENSION
- PROFILED METAL ROOFING
- HORIZONTAL TIMBER WEATHERBOARD - 150MM
- METAL FLASHING
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PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER
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KEY PLAN

STAMP

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SHEET NAME
SITE ELEVATIONS

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE **1 : 200**
SHEET SIZE **A3=100%**
PRINT IN COLOUR

SHEET NUMBER **A2-01-2304**
REVISION **A**

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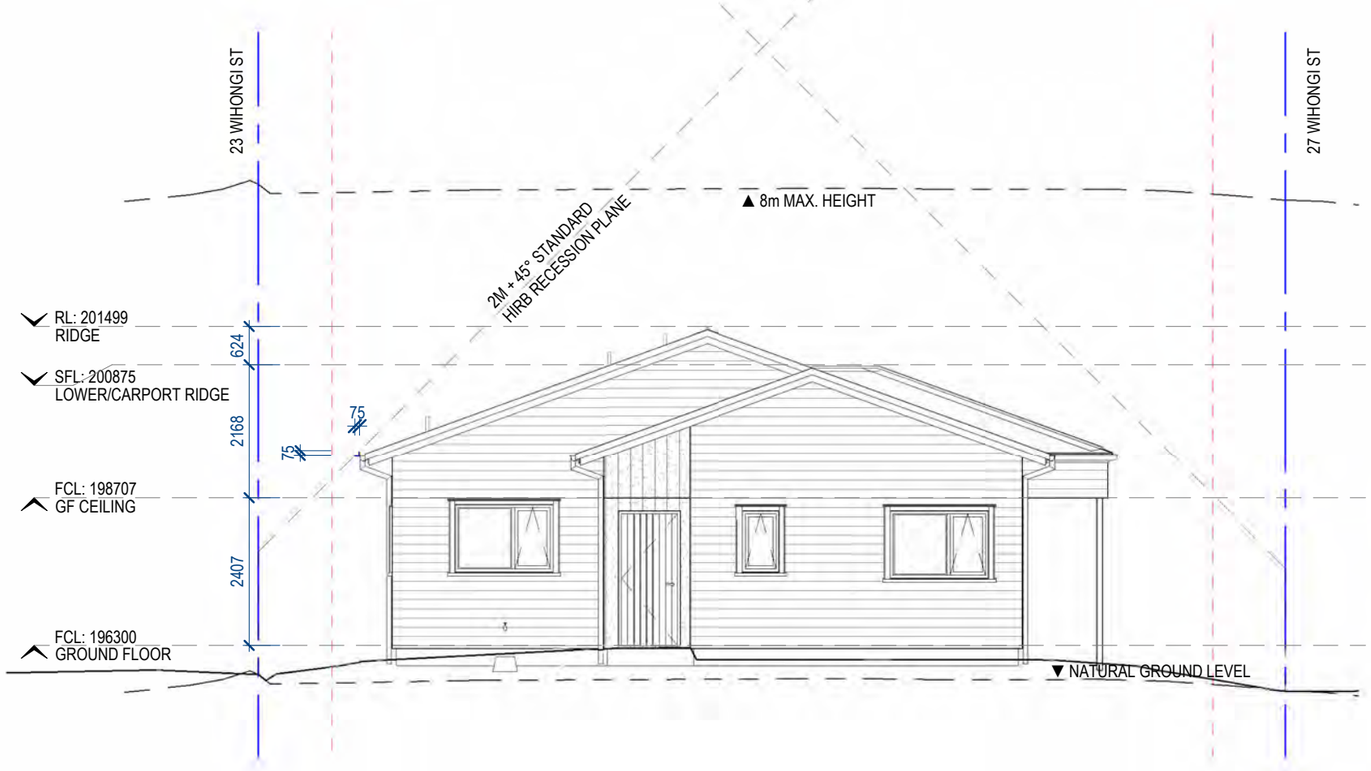
SCALE: 1 : 100

1 / A1-00-2200

ELEVATION 01 **01**



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1 / A1-00-2200

ELEVATION 02 **02**

KEY NOTES

SHEET NOTES

1. SITE SURVEY INFORMATION AS PROVIDED BY MCKENZIE & CO.
2. SUBDIVISION AS PROVIDED BY MCKENZIE & CO.
3. LANDSCAPE PLAN AS PROVIED BY RESILIO STUDIO.
4. REFER TO CIVIL INFRASTRUCTURE REPORT FOR PROPOSED SERVICES.

LEGEND

- PROPOSED PROPERTY BOUNDARY
- YARD SETBACK
- DIM — DIMENSION FROM BOUNDARY TO FACE OF CLADDING
- PROFILED METAL ROOFING
- GLAZING (REFER TO JOINERY SCHEDULE)
- FROSTED GLAZING
- HORIZONTAL TIMBER WEATHERBOARD - 150MM
- SELECTED VERTICAL WEATHERBOARD

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CLIENT

Kāinga Ora Homes and Communities

PROJECT NAME

25 WIHONGI STREET

PROJECT ADDRESS

25 WIHONGI STREET, KAIKOHE, NORTHLAND 0405

PROJECT NUMBER

240052

KEY PLAN

STAMP

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SHEET NAME

ELEVATIONS

PROJECT STATUS

RESOURCE CONSENT

SHEET SCALE **1 : 100**

SHEET SIZE **A3=100%**

PRINT IN COLOUR

SHEET NUMBER **A2-01-4020**

REVISION **A**

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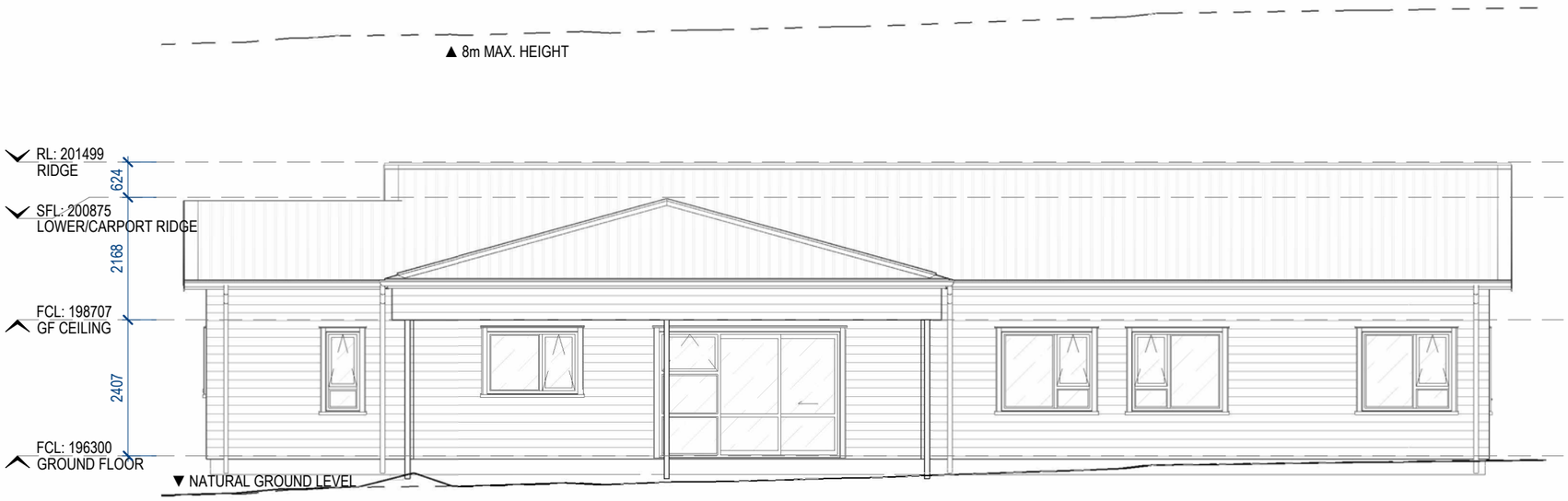

SCALE: 1 : 100
1 / A1-00-2200

ELEVATION 03 **01**

KEY NOTES

SHEET NOTES

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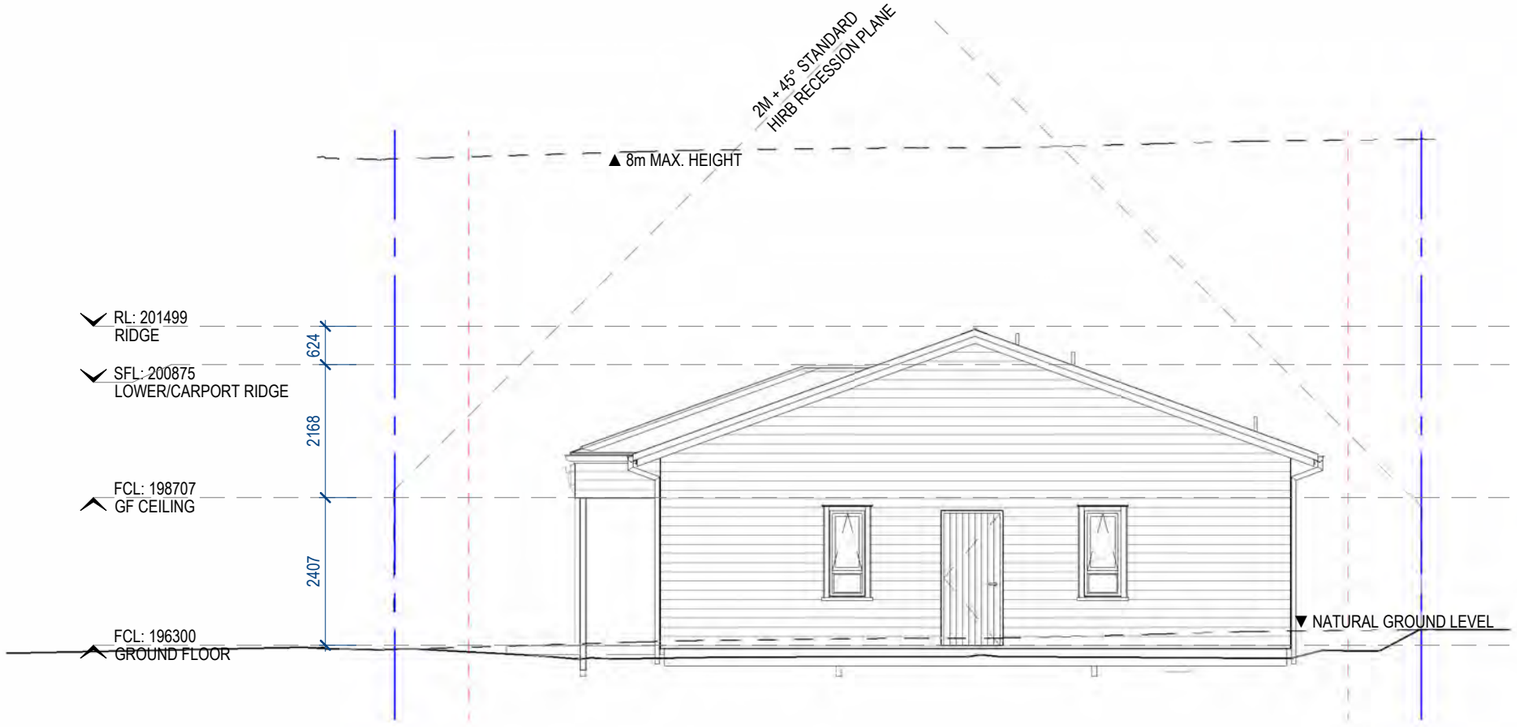

SCALE: 1 : 100
1 / A1-00-2200

ELEVATION 04 **02**

LEGEND

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- YARD SETBACK
- DIM — DIMENSION FROM BOUNDARY TO FACE OF CLADDING
- PROFILED METAL ROOFING
- GLAZING (REFER TO JOINERY SCHEDULE)
- FROSTED GLAZING
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CLIENT
Kāinga Ora Homes and Communities

PROJECT NAME
25 WIHONGI STREET

PROJECT ADDRESS
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PROJECT NUMBER
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KEY PLAN

STAMP

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SHEET NAME
ELEVATIONS

PROJECT STATUS
RESOURCE CONSENT

SHEET SCALE **1 : 100**
SHEET SIZE **A3=100%**
PRINT IN COLOUR

SHEET NUMBER **A2-01-4021**
REVISION **A**

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