Resource Management Act 1991

Submission on Notified Proposed Plan Change to Central Otago District Plan

Clause 6 of Schedule 1, Resource Management Act 1991

(FORM 5)

To: The Chief Executive
Central Otago District Council
PO Box 122
Alexandra 9340

Details of submitter

- Name: Pisa Moorings Developments Limited and Pisa Village Development Limited

---

Postal address: 17A Murray Terrace
(Or alternative method of service under section 352 of the Act)

Phone: _03 4450376

Email: _campbell@chasurveyors.co.nz__

Contact person: Campbell Hills

This is a submission on proposed Plan Change 19 to the Central Otago District Plan (the proposal).

I am not a trade competitor for the purposes of section 308B of the Resource Management Act 1991

The specific provisions of the proposal that my submission relates to are:

Refer to the attached submission document and supporting information.

This submission is:

Refer to the attached submission document and supporting information.

We seek the following decision from the consent authority:

Refer to the attached submission document and supporting information.

I wish to be heard in support of this submission

In lodging this submission, I understand that my submission, including contact details, are considered public information, and will be made available and published as part of this process.

PP _ 1 September 2022

Signature **Date**

Submissions close at 4pm on Friday 2 September 2022

Submissions can be emailed to districtplan@codc.govt.nz

Note to person making submission:

If you are a person who could gain an advantage in trade competition through the submission, your right to make a submission may be limited by clause 6(4) of Part 1 of Schedule 1 of the Resource Management Act 1991.

Please note that your submission (or part of your submission) may be struck out if the authority is satisfied that a least 1 of the following applies to the submission (or part of the submission):

- *it is frivolous or vexatious:*
- *it discloses no reasonable or relevant case:*
- *it would be an abuse of the hearing process to allow the submission (or the part) to be taken further:*
- *it contains offensive language:*
- *it is supported only by material that purports to be independent expert evidence but has been prepared by a person who is not independent or who does not have sufficient specialised knowledge or skill to give expert advice on the matter.*

Overview of the submission

Pisa Moorings Vineyard Limited and Pisa Village Development Limited (**Submitters**) request that the land at 828 Luggate-Cromwell Road SH6 and the adjoining site to the south at Pisa Moorings, located between State Highway 6 and the existing Pisa Moorings residential settlement, is rezoned from Rural Resource Area and Residential Resource Areas (3) and (13) to a mix of Low Density Residential, Medium Density and a local convenience retail zone or precinct.

The land is 24.3ha in area and currently zoned (in terms of PC 19) Rural Resource Area, Large Lot Residential (Precinct 1) and Low Density Residential. The land is legally described as Lot 2 DP 397990, Lot 2 DP 405431, Lot 19 DP 520912 and Lot 112 DP 546309.

The area of land within the site zoned by PC 19 as Large Lot Residential is approximately 2.2ha, and the area of Low Density Residential Land is approximately 0.9ha. The balance of the land is zoned Rural Resource Area.

The rezoning seeks 16.8ha Low Density Residential zoning, 7.6ha Medium Density Residential zoning and within this 7.6ha area, a local retail/convenience commercial zoning of 1.7ha.

The proposed rezoning would facilitate in the order of 292 residential lots. The intended land uses within the proposed commercial precinct would be for local convenience retail activities, small scale education and community or commercial activities such as an early childhood education centre, medical consulting rooms and consulting services.

Vehicle access to the rezoned land will be via the existing Pisa Moorings roading network, and onto State Highway 6 via Pisa Moorings Road. Water and wastewater servicing will be via the Council's reticulated supply.

The rezoning can be facilitated by way of the following amendments to the Central Otago District Plan:

- Amending the plan maps to rezone the site from Rural Resource Area and Residential Resource Area (3) and (13) to a mix of Low Density Residential, Medium Density Residential and Medium Density Residential with a Commercial zoning such as Precinct Overlay in accordance with the National Planning Standards, as shown in **Attachment A**.
- Inserting a development area plan/structure plan into the District Plan which will guide future subdivision development at the site, as shown in **Attachment B**.
- Adding text including any purpose statement text, objectives and other methods such as policies, rules and assessment matters to facilitate a commercial zoning, as indicated in the following submission document in red text.

The submission is supported by the following information (text amendments to the Central Otago District Plan are included below as part of the general submission on the PC 19 notified text):

1. **Attachment A** Proposed Rezoning Plan
2. **Attachment B** Proposed Structure Plan
3. **Document 1** Planning Statement and Assessment of Effects on the Environment
4. **Document 2** Section 32AA evaluation
5. **Document 3** Preliminary Infrastructure and Services Report
6. **Document 4** Transport Assessment
7. **Document 5** Landscape assessment
8. **Document 6** Acoustic assessment
9. **Document 7** Detailed Site Investigation

The following table summarises the rezoning by way of a summary of the decisions requested on the rezoning and the notified PC 19 provisions.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
Rezoning		
Plan Maps	Amend	Amend the Plan Maps to rezone the land at 828 Luggate-Cromwell Road SH6 and the site to the south, collectively legally described as Lot 2 DP 397990, Lot 2 DP 405431, Lot 19 DP 520912 and Lot 112 DP 546309. (as shown in **Attachment A**) from Rural Resource Area and Residential Resource Areas (3) and (13) to a mix of Low Density Residential Zone, Medium Density Residential Zone and a local convenience business zone, such as a Medium Density Residential Zone Commercial Precinct
Plan text	Amend	Amend the District Plan text to facilitate the rezoning described above, including any consequential amendments to the District Wide sections and rules of the District Plan. Without derogating from the breadth of the changes sought above, the specific amendments to the notified Plan Change 19 provisions and consequential amendments to the District Plan associated with the rezoning shown in **Attachment A**, can include (but not be limited by) the following particular amendments: • Inserting a structure plan into the District Plan which will guide future development as shown in **Attachment B**. • Amending the District Plan text by including any purpose statement text, objectives and other methods such as policies, rules and assessment matters to facilitate the proposed zoning, including a commercial zoning to serve the local Pisa Moorings community:

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	The reasons for my views and the decision I seek from the local authority are:
		The rezoning amendments are shown alongside the general submission on the PC 19 provisions. The rezoning related additions are shown in red underline and ~~strikethrough~~, and the general submission amendments sought are shown in black underline and ~~strikethrough~~. **Amend Introduction text in the MRZ** Add the following text after the fourth paragraph: … While the focus of the zone is residential, some commercial and community facilities are anticipated, where they support the local residential population and are compatible with the purpose, character and amenity values of the zone. Commercial Precincts identify where commercial and community facilities are encouraged to establish that are of a scale which is compatible with residential amenity and character and serve a local convenience purpose. **New Objectives and Policies Medium Density Residential Zone** **Objectives** **MRZ-O3** **Commercial Precincts** Commercial activities and community facilities are provided for within the Commercial Precincts, are limited in scale and maintain or enhance residential amenity, provide for local convenience and services, and support the local economy.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	The reasons for my views and the decision I seek from the local authority are:
		Policies **MRZ-P7** **Commercial Precincts** Identify Commercial Precincts on the Planning Maps, within which commercial activities and community facilities are provided for in order to meet the day-to-day needs of residents and visitors and support the local economy, subject to: 1. restricting the gross floor area of individual retail activities and individual office activities that may adversely affect the: a. establishment and retention of a diverse range of activities within the Commercial Precinct; b. role and function of the Business Resource Areas that provide for large scale retailing; and c. safe and efficient operation of the transport network. 2. controlling the height, scale, appearance and location of buildings to achieve a built form that: a. complements the existing pattern of development, where established; b. positively contributes to the streetscape and any open space; and c. minimises adverse effects on neighbouring residential activities. **New Rules** **(New restricted discretionary rule added after Rule MRZ-R14)** **MRZ-RX** **Commercial Precinct**

<table>
<tr><td>The specific provisions of the proposal that my submission relates to are:</td><td>I support or oppose the specific provisions or wish to have them amended.</td><td>The reasons for my views and the decision I seek from the local authority are:</td></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>Medium Density Residential Zone</td><td>The following activities within a Commercial Precinct

Activity Status: RDIS

Where:
1. Buildings;

2. Commercial Activity;

3. Community Facilities;

4. Residential Activity located above ground floor.</td><td>Activity status where compliance with Rx1-4 is not achieved: NC

Matters of Discretion are restricted to:
1. Hours of operation.
2. Location of parking, provision for mobility parking, traffic safety, manoeuvring.
3. Location and screening of recycling and waste.
4. Servicing.
5. Noise.
6. Design.
7. Scale and appearance of buildings.
8. Signs.
9. Lighting.</td></tr>
</table>
New Standard
<table>
<tr><td>MRZ-SX</td><td colspan="2">Retail and office activities within a Commercial Precinct</td></tr>
<tr><td>Medium Density Residential Zone</td><td>1. Individual retail activities within a Commercial Precinct shall not exceed 200m^2 gross floor area.</td><td>Activity status where compliance is not achieved: NC</td></tr>
</table>
</td></tr>
</table>

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	The reasons for my views and the decision I seek from the local authority are:

		2. Individual office activities within a Commercial Precinct shall not exceed 100m^2 gross floor area. 3. In the Commercial Precinct at Pisa Moorings, in addition to rule SX.1 one individual retail activity may exceed 200m^2 but shall not exceed 400m^2 gross floor area. Note: For rules Sx. 1 and Sx.3 any associated office, storage, staffroom and bathroom facilities used by the activity shall not be included in the calculation of gross floor area.	

Amendments to the Subdivision Chapter text:
(Add the following new policy after policy SUB-P4)

Policies	
SUB-PX	**Pisa Moorings Development Area Plan/Structure Plan**

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	The reasons for my views and the decision I seek from the local authority are:
		Ensure subdivision and development is undertaken in accordance with the Pisa Moorings Structure Plan to: 1. Provide integration and connection of internal roading and pedestrian cycle access through the Structure Plan area and the existing roading access at Pisa Moorings, while allowing for limited flexibility by enabling internal roading, pedestrian and cycling links to move +/- 20m. 2. Provide for a range of residential densities to promote a diversity of housing choice. 3. Provide safe pedestrian and cycle connections to the Commercial Precinct. 4. Encourage an integrated and cohesive approach to State Highway noise attenuation measures and the landscaping and planting design to provide a buffer between the State Highway and dwellings. 5. Provide a landscape buffer along the northern boundary to screen the development from adjoining quarry operations. 6. Provide planting along the eastern terrace edge and the existing adjoining residential properties located off Stratford Drive, Pony Court and Missy Crescent, to encourage privacy between properties, minimise the visual dominance of buildings and overlooking. 7. Encourage roofs to have a light reflectance value not greater than 30% to ensure buildings are not prominent in views from the wider rural area. **Amend Rule SUB-R4 by adding a matter of discretion to have regard to structure plans.**

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	The reasons for my views and the decision I seek from the local authority are:

SUB-R4	**Subdivision not otherwise specified**	
All Residential Zones	**Activity Status: RDIS** **Where the activity complies with the following rule requirements:** SUB-S1 **Matters of discretion are restricted to:** … 16. Consistency with any Structure Plan included in the District Plan.	**Activity status when compliance with rule requirement(s) is not achieved:** Refer to Rule Requirement Table.

General Submission on all PC 19 text:

The LLRZ, LRZand MRZ text alternates in some instances between alphabet and numerical referencing, i.e compare Rules LRZ-R10 and R-11. It may be beneficial to list the rule qualifiers and standards (i.e the middle column) to numerical and matters of control (i.e. the right hand column) to alphabet.

In any case the formatting should be consistent and amendments made to that effect.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**

General Submission on the design guidelines

The Medium Density Residential Design Guide, containing the Medium Density Guide and Comprehensive Residential Guide are identified in the section 32 evaluation and whether the guide should be incorporated by reference is discussed (paragraph 92 at page 29).

The s32 evaluation opted to not incorporate the design guide by reference because:
This option is not considered the most appropriate approach as it limits the flexibility of design options and affects the ability of Council to update these design guides, if improvements are required. As such it would be effective at achieving the outcomes sought, but less efficient. Retaining design guides outside the Plan, and ensuring these guides align with the matters of discretion and policy direction, will still allow for design guides to be used to assist with any resource consent process, without formalising their status within the Plan itself.

While this approach does provide flexibility for changes, there are two deficiencies with this approach which are not discussed in the section 32 evaluation. The first is that the use of the design guide in a resource consent context will only be able to be considered as an 'other matter' under section 104(c) of the RMA. The lack of specific reference to the design guide in the plan provisions clouds when they would actually be applied and whether any reliance can be placed on them as part of the notification assessment under section 95 of the RMA.

The utility of the design guide and their effectiveness would be improved if they were identified in policies and/or rules.

The second matter is that the ability for the planning authority to modify the design guidelines without any opportunity for public involvement and formal process, and the use of the guidelines by the Council as part of the consideration of resource consent applications to 'assist in guiding the Council's consideration of development within the Medium Density Zone' as referred to in the section 32 evaluation has the potential for uncertainty, and a 'shifting of the goalposts' in terms of how the Council would interpret and implement the policies and matters of discretion in relation to the design guide. The guidelines colour and influence how the Council acting in its role as a consent authority perceive an application for resource consent and the ability to change the guidelines on an ad hoc and informal basis would effectively have the same effect as amending the policies and matters of discretion without the proper plan change or variation processes and opportunities for submissions and the efficacy of those documents being tested in a transparent manner.

For these reasons, not incorporating the design guidelines into the District Plan results in a lack of transparency with how the Medium Density Residential Zone provisions will be implemented.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**

For the above reasons, it is sought that the Medium Density Residential Design Guide is incorporated by reference into the District Plan; by

1. adding a policy to the MRZ chapter which requires consideration of the design guides; and
2. a rule or other method which requires consideration of the Medium Density Residential Design Guide.

Identified as follows:

Amend Policies MRZ-P1 and MRZ-P2 as follows:

MRZ-P1 & P2	**Built Form**
Ensure that development within the Medium Density Residential Zone: 1. Considers the relevant design elements of the Central Otago Medium Density Residential Zone Design Guide 2022; 2. …	

Add the following standard

MRZ-SX	**Medium Density Residential Zone Design Guide 2022**	**Activity status when compliance is not achieved:**
Medium Density Residential Zone	For all restricted discretionary, discretionary and non-complying activities under the MRZ rules, applications for resource consent shall include a statement confirming that the relevant design elements from the Central Otago Medium Density Residential Zone Design Guide 2022 have been considered.	**NC**

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
	Rule MRZ-SX does not apply to rule [*the unreferenced rule attenuating state highway noise*].	
General Submission: Large Lot Residential Zone (LLRZ)		
Large Lot Residential Zone Introductory Text	Amend	The introductory text refers to the location of settlement zones, including Lowburn (which is approximately 32ha), and which contains a smaller number of existing houses than Pisa Moorings. Pisa Moorings is not referred to specifically but could be intended to be included in the reference to isolated areas of existing large lot residential near Lake Dunstan. There are four small areas of Large Lot Residential Zone located along the eastern margin of Lake Dunstan, however the existing (i.e. residential zoned) area of Pisa Moorings is located on the western side of Lake Dunstan and the existing LLR zone comprises an area of approximately 65ha (the portion of Low Density Residential is approximately 9ha). Pisa Moorings is not an isolated area and nor is it part of Lowburn. The introductory text needs to be amended to acknowledge and include Pisa Moorings, and to provide more certainty as to the isolated areas near Lake Dunstan. Amend the Introductory text as follows (underline to show additions and strikethrough to show deletions): Introduction The Large Lot Residential Zone (LLRZ) is located in some of the outer residential areas within the townships of Alexandra, Clyde and Cromwell, as well as in Bannockburn, Pisa Moorings, Lowburn and Roxburgh, along with some isolated areas of existing large lot residential ~~near~~ located along the eastern side of Lake Dunstan.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
Large Lot Residential Zone Introductory Text	Amend	The references to the anticipated densities in the 3rd and 4th paragraphs require greater certainty as to what the slightly higher or lower densities are. The reference to historic may be better replaced with the phrase 'existing' so it is not conflated historic heritage. Amend the Introductory text as follows (underline to show additions and strikethrough to show deletions): … The ~~density~~ densities within the Large Lot Residential Zone ~~is~~ are the lowest of all the residential zones, providing for detached houses on large sites, maintaining a high open space to built form ratio. Generous setbacks are also provided from the road and neighbouring boundaries. Buildings are expected to maintain these existing low density characteristics, minimise the effects of development on adjoining sites and integrate with the surrounding area. The focus of the zone is residential activity at a density of 2000m², with limited commercial and community facilities anticipated. Within Precinct 1, ~~slightly~~ higher densities of 1000m² are anticipated, which reflects the ~~historic~~ existing pattern of development. Within Precincts 2 ~~&~~ and 3, a lower density of 3000m² and 6000m² respectively is anticipated, to maintain the existing amenity and character in these areas.
LLRZ-P3 Home Business	Amended	The use of a '/' does not provide sufficient certainty and makes it unclear whether the policy intends that the matters are exclusive or inclusive of each other. It is understood that the intent of the policy is both that home occupations are compatible and that it will not compromise the amenity of adjoining sites. Amend the text as follows (underline to show additions and strikethrough to show deletions):

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
		Provide for home businesses where: 1. they are ancillary to a residential activity; 2. they are consistent the anticipated character, amenity values and purpose of the zone; and 3. the effects of the activity, including its scale, hours of operation, parking and vehicle manoeuvring are compatible with ~~/~~ and do not compromise the amenity of adjoining sites.
LLRZ-P5 Other non-residential activities	Amend	The policy refers to 'other' non residential activities however the only outstanding non-residential activity otherwise specified in the other policies is Policy LLRZ-P4 which relates to retirement villages. The policy therefore, applies to every other non-residential activity. The policy's preamble does not sufficiently contemplate the ability for appropriate non-residential activities to establish, and is unnecessarily strict without sufficient justification. Non residential activities also include community activities and activities that serve to fulfil the needs of the community. The expansion of existing non-residential activities does not need to be referenced because any increase to the scale would be treated as a new activity. The policy should not refer to the 'anticipated amenity'. Amenity values will vary across the zone based on the different environments and the varying densities of the identified precincts. The policy should refer to the environment in the context of the other objectives for the LLRZ. Amend the text as follows (underline to show additions and strikethrough to show deletions): ~~Avoid other non-residential activities and buildings, including the expansion of existing non-residential activities and buildings, unless:~~ Provide for non-residential activities that do not undermine residential amenity values or the viability of any Business

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
		Resource Area, including by: 1. minimising any adverse effects of the activity, including noise~~, do not compromise the anticipated amenity of the surrounding area~~; and 2. ensuring the nature, scale and intensity of the activity is compatible with the ~~anticipated~~ character and qualities of the zone and surrounding area; and 3. the activity is of a nature and scale that ~~meet~~ serves the needs of the local community and does not undermine the viability of the Business Resource Areas; and 4. the surrounding area retains a predominance of residential activities, and for adjoining Residential Zoned properties, a sense of amenity, security and companionship is maintained; 5. any parking and vehicle manoeuvring provided on-site is appropriately designed; and 6. maintaining road safety and efficiency ~~is maintained~~.
LLRZ-R10	Oppose	Extraction The rules refer to extraction but do not refer to fill. Placement of fill can have the same adverse effects as extraction. Clarification is sought (and amendments to the text) as to the relationship between extraction and other earthworks activities. In addition, the rule conflates volume with area, a 200m² limitation would require that every new house build which is anticipated by the Zone obtains an earthworks resource consent. It is more efficient and practicable to monitor erosion and sediment through the building consent conditions and inspections, as well as general compliance functions of the local authority than impose a very small permitted area limitation of 200m². The rule should more readily permit earthworks but subject to standards to control erosion and sediment. The reference to the Auckland Council Guideline Document GD2016/005 is consistent with the Otago Regional Plan: Water for Otago (Plan Change 8 provisions) Rule 14.5.1.1. The matters of discretion also would be better refined to refer to the urban environment only becuase landscape character is not relevant in an urban context. Mitigation is an inherent part of a resource consent and need not be referred to in the matters of discretion, in addition this method also creates an inconsistency with all other matters of discretion which do not list ‘mitigation measures’.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**

Amend the text as follows (underline to show additions and strikethrough to show deletions):

LLRZ-R10	**~~Extraction~~ Earthworks**	
Large Lot Residential Zone	**Activity Status: PER** **Where:** 1. Any extraction or fill of material shall not exceed 1m in depth within 2m of any site boundary; and 2. The maximum volume ~~or~~ ~~area~~ of land excavated within any site in any 12-month period does not exceed 200m^{2}3 per site. 3. Erosion and sediment control measures must be implemented and maintained during earthworks to minimise the amount of sediment exiting the site, entering water bodies, and stormwater networks. Note: Compliance with this standard is generally deemed to be compliance with Erosion and Sediment Control Guide for Land Disturbing Activities in the	**Activity status when compliance is not achieved with R10.1 – R10.2: RDIS** **Matters of discretion are restricted to:** 1. The location, volume and area of earthworks. 2. The effect on amenity values or safety of neighbouring properties. 3. The effect on water bodies and their margins. 4. The impact on visual amenity ~~and landscape character~~. 5. Any effects on the road network arising from the excavation. 6. Any effects on archaeological, heritage or cultural values. ~~7. Any mitigation measures proposed.~~

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
		Auckland region. Auckland Council Guideline Document GD2016/005.
LLRZ-R11	Support	Rule LLRZ-11 identifies that any activity not otherwise specified is a discretionary activity. On the basis that the activity rules do not list other activities which may be appropriate such as education activities, the rule is supported in favour of a non-complying activity status coupled with the lack of identification of other activities which would be appropriate as discretionary activities.
General Submission: Low Density Residential Zone (LRZ)		
LRZ Introductory text	Amend	The existing LRZ at Pisa Moorings should be identified in the introductory text. The existing LRZ at Pisa Moorings is approximately 10ha, which is similar in area to some of the other existing LRZ areas identified in the introductory text being Ettrick (approximately 12ha), Ophir (approximately 16ha), St Bathans (6ha) and Patearoa (14ha). Alexandra and Cromwell aside, the larger settlements are Roxburgh which is approximately 70ha, Millers Flat (approximately 35ha), Ranfurly (80ha), and Omakau (36ha). Amend the Introductory text as follows (underline to show additions and strikethrough to show deletions): LOW DENSITY RESIDENTIAL ZONE Introduction The Low Density Residential Zone covers the majority of the residential areas in the townships of Alexandra, Clyde, ~~and~~ Cromwell and Pisa Moorings, as well as all of the residential areas in the townships of Roxburgh, Ettrick, Millers Flat, Omakau, Ophir, St Bathans, Naseby, Ranfurly and Patearoa.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
		This zone provides for traditional suburban housing, comprised predominately of detached houses on sections with ample on-site open space, and generous setbacks from the road and neighbouring boundaries. Buildings are expected to maintain these existing low density characteristics, minimise the effects of development on adjoining sites and integrate with the surrounding area. While the focus of the zone is residential, some commercial and community facilities are anticipated, where they support the local residential population and are compatible with the character and amenity values of the zone. The Future Growth Overlay identifies any area that has been signalled in the Vincent Spatial Plan for low density residential zoning, in future. The provisions applying to this area are those of the underlying zoning, and therefore a Plan Change will be required to rezone this area in future. However, the Overlay is intended to identify any location where future growth is anticipated, when further supply of residential land is required, and provided that there is capacity within the reticulated water and wastewater networks to service the additional development.
LRZ-P2	Amend	LRZ-P2 states: *Enable residential activities within a range of residential units types and sizes.* However, the policy does not further explain how a range of residential unit types and sizes can enable residential activity, particularly given that the proposed minimum allotment size of 500m² is fixed. The utility of the policy is questioned given that the only guiding text is the introduction statement which refers to the zone being for traditional suburban housing, comprised predominantly of detached houses. If the intent of the policy is to enable what is contemplated in the permitted standards, the policy could be improved and amended as follows to include minor residential units and contemplate a range of varying types of activity.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
		Amend the policy as follows (underline to show additions and strikethrough to show deletions): ~~Enable residential activities within a range of residential units types and sizes.~~ <u>Enable a diversity of residential activity, including through permitting:</u> 1. <u>residential density up to 500m²;</u> 2. <u>minor residential units;</u> 3. <u>building height up to 7.5m, with provision for building heights to 8.5m subject to LRZ-P1; and</u> 4. <u>providing for relocated buildings.</u>
LRZ-P5 Other non-residential activities	Amend	The policy refers to 'other' non residential activities however the only outstanding non-residential activity otherwise specified in the other policies is Policy LRZ-P4 which relates to retirement villages. The policy, therefore, applies to every other non-residential activity. The policy's preamble does not sufficiently contemplate the ability for appropriate non-residential activities to establish, and is unnecessarily strict without sufficient justification. Non residential activities also include community activities and activities that serve to fulfil the needs of the community. The expansion of existing non-residential activities does not need to be referenced because any increase to the scale would be treated as a new activity. The policy should not refer to the 'anticipated amenity'. Amenity values will vary across the zone based on the different environments. The policy should refer to the environment in the context of the other objectives for the LLRZ. The policy is also drafted exactly the same as Policy LLRZ-P5 for the Large Lot Residential Zone, however the LRZ provides a framework for 'local convenience retail' which should be better reflected in the policies.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	The reasons for my views and the decision I seek from the local authority are:
		Amend the text as follows (underline to show additions and strikethrough to show deletions, text in red to reflect the submitters requested rezoning amendments): ~~Avoid other non-residential activities and buildings, including the expansion of existing non-residential activities and buildings, unless:~~ Provide for Local Convenience Retail and other non-residential activities that do not undermine the residential amenity values or the viability of any Business Resource Area, including by: 1. minimising any adverse effects of the activity, including noise~~, do not compromise the anticipated amenity of the surrounding area~~; and 2. ensuring the nature, scale and intensity of the activity is compatible with the ~~anticipated~~ character and qualities of the zone and surrounding area; and 3. the activity is of a nature and scale that ~~meet~~ serves the needs of the local community and does not undermine the viability of the Commercial Precincts or Business Resource Areas; and 4. the surrounding area retains a predominance of residential activities, and for adjoining Residential Zoned properties, a sense of amenity, security and companionship is maintained; 5. any parking and vehicle manoeuvring provided on-site is appropriately designed; and 6. maintaining road safety and efficiency ~~is maintained~~.
Rule LRZ-R2	Amend	Minor Residential Unit The permitted status for minor residential units are supported. The area limit on the minor unit itself can be supported to ensure the site is not overdeveloped and the intensity and nature and scale of activities do not result in adverse effects. However, the requirement for any garage to be limited

<table>
<tr><td>The specific provisions of the proposal that my submission relates to are:</td><td>I support or oppose the specific provisions or wish to have them amended.</td><td>The reasons for my views and the decision I seek from the local authority are:</td></tr>
<tr><td></td><td></td><td>to 20m² is not necessary because the building coverage rules limit the overall coverage and intensity of activities on a site. The requirement for a garage to be 20m² may give rise to arbitrary identification of garage space (i.e. where the minor residential unit is attached to the principal unit or within a garage loft) serves no resource management purpose and would not assist with achieving the objectives of the LRZ.

Amend the text as follows (underline to show additions and strikethrough to show deletions):

<table>
<tr><td>LRZ-R2</td><td colspan="2">Minor Residential Unit</td></tr>
<tr><td>Low Density Residential Zone</td><td>Activity Status: PER
Where:
1. There is a maximum of one minor residential unit per site;
2. The maximum floor area of the minor residential unit is 70m2 ~~or 90m2 including~~ excluding any garage or other accessory building; and
3. The minor residential unit shall use the same servicing connections and accessway as the principal residential unit.

And the activity complies with the following rule requirements:
LRZ-S2 to LRZ-S7.</td><td>Activity status when compliance is not achieved with R2.1: NC

Activity status when compliance is not achieved with R2.2 or R2.3: DIS

Activity status when compliance with rule requirement(s) is not achieved:
Refer to Rule Requirement Table.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>The specific provisions of the proposal that my submission relates to are:</th><th>I support or oppose the specific provisions or wish to have them amended.</th><th>The reasons for my views and the decision I seek from the local authority are:</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>LRZ-R10 Low Density Residential Zone</td><td>Amend</td><td>
The rules refer to extraction but do not refer to fill. Placement of fill can have the same adverse effects as extraction.

Clarification is sought (and amendments to the text) as to the relationship between extraction and other earthworks activities. In addition, the rule conflates volume with area, a 200m² limitation would require that every new house build which is anticipated by the Zone obtains an earthworks resource consent.

It is more efficient and practicable to monitor erosion and sediment through the building consent conditions and inspections, as well as general compliance functions of the local authority than impose a very small permitted area limitation of 200m².

The rule should more readily permit earthworks but subject to standards to control erosion and sediment. The reference to the Auckland Council Guideline Document GD2016/005 is consistent with the Otago Regional Plan: Water for Otago (Plan Change 8 provisions).

The matters of discretion also would be better refined to refer to the urban environment only and landscape character is not relevant in an urban context. Mitigation is an inherent part of a resource consent and need not be referred to in the matters of discretion, this method also creates an inconsistency with all other matters of discretion which do not list ‘mitigation measures’.

Amend the text as follows (underline to show additions and strikethrough to show deletions):
<table>
<tr><td>LRZ-R10</td><td colspan="2"><s>Extraction</s> Earthworks</td></tr>
<tr><td>Low Density Residential Zone</td><td>Activity Status: PER
Where:
1. Any extraction or fill of material shall not exceed 1m</td><td>Activity status when compliance is not achieved with R10.1 – R10.2: RDIS
Matters of discretion are restricted to:
1. The location, volume and area of earthworks.</td></tr>
</table>
</td></tr>
</table>

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**			
			in depth within 2m of any site boundary; and 2. The maximum volume ~~or area~~ of land excavated within any site in any 12-month period does not exceed 200m~~²~~**³** per site. <u>3.Erosion and sediment control measures must be implemented and maintained during earthworks to minimise the amount of sediment exiting the site, entering water bodies, and stormwater networks.</u> <u>Note: Compliance with this standard is generally deemed to be compliance with Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland region. Auckland Council Guideline Document GD2016/005</u>.	2. The effect on amenity values or safety of neighbouring properties. 3. The effect on water bodies and their margins. 4. The impact on visual amenity ~~and landscape character~~. 5. Any effects on the road network arising from the excavation. 6. Any effects on archaeological, heritage or cultural values. ~~7. Any mitigation measures proposed.~~	
LRZ-R14	Support	Rule LRZ-14 identifies that any activity not otherwise specified is a discretionary activity. On the basis that the activity rules do not list other activities which may be appropriate such as education activities, the rule is supported in favour of a non-complying activity status coupled with the lack of identification of other activities which would be appropriate as discretionary activities.			

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
LRZ-S2	Support	Support the permitted height of 7.5 with a restricted discretionary resource consent pathway up to 8.5m.
LRZ-S5 or unspecified rule	Amend	State Highway Noise Mitigation The rule beneath LRZ-S5 is incongruent with the formatting style of the rest of the chapter text. The left hand column is the 'place' context qualifier but this column is reserved for the rule identifier. In the absence of any further text the rule is incongruent with the 'setback from road boundary' subheading because the rule does not require a setback, but attenuation treatment to buildings within a certain distance from the road. The text at the end of the rule states" *This shall take account of any increases in noise from projected traffic growth during a period of not less than 10 years from the commencement of construction of the development.* It is unsure if this is an advice note identifying that the 80m setback takes into account projected growth or whether the rule itself is malleable and subject to projected traffic growth. If the matter is the former, it should be an advice note, if it is the latter it is not appropriate to include this type of arbitrary discretion in a rule where the projected growth is not defined nor referenced elsewhere. The Submitter supports the intent of the rule providing it is appropriate for the context of the District and in particular land at Pisa Moorings, subject to clarification and drafting improvements. The New Zealand Transport Agency's / Waka Kotahi *Guide to the management of effects on noise sensitive land use near to the state highway network* (Version 1.0 dated September 2015), which states that dwellings within 100m of a State Highway need to be designed and constructed to achieve an internal noise level of 40 dB LAeq (24h) for living and sleeping spaces. If windows must be closed to achieve the internal noise level of 40 dB LAeq (24h), the building must be designed, constructed and maintained with a ventilation and cooling system. It is therefore uncertain why a noise level of 35 dB LAeq (24h) has been identified for bedrooms.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
		Amend the text as follows (underline to show additions and strikethrough to show deletions):

LLRZ-S6	**State Highway Road Noise Attenuation**	
Low Density Residential Zone	**Activity Status: PER** **Where:** New residential buildings shall be designed and constructed to meet noise performance standards for noise from traffic on the State Highway that will not exceed ~~35dBA Leq (24hr) in bedrooms and~~ 40dBA Leq (24hr) for ~~other~~ habitable rooms in accordance with the satisfactory sound levels recommended by Australian and New Zealand Standard AS/NZ2107:2000 Acoustics – Recommended design sound levels and reverberation times for building interiors. ~~This shall take account of any increases in noise from projected traffic growth during a period of not less than 10 years from the commencement of construction of the development.~~	**RDIS** **Matters of discretion are restricted to:** 1. The potential for reverse sensitivity effects on the State Highway. 2. The effect on amenity values and sleep of occupants. or safety of neighbouring properties.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	The reasons for my views and the decision I seek from the local authority are:
Medium Density Residential Zone (MRZ)		
MRZ Introductory text	Amend	The introductory text be amended to include the proposed MRZ at Pisa Moorings. Amend the text as follows (underline to show additions and strikethrough to show deletions, red text is associated with the rezoning): MEDIUM DENSITY RESIDENTIAL ZONE Introduction The Medium Density Residential Zone is located within the townships of Alexandra, Clyde, ~~and~~ Cromwell and Pisa Moorings in areas that are within a walkable distance of commercial areas or other key community facilities. A more intensive density of development is anticipated in this zone compared with the ~~other~~ Large Lot Residential and Low Density ~~r~~Residential zones ~~and it is intended to develop over time~~ to provide for a ~~range~~ diversity of housing options, ~~including more intensive options,~~ to meet the ~~diverse~~ needs of the community, including opportunities for ~~provide affordable options~~ better housing affordability. An increase in residential density can contribute to ~~and provide~~ a greater critical mass to support commercial and community facilities. While providing for more intensive density, buildings within this zone are expected to be well-designed to ensure that they integrate with the surrounding area, minimise the effects of development on adjoining sites and still provide a good quality living environment for residents. Because of the greater densities anticipated in this zone, residential development will be subject to ~~The provisions also provide a pathway for the approval of~~ a Comprehensive Residential Development Plan, which enables ~~allowing for~~ an integrated and ~~master planning~~ master planned approach to be undertaken on larger sites, including at higher densities, where this still achieves ~~the~~ quality built form outcomes ~~sought~~.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	The reasons for my views and the decision I seek from the local authority are:
		Approval of a Comprehensive Residential Development Plan provides certainty regarding the appropriate function and form of an overall development, and ~~can~~ will precede, or be considered concurrently with subdivision consents and land use consents for residential units. Precinct 1 is located within Clyde. Because Precinct 1 is within or near the Clyde Heritage Precinct, development within this area has the potential to impact on the character of the Heritage Precinct. Therefore, a lower height limit is applied in Precinct 1, and development within the Precinct needs to be considered in terms of its relationship with the Heritage Precinct. Commercial Precincts identify where commercial and community facilities are encouraged to establish that are of a scale which is compatible with residential amenity and character and serve a local convenience purpose. While the focus of the zone is residential activity, some commercial and community facilities are anticipated, where they support the local residential population and are compatible with the purpose, character and amenity values of the zone. The Future Growth Overlay identifies any area that has been signalled in the Vincent Spatial Plan for medium density residential zoning, in future. The provisions applying to this area are those of the underlying zoning, and therefore a Plan Change will be required to rezone this area in future. However, the Overlay is intended to identify any location where future growth is anticipated, when further supply of residential land is required, and provided that there is capacity within the reticulated water and wastewater networks to service the additional development.
MRZ-P1	Amend	Policy MRZ-P1.3. requires on-site parking that is discretely integrated. It is unlikely to be practicable, despite best intentions, to hide carparking where the Zone anticipates sites as small as 200m², but still require a minimum amount of carparking. Provisions encouraging the sensitive location of carparking are better addressed in the comprehensive development policy MRZ-P2. Policy limb (4) requires a level of openness around buildings. This policy limb will stymie the ability for housing variety and efficiencies, such as terrace housing typologies and is better addressed through the comprehensive housing policy MRZ-P2.

<table>
<tr><th>The specific provisions of the proposal that my submission relates to are:</th><th>I support or oppose the specific provisions or wish to have them amended.</th><th>The reasons for my views and the decision I seek from the local authority are:</th></tr>
<tr><td></td><td></td><td>The policy should refer to the outcomes of the design guidelines.

Amend the policy as follows (underline to show additions and strikethrough to show deletions):

<table>
<tr><td>MRZ-P1</td><td>Built Form</td></tr>
<tr><td colspan="2">Ensure that development within the Medium Density Residential Zone:
<u>1. Considers the relevant design elements of the Central Otago Medium Density Residential Zone Design Guide 2022;</u>
1. actively and safely addresses road frontages and public open spaces;
2. provides reasonable levels of privacy, outlook and adequate access to sunlight;
3. provides safe and appropriate access and on-site parking ~~that is discretely integrated~~;
~~4. maintains a level of openness around and between buildings that reflect a moderate scale and intensity of built form that does not unreasonably dominate adjoining sites;~~
5. provides visual interest;
6. is managed so that relocated buildings are reinstated to an appropriate state of repair within a reasonable timeframe;
7. provides sufficient and usable common and private open space and storage space for residents;
8. maintains the safe and efficient operation of <u>shared</u> accessways and roads;
9. mitigates visual effects through screening of storage areas and provision of landscaping;
10. incorporates Crime Prevention Through Environmental Design (CPTED) principles to achieve a safe and secure environment;
11. encourages water efficiency measures; and
12. within Precinct 1, does not detract from the character of the Clyde Heritage Precinct.</td></tr>
</table>
</td></tr>
<tr><td>MRZ-P2 And residential</td><td>Amend</td><td>Policy MRZ-P2 relates to comprehensive residential development, it understood that Rules MRZ-R1 requires a resource consent where more than two residential units are proposed on a site, while Rule MRZ-R2 requires a resource consent for a residential comprehensive development.</td></tr>
</table>

<table>
<tr><th>The specific provisions of the proposal that my submission relates to are:</th><th>I support or oppose the specific provisions or wish to have them amended.</th><th>The reasons for my views and the decision I seek from the local authority are:</th></tr>
<tr><td>design guidelines and comprehensive development generally.</td><td></td><td>
The policy framework and matters of do not refer to the design guidelines for medium residential development or comprehensive residential development, prepared by Boffa Miskell which accompanied information to Council to resolve to notify PC19.
Policies MRZ-P1 and P2 are unlikely to be satisfactorily implemented without additional objective guidance from appropriate guidelines.
It is considered that the success of the MRZ and concept of comprehensive residential development is contingent on supporting guidance such as appropriate design. It is requested that design guidelines and guidance associated with commercial residential development are provided and incorporated by reference into the District Plan.
The subdivision provisions also need to provide an appropriate consenting pathway to take into account the design guidelines and comprehensive residential development.
Amend the policy as follows (underline to show additions and strikethrough to show deletions), including the addition of appropriate guidelines and that these are incorporated by reference:
<table>
<tr><th>MRZ-P2</th><th>Comprehensive Development</th></tr>
<tr><td colspan="2">Provide for comprehensively designed, medium density residential development on larger sites, at higher densities, where it:
<u>1. Considers the relevant design elements of the Central Otago Medium Density Residential Zone Design Guide 2022;</u>
1. <s>provides</s> <u>enables opportunity for a diversity of</u> housing <s>choice</s>;
2. is designed to respond positively to its context and the features of the site;
3. is compatible with the urban form of nearby areas;
4. provides a well-connected movement network and usable public open spaces and streetscapes; and
5. achieves the built form outcomes in MRZ-P1.</td></tr>
</table>
</td></tr>
</table>

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
MRZ-P3	Amend	LRZ-P2 states: *Enable residential activities within a range of residential units types and sizes.* However, the policy does not further explain how a range of residential unit types and sizes can enable residential activity, particularly given that the proposed minimum allotment size of 200m² is fixed. Amend the policy as follows (underline to show additions and strikethrough to show deletions): ~~Enable residential activities within a range of residential units types and sizes.~~ <u>Enable a diversity of residential activity, including through permitting:</u> 5. <u>residential density up to 200m² which is consistent with the outcomes of the relevant design elements of the Central Otago Medium Density Residential Zone Design Guide 2022;</u> 6. <u>minor residential units;</u> 7. <u>building height up to 11m; and</u> 8. <u>providing for relocated buildings.</u>
MRZ-P6 Other non-residential activities	Amend	The policy refers to 'other' non residential activities however the only outstanding non-residential activity otherwise specified in the other policies is Policy MRZ-P5 which relates to retirement villages. The policy therefore, applies to every other non-residential activity. The policy's preamble does not sufficiently contemplate the ability for appropriate non-residential activities to establish, and is unnecessarily strict without sufficient justification. Non residential activities also include community activities and activities that serve to fulfil the needs of the community.

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
		The expansion of existing non-residential activities does not need to be referenced because any increase to the scale would be treated as a new activity. The policy should not refer to the 'anticipated amenity'. Amenity values will vary across the zone based on the different environments. The policy should refer to the environment in the context of the other objectives for the LLRZ. The policy is also drafted exactly the same as Policies LLRZ-P5 and LRZ-P5 for the Large Lot Residential Zone and Low Density residential Zone, however the MRZ should provide great contemplation for mixed use activities because of the higher densities of residents encouraged. Amend the text as follows (underline to show additions and strikethrough to show deletions, text in red to reflect the submitters rezoning amendments): ~~Avoid other non-residential activities and buildings, including the expansion of existing non-residential activities and buildings, unless:~~ Provide for Local Convenience Retail and other non-residential activities that do not undermine the residential amenity values or the viability of any Business Resource Area, including by: 1. minimising any adverse effects of the activity, including noise~~, do not compromise the anticipated amenity of the surrounding area~~; and 2. ensuring the nature, scale and intensity of the activity is compatible with the ~~anticipated~~ character and qualities of the zone and surrounding area; and 3. the activity is of a nature and scale that ~~meet~~ serves the needs of the local community and does not undermine the viability of the Commercial Precincts or Business Resource Areas; and 4. the surrounding area retains a predominance of residential activities, and for adjoining Residential Zoned properties, a sense of amenity, security and companionship is maintained; 5. any parking and vehicle manoeuvring provided on-site is appropriately designed; and

<table>
<tr><th>The specific provisions of the proposal that my submission relates to are:</th><th>I support or oppose the specific provisions or wish to have them amended.</th><th>The reasons for my views and the decision I seek from the local authority are:</th></tr>
<tr><td></td><td></td><td>6. <u>maintaining</u> road safety and efficiency <s>is maintained</s>.</td></tr>
<tr><td>Rule
MRZ-P1</td><td>Amend</td><td>The intent of the comprehensive residential rule is conditionally supported. However, the rule and intended outcomes needs to be directly supported by design guidelines and appropriate matters of discretion. A proposed standard is requested to include consideration of the Design Guide (as set out above).

It is also unclear how the rule would be engaged and what the threshold of activity is which engages a requirement for a resource consent. The drafting of the rule needs to be amended to ensure that the rule is a use of land in terms of section (9) of the RMA. The following amendments are requested to also integrate the rule with subdivision (Rule SUB-R5.1).

Amend the text as follows (underline to show additions and strikethrough to show deletions, text in red to reflect the submitters rezoning amendments):

<table>
<tr><th>MRZ-R2</th><th>Comprehensive Residential Development Master Plan</th></tr>
<tr><td>Medium Density Residential Zone</td><td><u>The use of land for residential activity which results in two or more residential units.</u>

Activity Status: RDIS
Matters of discretion are restricted to:

a. ...
b. …</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td>The specific provisions of the proposal that my submission relates to are:</td><td>I support or oppose the specific provisions or wish to have them amended.</td><td>The reasons for my views and the decision I seek from the local authority are:</td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Rule MRZ-R3</td><td>Amend</td><td>
Minor Residential Unit

The permitted status for minor residential units is supported. However standard (3) in Rule MRZ-R3 requires that the minor residential unit shall use the same servicing connections as the principal residential unit.

The area limit on the minor unit itself can be supported to ensure the site is not overdeveloped and the intensity and nature and scale of activities do not result in adverse effects. However, the requirement for any garage to be limited to 20m² is not necessary because the building coverage rules limit the overall coverage and intensity of activities on a site. The requirement for a garage to be 20m² may give rise to arbitrary identification of garage space (i.e. where the minor residential unit is attached to the principal unit or within a garage loft) serves no resource management purpose and would not assist with achieving the objectives of the LRZ.

Amend the text as follows (underline to show additions and strikethrough to show deletions):

<table>
<tr><td>MRZ-P3</td><td colspan="2">Minor Residential Unit</td></tr>
<tr><td>Medium Density Residential Zone</td><td>Activity Status: PER
Where:
1. There is a maximum of one minor residential unit per site;
2. The maximum floor area of the minor residential unit is 70m2 ~~or 90m2 including~~ <u>excluding</u> a<u>ny</u> garage <u>or other accessory building;</u> and
3. The minor residential unit shall use the same servicing</td><td>Activity status when compliance is not achieved with R3.1: NC

Activity status when compliance is not achieved with R3.2 or R3.3: DIS

Activity status when compliance with rule requirement(s) is not achieved:
Refer to Rule Requirement Table.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>The specific provisions of the proposal that my submission relates to are:</th><th>I support or oppose the specific provisions or wish to have them amended.</th><th>The reasons for my views and the decision I seek from the local authority are:</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td>connections and accessway as the principal residential unit.

And the activity complies with the following rule requirements:
LRZ-S2 to LRZ-S7.</td><td></td></tr>
</table>
</td></tr>
<tr><td>MRZ-11 Medium Density Residential Zone</td><td>Amend</td><td>The rules refer to extraction but do not refer to fill. Placement of fill can have the same adverse effects as extraction.
Clarification is sought (and amendments to the text) as to the relationship between extraction and other earthworks activities. In addition, the rule conflates volume with area, a 200m² limitation would require that every new house build which is anticipated by the Zone obtains an earthworks resource consent.

It is more efficient and practicable to monitor erosion and sediment through the building consent conditions and inspections, as well as general compliance functions of the local authority than impose a very small permitted area limitation of 200m².

The rule should more readily permit earthworks but subject to standards to control erosion and sediment. The reference to the Auckland Council Guideline Document GD2016/005 is consistent with the Otago Regional Plan: Water for Otago (Plan Change 8 provisions).

The matters of discretion also would be better refined to refer to the urban environment only and landscape character is not relevant in an urban context. Mitigation is an inherent part of a resource consent and need not be referred to in the matters of discretion, this method also creates an inconsistency with all other matters of discretion which do not list ‘mitigation measures’.

Amend the text as follows (underline to show additions and strikethrough to show deletions):</td></tr>
</table>

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**			
		MRZ-R11	**~~Extraction~~ Earthworks**		
		Medium Density Residential Zone	**Activity Status: PER** **Where:** 1. Any extraction or fill of material shall not exceed 1m in depth within 2m of any site boundary; and 2. The maximum volume ~~or area~~ of land excavated within any site in any 12-month period does not exceed 200m~~2~~3 per site. 3.Erosion and sediment control measures must be implemented and maintained during earthworks to minimise the amount of sediment exiting the site, entering water bodies, and stormwater networks. Note: Compliance with this standard is generally deemed to be compliance with Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland region. Auckland Council Guideline Document GD2016/005.	**Activity status when compliance is not achieved with R11.1 – R11.2: RDIS** **Matters of discretion are restricted to:** 1. The location, volume and area of earthworks. 2. The effect on amenity values or safety of neighbouring properties. 3. The effect on water bodies and their margins. 4. The impact on visual amenity ~~and landscape character~~. 5. Any effects on the road network arising from the excavation. 6. Any effects on archaeological, heritage or cultural values. ~~7. Any mitigation measures proposed.~~

<table>
<tr><th>The specific provisions of the proposal that my submission relates to are:</th><th>I support or oppose the specific provisions or wish to have them amended.</th><th>The reasons for my views and the decision I seek from the local authority are:</th></tr>
<tr><td></td><td></td><td><table><tr><td></td><td></td><td></td></tr></table></td></tr>
<tr><td>MRZ-S4</td><td>Amend</td><td>Amend the building coverage from 40% to 50%.

<table><tr><th>MRZ-S4</th><th>Building Coverage</th><th>Activity Status where compliance not achieved</th></tr><tr><td>Medium Density Residential Zone</td><td>The building coverage of the net area of any site must not exceed ~~40~~ 50%.</td><td>RDIS
Matters of discretion are restricted to:
a. Compatibility of the built form with the existing or anticipated character of the area.
b. Dominance of built form in the surrounding area.
c. The extent to which a level of openness around and between buildings is retained.
~~d. Any mitigation measures proposed which reduce the adverse effects of the breach.~~</td></tr></table></td></tr>
<tr><td>MRZ-S5 or unspecified rule</td><td>Amend</td><td>The rule beneath MRZ-S5 is incongruent with the formatting style of the rest of the chapter text. The left hand column is the ‘place’ context qualifier but this column is reserved for the rule identifier.</td></tr>
</table>

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**
		In the absence of any further text the rule is incongruent with the 'setback from road boundary' subheading because the rule does not require a setback, but attenuation treatment to buildings within a certain distance from the road. The text at the end of the rule states *This shall take account of any increases in noise from projected traffic growth during a period of not less than 10 years from the commencement of construction of the development.* It is unsure if this is an advice note identifying that the 80m setback takes into account projected growth or whether the rule itself is malleable and subject to projected traffic growth. If the matter is the former, it should be an advice note, if it is the latter it is not appropriate to include this type of arbitrary discretion in a rule where the projected growth is not defined nor referenced elsewhere. The Submitter supports the intent of the rule providing it is appropriate for the context of the District and in particular land at Pisa Moorings, subject to clarification and drafting improvements. The New Zealand Transport Agency's / Waka Kotahi *Guide to the management of effects on noise sensitive land use near to the state highway network* (Version 1.0 dated September 2015), which states that dwellings within 100m of a State Highway need to be designed and constructed to achieve an internal noise level of 40 dB LAeq (24h) for living and sleeping spaces. If windows must be closed to achieve the internal noise level of 40 dB LAeq (24h), the building must be designed, constructed and maintained with a ventilation and cooling system. It is therefore uncertain why a noise level of 35 dB LAeq (24h) has been identified for bedrooms. Amend the text as follows (underline to show additions and strikethrough to show deletions): **MRZ-S6** | **State Highway Road Noise Attenuation** **Low Density Residential Zone** | **Activity Status: PER** **Where:** | **RDIS**

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	**The reasons for my views and the decision I seek from the local authority are:**		
			New residential buildings shall be designed and constructed to meet noise performance standards for noise from traffic on the State Highway that will not exceed ~~35dBA Leq (24hr) in bedrooms and~~ 40dBA Leq (24hr) for ~~other~~ habitable rooms in accordance with the satisfactory sound levels recommended by Australian and New Zealand Standard AS/NZ2107:2000 Acoustics – Recommended design sound levels and reverberation times for building interiors. ~~This shall take account of any increases in noise from projected traffic growth during a period of not less than 10 years from the commencement of construction of the development.~~	**Matters of discretion are restricted to:** 1. The potential for reverse sensitivity effects on the State Highway. 2. The effect on amenity values and sleep of occupants. or safety of neighbouring properties.

<table>
<tr><td>The specific provisions of the proposal that my submission relates to are:</td><td>I support or oppose the specific provisions or wish to have them amended.</td><td>The reasons for my views and the decision I seek from the local authority are:</td></tr>
<tr><td colspan="3">Residential Zones Subdivision</td></tr>
<tr><td>Sub-R5</td><td>Support</td><td>The rule requiring a restricted discretionary activity resource consent for a subdivision or more than three lots in the MRZ is supported, however the following amendments are sought to ensure that activities are covered as intended and the relevant guidelines are adhered to:
<table>
<tr><td>SUB-R5</td><td colspan="2">Subdivision <u>resulting in the creation</u> of three or more allotments in the Medium Density Residential Zone</td></tr>
<tr><td>Medium Density Residential Zone</td><td>Activity Status: RDIS
Where:

1. The application for subdivision consent made under this rule shall be submitted concurrently with an application for land use consent under MRZ-R1, or after the grant of a land use consent.

Where the activity complies with the following rule requirements:
SUB-S1, except where a resource consent has been obtained for a Comprehensive Residential Development</td><td>And the activity complies with the following rule requirements:
SUB-S1

Activity status when compliance with rule requirement(s) is not achieved: Refer to Rule Requirement Table.</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>The specific provisions of the proposal that my submission relates to are:</th><th>I support or oppose the specific provisions or wish to have them amended.</th><th>The reasons for my views and the decision I seek from the local authority are:</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td>Plan, and the subdivision is in accordance with that consent.

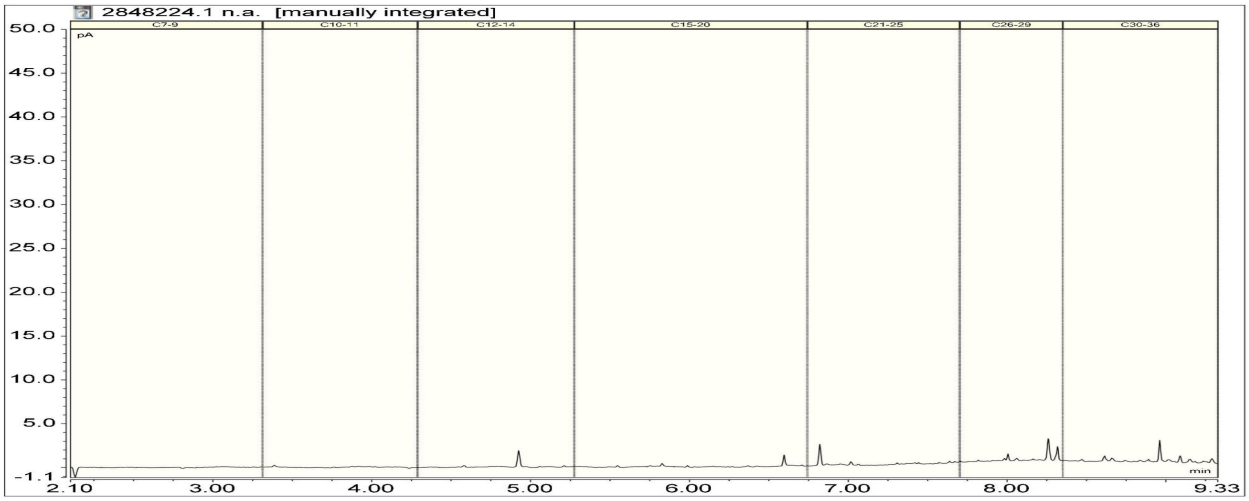
Matters of discretion are restricted to:
1. Those matters set out in SUB-R4.
2. <u>Consideration of the Central Otago Comprehensive Residential Development Design Guidelines 2022.</u></td><td></td></tr>
</table>
</td></tr>
<tr><td>District Plan Map (Operative)</td><td>Support with amendments if necessary</td><td>The southern part of the site contains Scheduled activity ‘127’. District Plan Section 19.3.6 ‘Other Scheduled Activities’ in the District Plan identifies #127 as ‘ Commercial facilities and Shop as defined in Section 18. Community facilities and Shop as defined in Section 18 is a permitted activity on the site identified as Scheduled Activity 127 subject to compliance with Rule 7.3.6(iii) Bulk and Location of Buildings and Rule 12.7 District Wide Rules and Performance Standards and provided that no vehicular access is achieved direct to Pisa Moorings Road’.

The PC 19 provisions do not seek this scheduled activity is struck out, however for the avoidance of doubt it is submitted that Schedule Activity 127 is retained on the basis it is sought to be removed as part of PC 19.

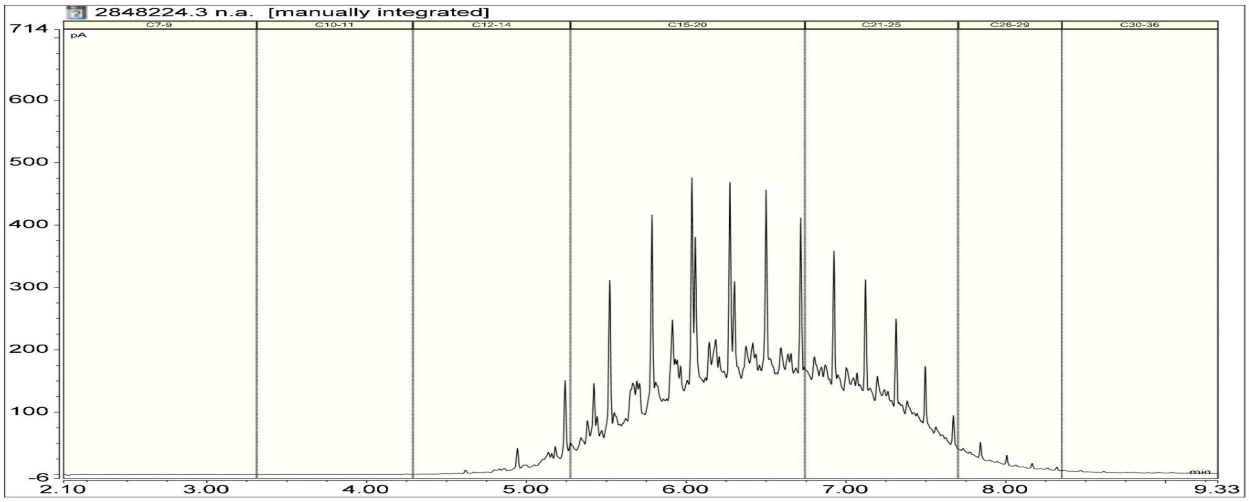
The reference in the provision to Rule 7.3.6(iii) may need to be updated to refer to the revised bulk and location of buildings rules introduced by PC19.</td></tr>
</table>

The specific provisions of the proposal that my submission relates to are:	*I support or oppose the specific provisions or wish to have them amended.*	The reasons for my views and the decision I seek from the local authority are:
		 Excerpt of PC 19 District Plan map identifying Scheduled Activity 127.

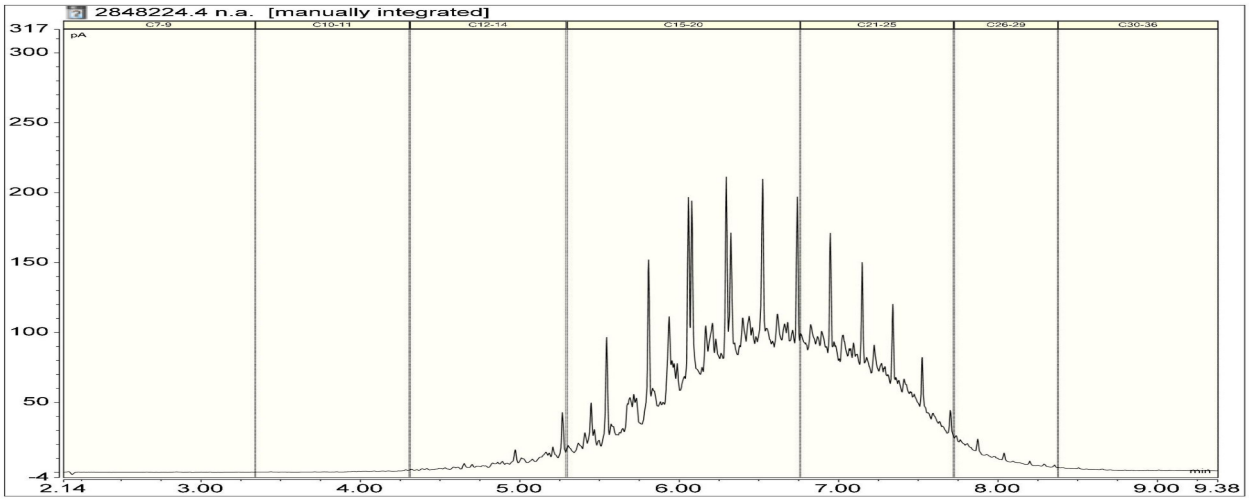
2848224.1
PH1 28-Jan-2022
Client Chromatogram for TPH by FID



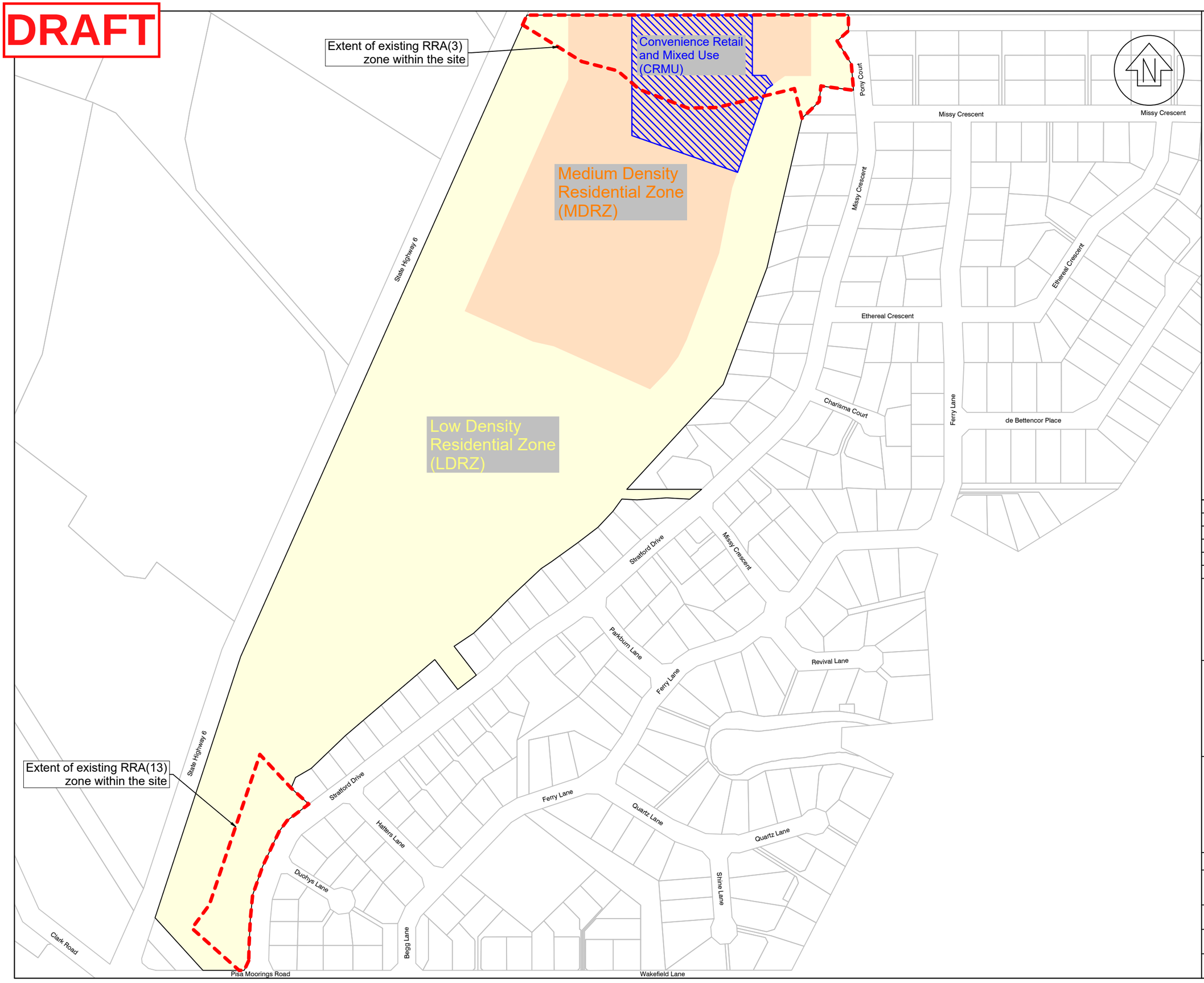
2848224.3
FT1 28-Jan-2022
Client Chromatogram for TPH by FID



2848224.4
FT2 28-Jan-2022
Client Chromatogram for TPH by FID



DRAFT



NOTES:

Revision	Amendments	Date

C. HUGHES & ASSOCIATES LTD

Surveying and Resource Management • Central Otago

CROMWELL
17A MURRAY TERRACE
P.O. BOX 51
03 445 0376

WANAKA
LEVEL 3, 80 ARDMORE ST
P.O. BOX 599
03 443 5052

www.chasurveyors.co.nz

Project:

PROPOSED REZONING

LOT 2 DP 397990, LOT 2 DP 405431

LOT 19 DP 520912 & LOT 112 DP 546309

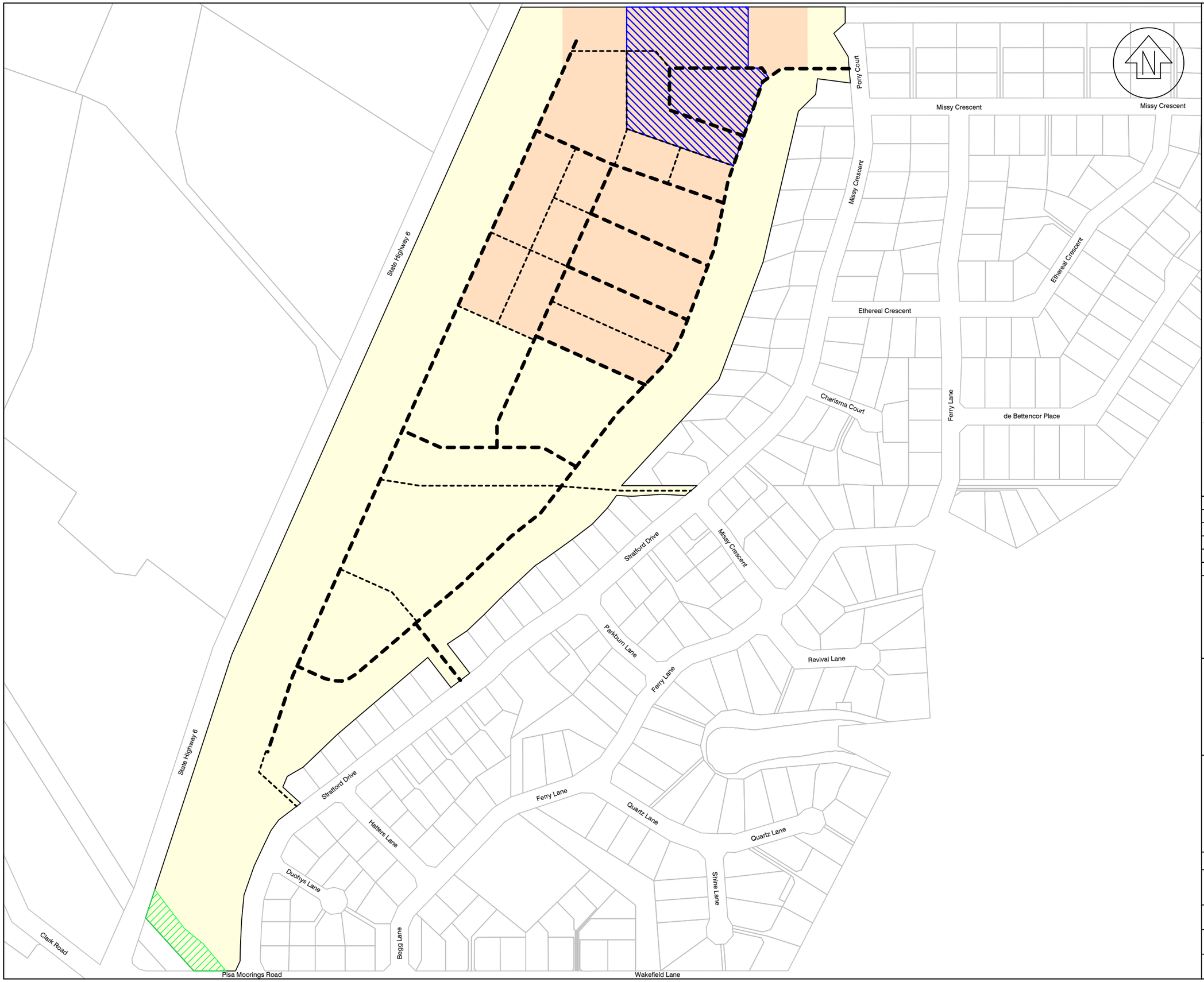
PISA MOORINGS

Title:

PROPOSED REZONING

REZONING PLAN

Scale:			
1:3500 (A3)			
Job No: 6182	Drawn By: ALC	Datum: -	
Drawing No: C1715	Sheet No: 1 OF 1	Revision: A	Date Created: 25/08/2022



NOTES:

1. Roading and pedestrian networks are indicative only and are subject to final land development design.

2. Areas of proposed zones are as follows
Low Density Residential Zone (LDRZ) : 16.8 Ha
Medium Density Residential Zone (MDRZ) : 7.6 Ha
Convenience Retail and Mixed Use (CRMU) : 1.7 Ha
(note MDRZ area includes CRMU area)

LEGEND

- Low Density Residential Zone (LDRZ)
- Medium Density Residential Zone (MDRZ)
- Indicative Roading Network (Road to Vest)
- Indicative Pedestrian Network (Reserve to Vest)
- Building Line Restriction (Flood Risk)
- Convenience Retail and Mixed Use (CRMU)

Revision	Amendments	Date
B	Minor title block ammendments	30/08/2022

C. HUGHES & ASSOCIATES LTD
Surveying and Resource Management • Central Otago

CROMWELL
17A MURRAY TERRACE
P.O. BOX 51
03 445 0376

WANAKA
LEVEL 3, 80 ARDMORE ST
P.O. BOX 599
03 443 5052

www.chasurveyors.co.nz

Project:

PROPOSED REZONING

LOT 2 DP 397990, LOT 2 DP 405431

LOT 19 DP 520912 & LOT 112 DP 546309

PISA MOORINGS

Title:

PROPOSED STRUCTURE

STRUCTURE PLAN

Scale: 1:3500 (A3)

Job No:	Drawn By:	Datum:	
6182	ALC	-	
Drawing No:	**Sheet No:**	**Revision:**	**Date Created:**
C1710	1 OF 1	B	01/08/2022

Pisa Moorings Rezoning

Pisa Moorings Vineyard Limited and Pisa Village Development Limited

PLANNING STATEMENT
SUMMARY OF TECHNICAL REPORTS
ASSESSMENT OF EFFECTS

1 September 2022

Document prepared by:

Town Planning Group (NZ) Limited

Phone: 0800 22 44 70

Email: office@townplanning.co.nz

Web: www.townplanning.co.nz

Offices in Tāhuna, Wānaka, Ōtautahi & Tāmaki Makaurau

Contents

Figures

1 Proposal Summary

1.1 Objectives of the proposal

The objectives of the proposal are to rezone four sites with a collective area of 24.3ha located adjacent to the existing Pisa Moorings residential suburban township, to 16.8ha Low Density Residential zoning, 7.6ha Medium Density Residential zoning and within this 7.6ha area, a local retail/convenience commercial zoning of 1.7ha. The rezoning will provide for residential subdivision and development and small scale commercial zoning while:

- Ensuring subdivision and development is well connected for both vehicles and walking / cycling;
- Ensuring landscape buffers are installed along the State Highway 6 interface, eastern interface with the existing Pisa Moorings neighbourhood, and the quarry located to north of the site;
- Ensuring State Highway road noise is attenuated, and attenuation measures are encouraged to be integrated with landscaping;
- Ensuring retail, community facilities, and commercial activities within the Commercial Precinct are of a nature and scale that maintains amenity and serves the needs of the local Pisa Moorings neighbourhood.

The proposal and the intended built form outcomes are compatible with the Central Otago District Council's (**CODC/Council**) zoning framework proposed as part of Plan Change 19, as the proposal seeks to utilise the Low Density Residential and Medium Density Residential zone frameworks (with some relatively minor amendments as set out in the submission document).

This document should be considered in conjunction with the supporting technical report and the section 32 evaluation.

2 Site and Surrounds

The site is 24.3ha in area and currently zoned (in terms of PC 19) Rural Resource Area, Proposed Large Lot Residential (Precinct 1) and Proposed Low Density Residential. The land is legally described as Lot 2 DP 397990, Lot 2 DP 405431, Lot 19 DP 520912 and Lot 112 DP 546309.

The site is located on the western edge of the existing urban settlement of Pisa Moorings and contains an existing orchard, pack house and worker accommodation in the northern half, and an existing vineyard with supporting infrastructure in the southern half.

The site is predominantly flat with localised undulations, and is at a similar level as the State Highway located along the western boundary of the site. The surrounding areas consist generally of agricultural / horticultural land towards the west, industrial land (Parkburn Quarry) to the north, and residential suburban land developed to a density of large lot residential and low density suburban housing. Lake Dunstan is located approximately 500 metres to the east of the site.

A pond covering approximately 4,000 m2 is located within the site boundary, near to the northern site boundary within the pack house area.

Figure 1. Site and its location between State Highway 6 (west), Pisa Moorings residential area (east and south) a quarry (north) and Lake Dunstan and wider rural environment.

3 District Plan Zoning

The majority of the site is zoned Rural Resource Area, with the exception of an approximately 2.2ha area zoned Residential Resource Area 3 under the Operative District Plan (**ODP)** in the northern part of the site (Large Lot Residential Precinct 1 under PC19), which contains the existing pack house and infrastructure. Also, in the southern part of the site an area of approximately 0.9ha is zoned Residential Resource Area 13 under the ODP, and Low Density Residential under PC19.

The southern part of the site contains a scheduled activity #127. ODP Section 19.3.6 identifies and describes the Scheduled Activity as:

> *'Other Scheduled Activities' identifies Scheduled Activity #127 as ' Commercial facilities and Shop as defined in Section 18. Community facilities and Shop as defined in Section 18 is a permitted activity on the site identified as Scheduled Activity 127 subject to compliance with Rule 7.3.6(iii) Bulk and Location of Buildings and Rule 12.7 District Wide Rules and Performance Standards and provided that no vehicular access is achieved direct to Pisa Moorings Road'.*

The PC 19 provisions do not show this scheduled activity as being struck out and therefore it is being retained[1]. **Figure 2** below is an excerpt of the Council webmap which shows the site with PC 19 zoning and relevant district wide overlays and annotations.

[1] The Submitters have made a submission on the retention of the Scheduled Activity for the avoidance of doubt.

Figure 2. Excerpt of the Council webmap. The blue polygon is Scheduled Activity #127. The green areas are designations and appear to be reserves.

3.1.1 Design and rezoning rationale and built form outcomes

Having considered a range of reasonably practicable options, and the costs and benefits of those options in the accompanying section 32 evaluation, the most appropriate way to meet the objectives of the proposal and the objectives of PC19 are to adopt the PC19 policy, rule and zone framework to the site (with minor amendments as set out in the accompanying submission).

The built form and amenity outcomes of the proposed Low Density Residential Zone (LRZ) and Medium Density Residential Zone (MRZ) are compatible with the built form and associated amenity outcomes of the proposal. While the PC19 MRZ is relatively 'intense' by traditional Medium Density standards in New Zealand, with a minimum lot size of 200m² and building height of 11 metres and 3 storeys, good quality outcomes can be achieved through proposals considering the residential design guidelines and comprehensive residential development criteria proposed as part of PC19. It is also noted that there is no maximum lot size specific for the zone, and a medium density housing form can be achieved by way of two-storey dwellings on lots ranging in size from 300m²- 400m².

In addition, a precinct overlay is proposed within a 1.7ha portion of the proposed MRZ zone to provide for small scale commercial activities that meet the needs of the existing and future Pisa Moorings settlement. While the PC19 framework provides a resource consent pathway for 'local convenience retail' a dedicated precinct is considered the most appropriate option because this will provide a dedicated 'village node' to support the proposed MRZ neighbourhood and surrounding residential area.

A dedicated commercial precinct overlay will also provide certainty to existing and future landowners of the intended land use and the proposed structure plan will provide an indicative roading layout which can ensure good connectivity through the MRZ area, Commercial Precinct and wider site to connect with the existing Pisa Moorings area.

3.1.2 Provisions to be included within the ODP/PC 19 Provisions

The submission document includes the specific amendments sought to the ODP and PC 19 provisions. The following provides a summary of the amendments sought:

- Amend the zoning as sought in **Attachment A** and **Figure 3** below.
- Minor amendments to the MRZ Chapter text to:
    - Refer to Pisa Moorings MRZ area and the proposed Commercial Precinct.
    - Adding an objective and a policy to provide for retail and commercial activities within the Commercial Precinct while appropriately managing

the effects of activities, including on the established town centres of the District.

- Adding a rule which provides for buildings, retail, community facilities and residential activity above ground floor level subject to a restricted discretionary activity to manage built form and performance outcomes.
- Adding a rule which limits the area of individual retail and office activities to ensure the activities are of a small nature and scale that is compatible with the environment and avoids high trip generating activities.

- Adding the proposed structure plan to the subdivision provisions and a policy to ensure subdivision and development is undertaken in accordance with the structure plan.

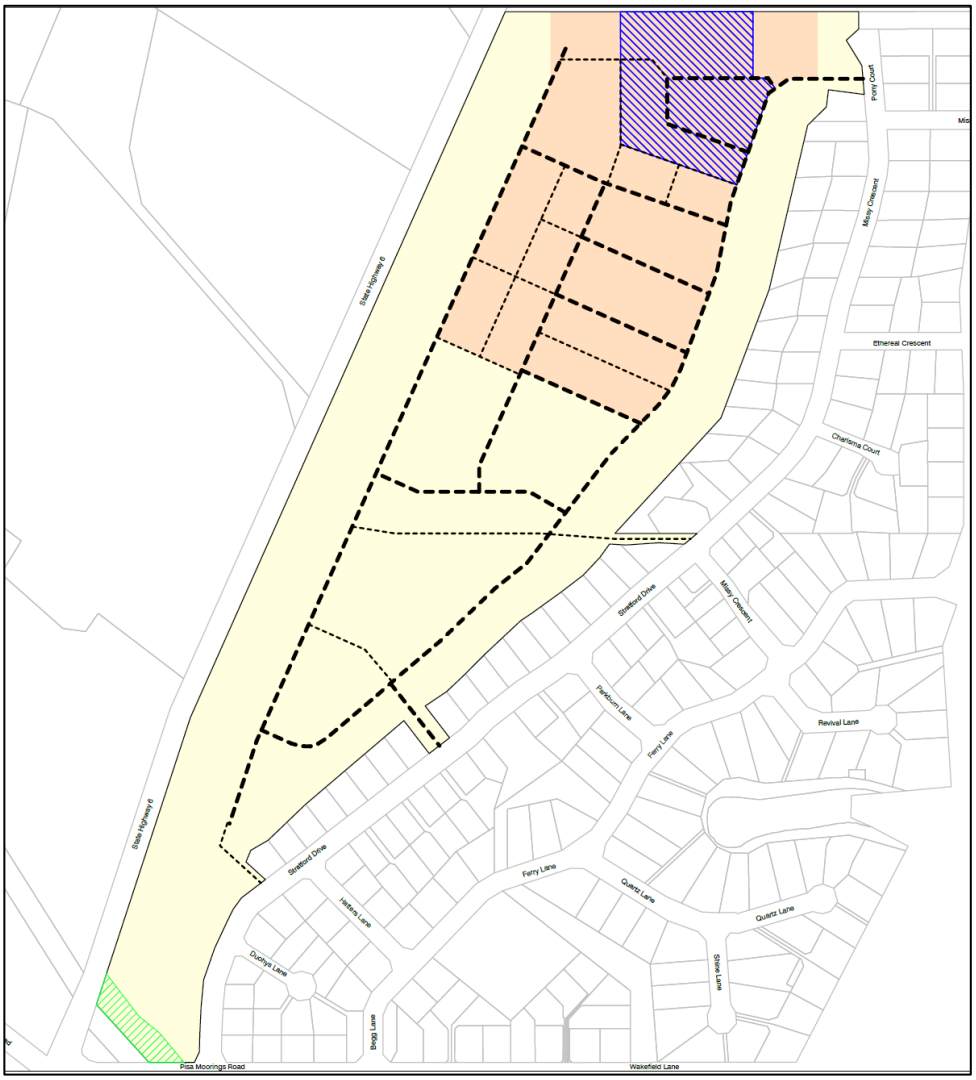


Figure 3. Proposed Structure Plan with LRZ (Yellow), MRZ (orange) and blue shading representing the proposed Commercial Precinct. The green hatching identifies an existing stormwater flowpath/no build area.

4 Assessment of Effects

4.1 Urban Design

The proposed rezoning identifies an area of 7.6ha for medium density rezoning, within which 1.7ha would be subject to an overlay/precinct which provides for retail, service and community activities would meet the needs of the local community.

The indicative roading and reserve/pedestrian layout is identified in the proposed Structure Plan in **Attachment B** (and **Figure 3** above) which shows both vehicle and pedestrian/cycling connections through the area subject to the Structure Plan.

The proposed MRZ area would be subject to the comprehensive residential development provisions notified as part of PC19, and the assessment of subdivision and development proposals and proposals for multiple development would also be subject to the Council's proposed Comprehensive Residential Development rule framework.

The northern location of the proposed MRZ area has been designed to be located centrally within the rezone (east/west) area to provide a buffer to established residential development within Pisa Moorings, and in a northern location to utilise opportunities to reuse the infrastructure provided as part of the pack house and related hard stand areas. The MRZ is focusing higher densities close to the proposed commercial precinct which is intended to include small retail and service amenities, convenience shopping, an early childhood education activity and open space.

The use of the MRZ will encourage a diversity of housing options and choice which can also assist with alleviating housing affordability.

With higher density living comes a requirement for greater attention in the design of subdivision and dwellings themselves to ensure good amenity and built form outcomes and well connected settlement patterns

Figure 4 below is an excerpt of the indicative landscape master plan from the Bridget Gilbert Landscape Architecture report, which identifies the application of the gridded street pattern within the proposed MRZ area, street trees, and a park/open space area located centrally within the commercial precinct area.

The application of both LRZ and MRZ zoning over the site is appropriate, future subdivision and development can be appropriately managed through the PC19 provisions, and the proposed commercial precinct can also be appropriately managed by way of the proposed provisions.

Figure 4. Excerpt of the Indicative landscape master plan illustrating the grided street layout and connectivity.

4.2 Landscape

Bridget Gilbert Landscape Architecture has undertaken a landscape assessment of the proposed rezoning, focusing on identifying the landscape characteristics and values of the local area, the suitability of the site for urban development, and identifying and recommending a range of measures which may be appropriate to manage landscape effects and provide good urban form outcomes; particularly at the interface between the site and the State Highway, the quarry located to the north, and the existing housing located to the east of the site within the Pisa Moorings urban area.

The landscape assessment identifies that rezoning the site from Rural Resource Area to urban is appropriate for the site, and will not detrimentally affect the landscape character and visual amenity values of the surrounding rural environment, including any highly valued or outstanding natural features or landscape within the vicinity of the site. The existing settlement patterning of Pisa Moorings lends itself well to the site being an extension of the existing urban settlement.

Several recommendations are made which are summarised and discussed in terms of planning methods as follows:

a) *The integration of a **highway landscape buffer** along the highway frontage that serves to ground, filter and frame views of any new built development on*

the site in the outlook from the highway, while maintaining long range views to the Dunstan Mountains. This buffer should comprise earth mounding with a mix of locally appropriate, eco sourced native tree and shrub planting to form a green edge. Any fencing required in the buffer should comprise visually permeable black fencing, so that it is effectively 'lost' in the planting in views from the road. The highway landscape buffer could also be integrated with/have a dual role of providing road noise attenuation from the state highway for future dwellings within the site.

This recommendation has been incorporated into the proposed rezoning through a policy which ensures that the State Highway noise attenuation is integrated with the landscaping. The exception between the noise attenuation requirements and the landscape related recommendation is that fencing for noise attenuation would need to be solid, and a permeable fencing option is preferred for aesthetic reasons.

As noted below, the acoustic attenuation can be achieved by either an earth barrier on its own (with planting for landscape treatment purpose) or a combination of earth barrier and a solid fence. While a matter for the subdivision process, it is envisaged that the works would be installed at the time of the subdivision development, with future lot owners being responsible for maintenance of the vegetation and its ongoing protection and maintenance ensured by way of consent notice.

b) *The requirement for **building roofs to have a maximum LRV of 30%**. This will ensure that the new built development is not prominent in views from elevated roads, tracks and rural/rural living dwellings to the northwest.*

This recommendation has been included by way of a policy limb and it is anticipated that it can be imposed on future lots by way of a consent notice condition. The requirement is also consistent with the Council's MRZ residential design guidelines which encourages the use of sympathetic and complementary colours. Applying this control to the wider LRZ is not considered onerous nor a requirement that would be in high transaction/resource consent or build costs.

c) *The integration of a **boundary landscape buffer** along the northern edge of the site to form an appreciable evergreen screen to the adjacent quarry. This buffer should comprise a minimum 3.0m width band of locally appropriate, eco sourced native trees and shrubs.*

This matter is included as a policy limb and can be readily achieved.

d) *The incorporation of a **terrace interface strategy** along the eastern edge of the site that avoids the impression of new built development dominating or overlooking the existing development on the lower terrace (while enabling framed and filtered longer range eastern views from the dwelling to Lake Dunstan etc). This interface strategy should include: a requirement for buildings to be set back a minimum of 5m from the upper terrace edge; a 1.0m width band of locally appropriate native trees and shrubs; and a requirement for all*

fencing along the upper edge of the terrace to comprise visually permeable black fencing to a maximum height of 1.2m set into the planting.

This matter is included as a policy limb and can be readily achieved. It is noted that some of the existing properties located along Stratford Drive and Pony Court which adjoin the site have their rear (western) boundary which adjoins the site on the upper part of the terrace. The proposed PC 19 LRZ bulk and location rules require a setback of 1.8m (Rule LRZ-S6). The matter will need to be further investigated at the time of subdivision, and potentially a setback and landscaping requirement may be included by way of consent notice.

The recommendations in the landscape assessment are able to be implemented through the zoning and future subdivision and development in a manner that is both efficient and effective.

4.3 Contaminated land

Insight Engineering has prepared a detailed site investigation (**DSI**) which has identified the following activities or industries identified on the Hazardous Substances List (**HAIL**) as part of the review of the site history:

- Agrichemicals including use of spray contractors for filling, storing or washing out tanks for agrichemical application. Fertiliser manufacture or bulk storage. Persistent pesticide storage from the horticulture activities present on site.
- Pest control including the use of Pindone for rabbit control.
- Petrochemicals by way of the two above ground fuel storage tanks in the area south east of the dam in the northern portion of the site.
- Storage of fuel in drums and chemicals in drums in the pack house yard.
- Wood treatment or preservation by virtue of the presence of stacked treated timber posts.
- Electrical transformers by the presence of an existing electrical transformer on site.
- The use of timber posts in the vineyard and orchard.

The Insight Engineering DSI recommends remedial measures to properly manage the contaminated areas as well as to provide controls that will minimise or eliminate the risks to human health during the completion of the soil disturbance works.

Based on this, any future subdivision would require a resource consent under Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (**NES-CS**).

An application for resource consent as a restricted discretionary activity (pursuant to Regulation 10) can be under the NES-CS.

The DSI references a preliminary subdivision development layout that does not form part of the rezoning proposal, and this does not in any way alter the validity of the DSI itself.

Based on the DSI, there is considered sufficient information available to advance the rezoning, and contaminated land matters can be addressed through the NES-CS as part of the initial subdivision and development.

The rezoning is considered appropriate from a contaminated land perspective and the future subdivision development can be managed by way of resource consent under the NES-CS.

4.4 Ecological Effects

The site is heavily modified and contains an established orchard and packhouse, with a vineyard on the southern boundary of the site. There are no to very low indigenous vegetation values on site, and the proposed rezoning is appropriate from an indigenous vegetation perspective.

4.5 Three waters

C Hughes and Associates Limited have undertaken preliminary assessment of the surrounding infrastructure serving the existing Pisa moorings area and have offered the following findings.

4.5.1 Stormwater

Stormwater run-off from future development of the site can be locally disposed of via soakage pits. Stormwater disposal via soakage pits avoids the need for intensive stormwater reticulation to concentrate the stormwater flow and direct it off site. Stormwater accumulated on the roading network can be directed to, and disposed of by, soakage pits within the road reserve or other reserve areas. Stormwater accumulated within residential allotments resulting from built development will be required to be disposed of within individual allotments via onsite soakage.

4.5.2 Water

Potable water reticulation to service future residential development of the site can be connected to the existing CODC water reticulation within the Pisa Moorings residential area adjoining the site. There are existing CODC water mains located in Pisa Moorings Road, Stratford Drive, and Pony Court to which reticulation to service development of the site can be connected.

The site has the advantage of having access to existing CODC water reticulation at both the southern and northern ends of the site. Future water reticulation can therefore be looped through the site, connected at both the southern and northern ends to the existing network, including to the 300mm diameter trunk water main within Pisa Moorings Road (if considered appropriate by the CODC Engineering department). Looped water reticulation has the advantages of reducing the risk of water stagnation and improving the ability to isolate and repair faults in the network, minimising loss of service if faults do occur.

4.5.3 Wastewater

Calculations have been completed which confirm that the entire site can be serviced by extension of the existing CODC gravity wastewater network.

There are existing 150mm uPVC wastewater drainage pipes with standard 1050mm concrete manholes located within Stratford Drive and Pony Court adjacent to the site. This existing wastewater network is at a suitable depth such that a gravity wastewater network extension from these existing manholes can be designed in accordance with CODC standards to service future development.

Calculations have also confirmed that all pipes within the extension to the network can be provided with suitable cover between the top of pipes and finished surface level under both potential future trafficable and non-trafficable surfaces.

4.6 Transport

The site has two existing crossing points onto State Highway 6. There is also frontage to the local road network via Stratford Drive and Pony Court and then onto State Highway 6 via the existing Pisa Moorings Road T intersection.

A transport assessment has been undertaken by Bartlett Consulting, which supports the consolidation of access points by way of the proposed rezoning accessing the local road network and obtaining access onto SH6 via the use of the existing intersection at Pisa Moorings Road.

To understand the effects of the rezoning on the road network, the Bartlett assessment has focused on the Pisa Moorings Road intersection at the pm peak operating time which is when traffic is likely to be at its greatest with existing and future residents returning home.

The transport assessment identifies that the level of service of the roundabout during the peak pm will be affected, and in relative terms the capacity of the intersection will change from 26% under ‘existing’ scenario, to 43% capacity as a result of the proposed rezoning.

The intersection will still operate within its capacity but there will be greater delays than what is currently experienced, most noticeably for motorists at both Pisa Moorings Road and Clark Road turning right during the pm peak period. It is noted that the

predominant traffic flows at that time of the day will be northbound motorists from Cromwell turning right from SH6 into Pisa Moorings Road, and southbound motorists with a left turn into Pisa Moorings Road. There are generally much fewer vehicle movements from Pisa Moorings Road turning right onto SH6 (northbound), and even fewer from Clark Road.

The transport assessment has identified that if necessary, upgrades/modifications to the Pisa Moorings Road intersection are possible within the existing legal road corridor. Upgrades could include the installation of physical islands to better distinguish and separate traffic streams and reducing the posted speed limit.

The option of installing an additional T intersection onto SH6 at the northern part of the site is not currently favoured because it is understood that Waka Kotahi encourages consolidation of accesses onto the State Highway network.

The proposed Structure Plan in **Attachment B** identifies an indicative roading layout illustrating the proposed internal roading connections and connections onto the existing local road network at Pony Court and Stratford Drive. The Structure Plan identifies an adequate roading layout, including connections through the proposed MRZ area and an absence of cul de sacs which constrain connectivity.

The effects of the proposed rezoning on the local and SH6 road network are able to be managed so that they are appropriate.

4.7 State Highway Road Noise

Acoustic Engineering Services Limited (**AES**) have prepared an assessment of the identified noise from the State Highway on potential future occupants of dwellings in proximity to the State Highway. The AES assessment is based on a preliminary subdivision development layout and while this layout does not form part of the rezoning proposal, it is considered relevant for the purposes of identifying the levels of road noise.

The AES report has applied the New Zealand Transport Agency's / Waka Kotahi *Guide to the management of effects on noise sensitive land use near to the state highway network* (Version 1.0 dated September 2015), which states that dwellings within 100m of a State Highway need to be designed and constructed to achieve an internal noise level of 40 dB $L_{Aeq\ (24h)}$ for living and sleeping spaces. If windows must be closed to achieve the internal noise level of 40 dB $L_{Aeq\ (24h)}$, the building must be designed, constructed and maintained with a ventilation and cooling system. Development should have an external design noise level of 57 dB $L_{Aeq\ (24h)}$ applied to the main outdoor living space.

The AES assessment has assessed the road noise effects based on a 3m high barrier to attenuate noise. It is noted that the assessment is based on a 1.5m high earth barrier coupled with a 1.5m high acoustic fence, however various options are available,

including the suggested full earth mound mitigation treatment identified in the Bridget Gilbert Landscape Architecture report.

With the inclusion of a 3m high noise attenuation barrier located along the western boundary of the site adjoining the State Highway, the AES report identifies that noise levels of up to 61 dBA $L_{Aeq\ (24hr)}$ would be received at ground floor level, and it is realistic to be able to construct single storey dwellings which can readily achieve an internal noise level of 40 dBA $L_{Aeq\ (24hr)}$. The AES report notes as a guide, that where noise levels are more than 57 dBA $L_{Aeq\ (24hr)}$ but not greater than 61dBA $L_{Aeq\ (24hr)}$ upgrades to the construction of the dwellings may not be required to achieve an internal noise level of 40 dB $L_{Aeq\ (24h)}$ depending on the selected cladding products.

The AES report identifies that development adjacent to the State Highway is feasible and noise attenuation measures are achievable to ensure that effects of noise on future occupants are appropriate.

It is noted that the PC19 proposed rules within each of the Large Lot, Low and Medium Density Residential Zones require that noise will not exceed 35dBA Leq (24hr) in bedrooms and 40dBA Leq (24hr) for other habitable rooms within 80m of the State Highway carriageway.

Mitigation options include a combination of earth barrier with an acoustic fence (with plantings), or an earth barrier with landscaping as shown below:

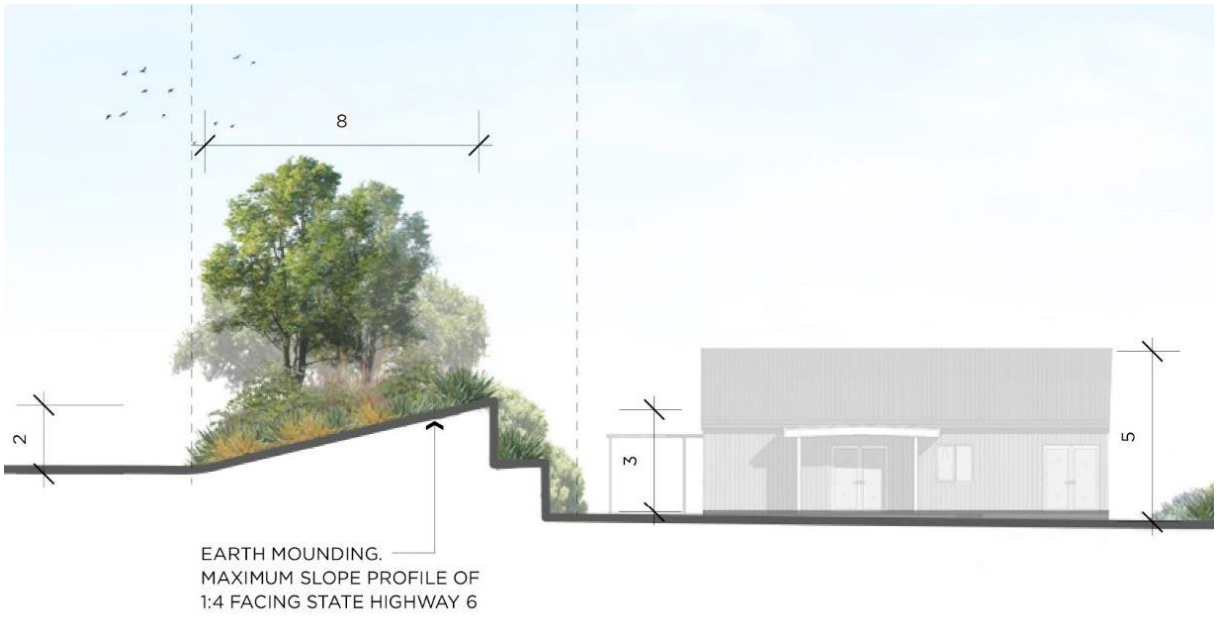


Figure 5. Excerpt of Bridget Gilbert Landscape Architecture assessment showing an indicative earth mound and planting option.

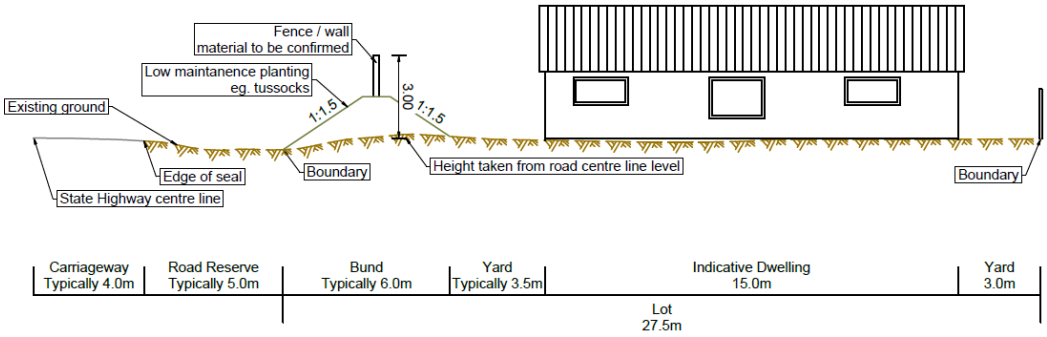


Figure 6. Indicative sketch illustrating earth mound and acoustic fence option.

It is considered that reliance can be placed on the proposed PC 19 rules to ensure that subdivision and development manages the potential adverse effects from State Highway road noise on building occupants, and the proposed rezoning is considered appropriate.

5 Summary

The rezoning of the site from Rural Resource Area and Proposed Large Lot Residential (P1) to LRZ, MRZ and a proposed Commercial Precinct is appropriate from a spatial settlement pattern perspective, being a congruent and natural extension to the existing Pisa Moorings area. This will be able to be undertaken in a way that appropriately manages the adverse effects on the surrounding environment, including the existing settlement of Pisa Moorings, the road environment, and the wider rural area. The location / rezoning specific amendments to the ODP and PC19 provisions are subtle and can be accommodated within the structure and overall parameters of the notified PC19 framework.

Pisa Moorings Rezoning

Pisa Moorings Vineyard Limited and Pisa Village Development Limited

SECTION 32AA EVALUATION

1 September 2022

Document prepared by:

Town Planning Group (NZ) Limited

Phone: 0800 22 44 70

Email: office@townplanning.co.nz

Web: www.townplanning.co.nz

Offices in Tāhuna, Wānaka, Ōtautahi & Tāmaki Makaurau

Contents

1 Introduction

1.1 Objectives of the proposal

The objectives of the proposal are to rezone four sites with a collective area of 24.3ha located adjacent to the existing Pisa Moorings residential suburban township, to 16.8ha Low Density Residential zoning, 7.6ha Medium Density Residential zoning and within this 7.6ha area, a local retail/convenience commercial zoning of 1.7ha. The rezoning will provide for residential subdivision and development and small-scale commercial activities which meet the needs of the neighbourhood while:

- Ensuring subdivision and development is well connected for both vehicle and walking and cycling;
- Landscape buffers are installed along the state Highway 6 interface, eastern interface with the existing Pisa Moorings neighbourhood, and the quarry located to north of the site;
- State Highway road noise is attenuated and that attenuation measures such as earth barriers or fencing are encouraged to be well integrated with landscaping;
- Retail, community facilities and commercial activities within the Commercial Precinct are of a nature and scale that maintains amenity and serves the needs of the local Pisa Moorings neighbourhood.

This evaluation also examines the extent to which the objectives of this proposal achieve the objectives of PC19 as identified and evaluated in the Council's section 32 evaluation.

In addition to the objectives of PC19 as identified in the Council section 32 evaluation, a new proposed statutory objective is proposed in relation to a new commercial precinct overlay within the Medium Density Residential Zone:

Commercial activities and community facilities are provided for within the Commercial Precincts, are limited in scale and maintain or enhance residential amenity, provide for local convenience and services, and support the local economy.

1.2 Background

The submitters have been investigating a plan change on the site for several years and have commissioned various technical reports to identify environmental constraints and opportunities and test the most appropriate zoning response. During promulgation of the rezoning proposal the Council resolved to notify PC19, being a review of the existing residential zoning of the District Plan, and to implement the Cromwell and Vincent Spatial Plans.

The Council advised the submitters that a request for a private plan change was unlikely to be accepted for notification due to the review of, and imminent notification of, a revised planning framework for the District's residential zones. The Council accepted that a submission to rezone the site as part of the PC19 notification and submission process would be accepted in lieu of a request for a plan change.

The submission and rezoning request has adopted to the greatest extent practicable the Council's PC19 zoning framework. The submission on the PC19 chapter text is generally supportive of the fundamental concepts of PC19, with the majority of submission points related to drafting clarity and refinements, and ensuring that the Medium Density Residential Design Guidelines, and the Comprehensive Residential Development guidelines are required to be considered as part of the resource consent application process.

2 Section 32 and Section 32AA

2.1 Section 32 requirements for preparing and publishing evaluation reports

Changes to a district plan must be evaluated in accordance with section 32 of the RMA.

Section 32 states:

32 Requirements for preparing and publishing evaluation reports

(1) An evaluation report required under this Act must—

(a) examine the extent to which the objectives of the proposal being evaluated are the most appropriate way to achieve the purpose of this Act; and

(b) examine whether the provisions in the proposal are the most appropriate way to achieve the objectives by—

(i) identifying other reasonably practicable options for achieving the objectives; and

(ii) assessing the efficiency and effectiveness of the provisions in achieving the objectives; and

(iii) summarising the reasons for deciding on the provisions; and

(c) contain a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the proposal.

(2) An assessment under subsection (1)(b)(ii) must—

(a) identify and assess the benefits and costs of the environmental, eco- nomic, social, and cultural effects that are anticipated from the implementation of the provisions, including the opportunities for—

(ii) economic growth that are anticipated to be provided or reduced; and

(iii) employment that are anticipated to be provided or reduced; and

(b) if practicable, quantify the benefits and costs referred to in paragraph (a); and

(c) assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions.

(3) If the proposal (an amending proposal) will amend a standard, statement, national planning standard, regulation, plan, or change that is already proposed or that already exists (an existing proposal), the examination under subsection (1)(b) must relate to—

(a) the provisions and objectives of the amending proposal; and

(b) the objectives of the existing proposal to the extent that those objectives—

(i) are relevant to the objectives of the amending proposal; and

(ii) would remain if the amending proposal were to take effect.

(4) If the proposal will impose a greater or lesser prohibition or restriction on an activity to which a national environmental standard applies than the existing prohibitions or restrictions in that standard, the evaluation report must examine whether the prohibition or restriction is justified in the circumstances of each region or district in which the prohibition or restriction would have effect.

(4A) If the proposal is a proposed policy statement, plan, or change prepared in accordance with any of the processes provided for in Schedule 1, the evaluation report must—

(a) summarise all advice concerning the proposal received from iwi authorities under the relevant provisions of Schedule 1; and

(b) summarise the response to the advice, including any provisions of the proposal that are intended to give effect to the advice.

(5) The person who must have particular regard to the evaluation report must make the report available for public inspection—

(a) as soon as practicable after the proposal is made (in the case of a standard, regulation, national policy statement, or New Zealand coastal policy statement); or

(b) at the same time as the proposal is notified.

The Council has prepared and published a section 32 evaluation report. That report outlines the proposed objectives of PC19, being the proposed statutory objectives which accompany the revised District Plan text. An evaluation of those objectives to the extent they are the most appropriate way to achieve the purpose of the RMA has been undertaken[1].

2.2 Section 32AA requirements for undertaking and publishing further evaluations

In accordance with section 32AA(1)(a), a further evaluation is required in respect of the amendments made to the existing proposal since the s32 evaluation was completed.

Section 32AA of the RMA is:

(1) A further evaluation required under this Act—

(a) is required only for any changes that have been made to, or are proposed for, the proposal since the evaluation report for the proposal was completed (the changes); and

(b) must be undertaken in accordance with section 32(1) to (4); and

(c) must, despite paragraph (b) and section 32(1)(c), be undertaken at a level of detail that corresponds to the scale and significance of the changes; and

(d) must—

(i) be published in an evaluation report that is made available for public inspection at the same time as the approved proposal (in the case of a national policy statement or a New Zealand coastal policy statement or a national planning standard), or the decision on the proposal, is notified; or

(ii) be referred to in the decision-making record in sufficient detail to demonstrate that the further evaluation was undertaken in accordance with this section.

(2) To avoid doubt, an evaluation report does not have to be prepared if a further evaluation is undertaken in accordance with subsection (1)(d)(ii).

(3) In this section, proposal means a proposed statement, national planning standard, plan, or change for which a further evaluation must be undertaken under this Act.

[1] Council Section 32 evaluation report at [78].

2.3 Section 32AA(1)(a)-(c)

Section 32AA(1)(a)-(c):

> *a) is required only for any changes that have been made to, or are proposed for, the proposal since the evaluation report for the proposal was completed (the changes); and*
>
> *(b) must be undertaken in accordance with section 32(1) to (4); and*
>
> *(c) must, despite paragraph (b) and section 32(1)(c), be undertaken at a level of detail that corresponds to the scale and significance of the changes; and*

This evaluation therefore, must still examine the proposal through the tests in S32(1) to (4) (i.e. an examination of reasonably practicable options and the costs and benefits), but is limited to the additional changes made by the rezoning proposal and at a level of detail which corresponds to the scale and significance of the changes.

2.3.1 Scale and Significance of the changes

PC 19 overtly addresses two key themes .The first is a review of the District Plan's objectives and provisions of the existing residential resource area zoning with a view to consolidating the various zones/resource areas and adopting the National Planning Framework standards for plan structure and drafting. The other key theme of PC19 is a review of the existing spatial pattern and extent of residential zoned land to implement the Cromwell Spatial Plan and the Vincent Spatial Plan.

PC19 is therefore a fulsome review of the District's residential zoning and the location and extent of land zoned for housing. PC 19 is itself identified in the Council section 32 evaluation as having moderate to high significance for these reasons. The submitters rezoning, relative to the overall breadth and scale of PC19 is considered to have low to moderate scale and significance due to the approximately 22ha addition of residential land sought and that it is spatially contiguous with an existing zoned and developed urban settlement.

In the context of the Pisa Moorings area itself, the scale and significance of the proposal is higher as a result of the changes to the environment from rural land uses to urban as perceived in the immediate environment and Pisa Moorings neighbourhood. This section 32 evaluation and accompanying supporting technical reports have been prepared at a sufficient detail in the context of the scale and significance of the changes.

This section 32AA evaluation is supported by the following information:

- **Document 1**[2] Planning Statement and Assessment of Effects on the Environment
- **Document 3** Preliminary Infrastructure and Services Report
- **Document 4** Transport Assessment
- **Document 5** Landscape assessment
- **Document 6** Acoustic assessment
- **Document 7** Detailed Site Investigation

[2] Document 2 is this Section 32AA evaluation report.

2.3.2 The extent the objectives of the rezoning are the most appropriate way to achieve the purpose of the RMA

The examination to the extent the objectives of the rezoning are the most appropriate way to achieve the purpose of the RMA has been undertaken in Document 1 which has summarised the technical reports and provided an assessment of effects on the environment, and evaluated in light of the key statutory planning documents[3] which achieve the purpose of the RMA in the context of the district, being the following:

- Part 2 of the RMA
- National Policy Statement Urban Development 2020 (**NPSUD**)
- Partially Operative Regional Policy Statement for Otago 2019 (**PRPS19**)
- Proposed Regional Policy Statement for Otago 2021 (**pRPS21**)
- Central Otago District plan - focusing on the Section 4 Rural Resource Area and Section 6 Urban Areas

The evaluation of these statutory policy statements and plans has been informed by the package of reports which accompany the rezoning request.

2.3.3 Part 2 of the RMA – Purpose and Principles

Section 5

Section 5(2)(a) provides for development of natural resources while sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations. Section 5(2)(b)seeks to safeguard the life supporting capacity of air, water, soil, and ecosystems. Section 5(2)(c) seeks to avoid, remedy or mitigate any adverse effects of activities on the environment.

Section 6

There are not any Section 6 (matters of national importance) matters engaged in this evaluation.

The land is not within an outstanding feature or natural landscape, and nor does the proposal impinge on the values of any Outstanding Natural Feature or Landscape, it has no significant indigenous vegetation and significant habitats of indigenous fauna, has no opportunities for public access to lakes or rivers, has no cultural significance to Maori; no historic heritage values, and no significant natural hazard risks.

Section 7

[3] The operative District Plan Residential Resource Area objectives are not included as a key relevant statutory planning document because it has been identified for replacement by the PC19 framework.

Section 7 requires particular regard to be had to various matters including, of relevance to this evaluation:

(b) the efficient use and development of natural and physical resources:

(c) the maintenance and enhancement of amenity values:

(d) the intrinsic values of ecosystems:

(f) maintenance and enhancement of the quality of the environment:

(g) any finite characteristics of natural and physical resources:

These Part 2 matters are generally addressed in the assessment of the options in the context of the higher order objectives and policies of the Partially Operative Regional Policy Statement 2019 (**PORPS19**), the Proposed Regional Policy Statement 2021 (**pRPS21**), and District Plan. The relevant provisions of these documents are set out below.

Section 8

Section 8 requires that the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) are taken into account. There are no known areas of cultural significance within the subject Site or immediate environs.

2.3.4 National Policy Statement Urban Development 2020 (NPSUD)

The Council's section 32 evaluation states that the NPSUD does not apply to the Central Otago District and the District Plan because the District does not qualify as an urban environment[4]:

> *The definition of an "urban environment" any area of land (regardless of size, means and irrespective of local authority or statistical boundaries) that is, or is intended to be, part of a housing and labour market of at least 10,000 people. This currently does not apply within the District, while noting that over the horizon covered by the spatial plans, Cromwell is expected to reach this threshold.*

Additionally, the Section 32 report also acknowledges that the PC19 is consistent with the direction in the NPSUD which future proofs the plan change if the District becomes an urban environment.

It is uncertain whether the Alexandra and Cromwell areas have been distinguished spatially in terms of whether they are individual areas which constitute separate urban environments. While the Council section 32 report acknowledges that Cromwell alone is likely to reach this threshold over the horizon covered by the spatial plans, it is considered that greater emphasis is able to be placed on the NPSUD than what is indicated in the Council's Section 32 report.

While the Section 32 report has not erred in its application of the NPSUD at the current time, it is considered that the District is a valid candidate to be treated as though it were a Tier 3 local authority under the NPSUD, particular where the NPSUD definition of

[4] Council Section 32 report at [78].

urban environment is relatively open in terms of an area qualifying as an urban environment:

> *urban environment means any area of land (regardless of size, and irrespective of local authority or statistical boundaries) that:*
>
> *(a) is, or is intended to be, predominantly urban in character; and*
>
> *(b) is, or is intended to be, part of a housing and labour market of at least 10,000 people*

Collectively, the urban settlements within the Cromwell Ward encompassing the PC19 residential zoned areas of Cromwell, Bannockburn, Lowburn and Pisa Moorings are more likely than not to fall as an urban environment within the planning period of the PC19 and prior to the next review.

The Council's own published population information identifies that in 2018 Census there were 21,558 residents in Central Otago with population increasing by 20.5% between the 2013 and 2018 census. The Cromwell Spatial Plan has been promulgated to address a 30-year timeframe in which the population of Cromwell is intended to double. The Cromwell Spatial Plan[5] identified that the population of the Cromwell Ward under a high growth projection scenario would be 9,450 by 2028.

It is also noted that a recent Covid-19 Fast Track consent decision where the Expert Consenting Panel stated the following with regards to whether Cromwell qualified as an urban environment[6]:

> *[309] We agree with Brookfields that Cromwell is part of a housing and labour market of at least 10,000 people. As we understand it, that housing and labour market is not required to be predominantly urban in character.*
>
> *[310] Thus, the Panel accepts the position advanced by the Applicant and Brookfields that Cromwell (and adjacent areas identified for future urban zoning) would fall within the meaning of an "urban environment" under the NPS-UD.*

Because of the population growth in the Cromwell area, the length of time between plan reviews initiated by the Council and that the Cromwell and Vincent Spatial Plans are informative (albeit non-statutory) documents, this Section 32AA evaluation considers that the NPSUD is relevant in terms of the positive obligations placed on local authorities to provide for housing and a diversity of housing options.

Provision 1.5(1) of the NPSUD strongly encourages Tier 3 local authorities to do the things that tier 1 and tier 2 local authorities are obliged to do under Parts 2 and 3 of this National Policy Statement, adopting whatever modifications to the National Policy Statement are necessary or helpful to enable them to do so.

[5] Cromwell Spatial Framework Plan May 29 2019 at [28].

[6] Record Of Decision Of The Expert Consenting Panel Under Clause 37 of Schedule 6 To The FTA: Wooing Tree Estate Project. 29 September 2021.

On this basis, the following objectives and policies of the NPSUD are relevant to PC19 and the rezoning proposal, although they are not a mandatory requirement to be given effect to through the District Plan (which is the case for Tier 1 and 2 local authorities):

> ***Objective 1**: New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future.*
>
> ***Objective 2**: Planning decisions improve housing affordability by supporting competitive land and development markets.*
>
> ***Policy 1**: Planning decisions contribute to well-functioning urban environments, which are urban environments that, as a minimum:*
>
> *(a) have or enable a variety of homes that:*
>
> *(i) meet the needs, in terms of type, price, and location, of different households; and*
>
> *(ii) enable Māori to express their cultural traditions and norms; and*
>
> *(b) have or enable a variety of sites that are suitable for different business sectors in terms of location and site size; and*
>
> *(c) have good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport; and*
>
> *(d) support, and limit as much as possible adverse impacts on, the competitive operation of land and development markets; and*
>
> *(e) support reductions in greenhouse gas emissions; and*
>
> *(f) are resilient to the likely current and future effects of climate change.*

This rezoning proposal will help the local authority and the District Plan achieve Objectives 1 and 2 by contributing to a well functioning urban environment, the provision of local retail needs for the Pisa Moorings community, and by supporting competitive land development and markets through increasing housing choice in an established urban settlement within the Cromwell Ward.

The proposed rezoning will assist PC19 with achieving the NPSUD, with comparatively few environmental costs, as summarised in Document 1 (planning assessment and summary of technical reports).

2.3.5 Partially Operative Otago Regional Policy Statement 2019

Section 75(3)(c) of the Act requires that a district plan must give effect to any Operative Regional Policy Statement. Section 74(2)(a) of the RMA requires that a territorial authority have regard to any Proposed Regional Policy Statement when preparing or changing a District Plan.

Under the Partially Operative Regional Policy Statement 2019 (PORPS19), all provisions of relevance to PC19 and the proposal are operative.

The key provisions of the PORPS19 relevant to this evaluation are:

- Objective 1.1 - Otago's resources are used sustainably to promote economic, social, and cultural wellbeing for its people and communities;

- Policy 1.1.1 – Provide for the economic wellbeing of Otago's people and communities by enabling the resilient and sustainable use and development of natural and physical resources.

- Objective 1.2 – Recognise and provide for the integrated management of natural and physical resources to support the wellbeing of people and communities in Otago, and allied policies relating to integrated management;

- Objective 3.1 – The values (including intrinsic values) of ecosystems and natural resources are recognised and maintained, or enhanced where degraded, and allied policies;

- Objective 3.2 – Otago's significant and highly-valued natural resources are identified and protected, or enhanced where degraded; and allied policies;

- Policy 3.2.6 – Maintain or enhance highly valued natural features, landscapes and seascapes by …avoiding significant adverse effects on those values which that contribute to the high value of the natural feature, landscape or seascape; avoiding, remedying or mitigating other adverse effects; encouraging enhancement of those values that contribute to the high value of the natural feature, landscape or seascape.

  In this case the site is not identified in the District Plan as a high valued natural feature or landscape and the proposal does not engage with Section 7(c) and Policy 3.2.6.

- Objective 4.5 - Urban growth and development is well designed, occurs in a strategic and coordinated way, and integrates effectively with adjoining urban and rural environments, and related Policy 4.5.1 (repeated in full):

  Providing for urban growth and development

  Provide for urban growth and development in a strategic and co-ordinated way, including by:

  a) *Ensuring future urban growth areas are in accordance with any future development strategy for that district.*
  b) *Monitoring supply and demand of residential, commercial and industrial zoned land;*
  c) *Ensuring that there is sufficient housing and business land development capacity available in Otago;*
  d) *Setting minimum targets for sufficient, feasible capacity for housing in high growth urban areas in Schedule 6*
  e) *Coordinating the development and the extension of urban areas with infrastructure development programmes, to provide infrastructure in an efficient and effective way.*

f) Having particular regard to:

i. Providing for rural production activities by minimising adverse effects on significant soils and activities which sustain food production;

ii. Minimising competing demands for natural resources;

iii. Maintaining high and outstanding natural character in the coastal environment; outstanding natural features, landscapes, and seascapes; and areas of significant indigenous vegetation and significant habitats of indigenous fauna;

iv. Maintaining important cultural or historic heritage values;

v. Avoiding land with significant risk from natural hazards;

g) Ensuring efficient use of land;

h) Restricting urban growth and development to areas that avoid reverse sensitivity effects unless those effects can be adequately managed;

Policy 4.5.1 is an important policy in terms of directing urban development within the Otago Region. It is noted that the Cromwell Spatial Plan is not a future development strategy, but is a non-statutory document, albeit an important document to the Council which has been mandated by the Council. Rezoning proposals therefore do not need to accord with the Cromwell Spatial Plan in order to be consistent with and implement Policy 4.5.1.

Limb (e) requires that the extension of urban areas with infrastructure development is coordinated with programmes, to provide infrastructure in an efficient and effective way. The site is located adjacent to an existing urban settlement and offers efficiencies in terms of servicing, including any necessary infrastructure upgrades.

The rezoning will result in the loss of some productive land, but this land is already located directly adjacent to existing urban settlements and compatibility issues may be present such as the use of spray (and spray drift) and frost deterrent devices.

- Objective 5.3 – Sufficient land is managed and protected for economic production; and

- Policy 5.3.1 – Rural Activities – Manage activities in rural areas, to support the region's economy and communities, by … restricting the establishment of incompatible activities in rural areas that are likely to lead to reverse sensitivity effects; providing for other activities that have a functional need to locate in rural areas.

  The proposal will involve the retirement of productive land, however the existing urban settlement located adjacent to the site has the potential for compatibility effects. The proposed rezoning is not considered an incompatible activity. Rather, it alleviates potential incompatibilities.

  The road noise from State Highway 6 is able to be managed so that reverse

sensitivity effects do not arise. The PC19 framework anticipates development within the State Highway buffer on the basis that noise attenuation measures are deployed.

The proposal is consistent with the PORPS19.

2.3.6 Proposed Regional Policy Statement 2021 (pRPS21)

The pRPS21 was notified on 26 June 2021 and is intended to give effect to the NPSFM and the concept of Te mana o Te Wai, which are expressed through Objectives LF-WAI-O1 and related policies. The site has been identified within the pRPS21 as within the Clutha Mata-au Freshwater Management Unit, and Dunstan Rohe.

Significant resource management issue 4 (SRMR-I4) is *Poorly managed urban and residential growth affects productive land, treasured natural assets, infrastructure and community well-being*. Significant resource management issue 9 (SRMR-19) is *Otago lakes are subject to pressures from tourism and population growth*, and significant resource management issue 11 (SRMR-I11) *Cumulative impacts and resilience – the environmental costs of our activities in Otago are adding up with tipping points potentially being reached*.

The most relevant objectives and policies are:

(a) NFL-01-Outstanding and highly valued natural features and landscapes:

The areas and values of Otago's outstanding and highly valued natural features and landscapes are identified, and the use and development of Otago's natural and physical resources results in:

a. the protection of outstanding natural features and landscapes, and

b. the maintenance or enhancement of highly valued natural features and landscapes.

(b) NFL-P3-Maintenance of highly valued natural features and landscapes

Maintain or enhance highly valued natural features and landscapes by:

a. avoiding significant adverse effects on the values of the natural feature or landscape, and

b. avoiding, remedying or mitigating other adverse effects.

(c) UFD–O4 – Development in rural areas

Development in Otago's rural areas occurs in a way that:

1. avoids impacts on significant values and features identified in this RPS, ...

(d) UFD–P7 – Rural Areas

The management of rural areas:

1. provides for the maintenance and, wherever possible, enhancement of important features and values identified by this RPS, ...

The pRPS21 is currently on hold while parts are re-notified on the basis the entire document was not a fresh water planning instrument. No decisions have been made on submissions and the RPS 2021 therefore can be afforded limited weight at this time.

2.3.7 Operative Central Otago District Plan

The following table provides an evaluation of the following relevant operative district wide provisions. While PC19 proposes to replace the existing residential resource area provisions, the Operative District Plan District Wide provisions have not been replaced and are relevant to PC19 and the proposal.

Table 1. Evaluation of the relevant District Plan objectives and policies.

District Plan Objective or Policy	**Evaluation**
Section 4: Rural Resource Area	
4.3.1 Objective - Needs of the District's People and Communities *To recognise that communities need to provide for their social, economic and cultural wellbeing, and for their health and safety at the same time as ensuring environmental quality is maintained and enhanced.*	The proposal will achieve this objective by way of provision of additional housing opportunities and consolidation of an existing urban settlement. This will encourage opportunities for greater local retail and services at Pisa Moorings.
4.3.7 Objective - Soil Resource *To maintain the life-supporting capacity of the District's soil resource to ensure that the needs of present and future generations are met.*	The rezoning will result in the loss of existing productive orchard and viticulture activities. The loss is not considered extensive and the conversion of the soil resource from rural productive activities to housing and a small commercial area will meet the needs of present and future generations.
4.3.3 Objective - Landscape and Amenity Values *To maintain and where practicable enhance rural amenity values created by the open space, landscape, natural character and built environment values of the District's rural environment, and to*	The proposal will not result in the loss of valued rural amenity, nor will it affect the character of any open natural character of the hills and ranges.

maintain the open natural character of the hills and ranges.	Related Policy 4.4.2 is also relevant and discussed below.
4.4.2 Policy – Landscape and Amenity Values *To manage the effects of land use activities and subdivision to ensure that adverse effects on the open space, landscape, natural character and amenity values of the rural environment are avoided, remedied or mitigated through:* *(a) The design and location of structures and works, particularly in respect of the open natural character of hills and ranges, skylines, prominent places and natural features,* *(b) Development which is compatible with the surrounding environment including the amenity values of adjoining properties,* *(c) The ability to adequately dispose of effluent on site,* *(d) Controlling the generation of noise in back country areas,* *(e) The location of tree planting, particularly in respect of landscape values, natural features and ecological values,* *(f) Controlling the spread of wilding trees.* *(g) Encouraging the location and design of buildings to maintain the open natural character of hills and ranges without compromising the landscape and amenity values of prominent hillsides and terraces.*	The proposal will avoid development on hills and ranges, and will not result in inappropriate urban development in an area with valued rural landscape, character and amenity values, as identified in the Bridget Gilbert Landscape Architecture Report. The rezoning and future development is considered to be compatible with the surrounding environment. The amenity values of the surrounding rural area will not be diminished.
Section 6: Urban Areas	
6.3.1 Objective - Needs of People and Communities To promote the sustainable management of the urban areas in order to: *(a) Enable the people and communities of the district to provide for their social, economic and cultural wellbeing and their health and safety; and* *(b) Meet the present and reasonably foreseeable needs of these people and communities*	The proposal can assist PC19 and the District Plan further achieve this objective by providing for additional urban land in a sustainable manner and in a way that enables the existing residents of Pisa Moorings to provide for their wellbeing.
6.3.2 Objective - Amenity Values *To manage urban growth and development so as to promote the maintenance and enhancement of the environmental quality and amenity values of*	The extension of the urban environment will maintain the existing amenity of Pisa Moorings. The Commercial Precinct will

the particular environments found within the District's urban areas.	provide an opportunity for enhancement of urban amenity values through providing local convenience and commercial activities. The adverse effects and costs of the rezoning on the environment can be appropriately managed.
6.3.3 Objective - Adverse Effects on Natural and Physical Resources *To avoid, remedy or mitigate the adverse effects of urban areas on the natural and physical resources of the District.*	The urban extension will result in the relatively small loss of existing horticultural land and a vineyard. The effects on rural character will be avoided and mitigated so that the benefits of the proposal outweigh the costs.
6.3.4 Objective - Urban Infrastructure *To promote the sustainable management of the District's urban infrastructure to meet the present and reasonably foreseeable needs of the District's communities.*	The rezoning area can be serviced and does not require any significant extension of infrastructure due to the site's location adjacent to an existing urban settlement with reticulated water and wastewater.
6.4.1 Policy - Maintenance of Quality of Life within Urban Areas *To maintain and, where practicable, enhance the quality of life for people and communities within the District's urban areas through:* *(a) Identifying and providing for a level of amenity which is acceptable to the community; and* *(b) Avoiding, remedying or mitigating the adverse effects on the community's social, economic and cultural wellbeing and health and safety which may result from the use, development and protection of natural and physical resources, and* *(c) Recognising that change is inevitable in the use of land to enable the community to provide for its wellbeing.*	The proposed rezoning can be undertaken to provide good amenity for future inhabitants and will maintain amenity values for the existing Pisa Moorings settlement.
6.4.2 Policy - Expansion of Urban Areas *To enable the expansion of urban areas or urban infrastructure in a manner that avoids, remedies or mitigates adverse effects on:* *(a) Adjoining rural areas.* *(b) Outstanding landscape values.* *(c) The natural character of water bodies and their margins.* *(d) Heritage values.* *(e) Sites of cultural importance to Kai Tahu ki Otago.* *(f) The integrity of existing network utilities and infrastructure, including their safe and efficient operation.*	The explanation for this policy states: *The expansion of existing urban areas or the development of new urban areas has the potential to create significant adverse effects. The cost to the general public of extending infrastructure to service new urban areas must not outweigh the public benefits to be gained. Furthermore, the safe and efficient operation of existing infrastructure must not be compromised. The values associated with the area to be developed must also be assessed to ensure*

(g) The life supporting capacity of land resources. *(h) The intrinsic values of areas of significant indigenous vegetation and habitats of significant indigenous fauna.*	*landscape, soil, water, and heritage resources are not adversely affected by the expansion.* The urban expansion will avoid adverse effects on adjoining rural areas and outstanding landscape values and indigenous biodiversity, and other elements.

2.3.8 Summary

The proposed rezoning provides an opportunity to more appropriately give effect to the PORPS and District Plan objectives and policies through providing for housing in an appropriate location that will result in a small loss of rural productive land.

2.3.9 Sections 74 and 75 of the RMA and the Cromwell Spatial Plan

Section 75(3) of the RMA requires a district plan to give effect to:

(a) any national policy statement; and

(b) any New Zealand coastal policy statement; and

(ba) a national planning standard; and

(c) any regional policy statement

Section 74(2)(b)(i) of the RMA requires that when preparing or changing a district plan, a territorial authority shall have regard to management plans and strategies prepared under other Acts.

Regard is able to (and should) be had to the Cromwell Spatial Plan, howeverPC19 and the District Plan is not required to 'give effect to' the Cromwell Spatial Plan or any other plan endorsed by the Council in terms of the Local Government Act derived consultation documents. The objectives and policies of the NPSUD (to the extent relevant to the District), the PORPS19 and the District Plan are required to be given effect to by PC19 and this proposal. The Cromwell Spatial Plan is relevant, but only that regard shall be given to it.

The Cromwell Spatial Plan was completed in 2019, and the growth projections and population information appeared to be for the period 2013-2017 and the 2018 Census data. The Cromwell Spatial Plan does not identify any growth for Pisa Moorings, despite it being an established urban settlement. The Spatial Plan identifies consolidation within Cromwell itself, and PC19 has identified several sites on the edge of Cromwell as appropriate for urban zoning, including a relatively large area of existing Rural Resource Area zoned land adjacent to SH8 as rezoning from Rural Resource Area with established horticulture activities to Medium Density Residential (Freeway Orchard Site) and land at Bannockburn (Domain Road Vineyard) from Rural Resource Area to Large Lot Residential.

Notwithstanding that the Spatial Plan does not identify any urban extension at Pisa Moorings, the rezoning proposal at Pisa Moorings is considered an appropriate candidate for rezoning for the following reasons:

- It is adjacent to an established urban settlement.
- It is adjacent to existing reticulated water and wastewater and can be serviced.
- There are sufficient roading connections to the local road network and the ability to use an existing access onto SH6.
- The land has capacity for urban development and will not affect any significant amenity landscapes or ONL/F.
- The urban extension is a logical and contiguous extension of an established urban area, the proposed zoning is not a spot zone and is not isolated from existing urban areas.
- The proposed urban extension at Pisa Moorings is consistent with the Cromwell Spatial Plan, despite that Plan's omission of the opportunities for growth at Pisa Moorings because the proposal consolidates an existing urban settlement. Objective 1 of the Spatial Plan states: *Enable consolidated urban development, predominantly accommodating future growth within existing Cromwell (including the town centre and nearby localities) at a higher density of development than is currently occurring.*

  The extension of Pisa Moorings accommodates growth within a nearby locality to Cromwell, being land framed by the existing settlement and the State Highway.

2.3.10 Evaluation – s32(1)(b)

Section 32(1)(b)(i) requires an examination as to whether the provisions in the proposal are the most appropriate way to achieve the objectives by identifying other reasonably practicable options for achieving the objectives. The following options have been considered.

(a) Option 1: Status Quo

The status quo would see the majority of the site retained as Rural Resource Area. This would not achieve the objectives of PC19, and would not acknowledge the opportunity for an extension to the existing urban settlement at Pisa Moorings in an integrated and coordinated way.

Applying for resource consents is inefficient and results in high transaction costs, and negates the opportunity for a certainty of outcomes through the use of a development area plan/structure plan added to the District Plan.

The resource consent process under the Rural Resource zoning does not provide for a strategic and master planned type approach to the development of the site, nor does

the resource consent process sufficiently enable the social and economic benefits of providing for land uses in a tailored way that is otherwise able to be evaluated through section 32, and the identification of the most appropriate way to achieve the objectives and policies of the District Plan.

For these reasons, relying on the existing zoning and applying for multiple non-complying resource consents is not efficient, nor as effective at providing for development while managing adverse effects on the environment, provided there is an appropriate alternative option.

(b) Option 2: Applying a Special Purpose Zone

This option is available under the National Planning Standards framework, and could be simpler from the Submitters perspective to 'bed-in' the Pisa Moorings structure plan, but would have disregard to the utility and efficiency of the notified PC19 framework. This option would also require numerous consequential amendments to the District Plan and PC 19 provisions, and the district wide framework to include zone specific rules (i.e signs, earthworks chapters). This option is not considered efficient in a plan drafting and plan design context, particularly where PC19 is striving to consolidate legacy zoning under the District Plan.

This option is not favoured and it is recommended that the rezoning adopt to the greatest extent practicable the zone framework as notified in PC19.

(c) Option 3: Adopting the notified PC19 zones with a development area plan

This option involves adopting the most relevant and 'best fit' notified PC19 zones, with relatively minor modifications to the MRZ provisions to introduce the Commercial Zoning precinct overlay. The Commercial Zoning precinct is also able to be adopted for other parts of the district and need to not be entirely bespoke to the Pisa Moorings rezoning proposal. The Commercial Precinct overlay and provisions provide certainty to the local community of the nature and scale of non-residential activity and avoid the need for multiple resource consents under the LRZ and MRZ local convenience retail rule framework.

The MRZ areas within the proposed zoning can also be effectively developed by applying the Council's residential design guidelines and, the development area plan and master plan can be used collectively with the comprehensive residential development guidelines.

2.3.11 Preferred Option

The preferred option is Option 3: Adopting the notified PC 19 zones with a development area plan, and a bespoke rule for commercial activities within a defined precinct/overlay. For the reasons set out above, in this evaluation for Section 32AA purposes:

- The **existing proposal** is the notified PC19 Zoning and provisions, i.e. the Rural Resource Area, and small areas of LRZ and LLR zoning on the site;

- The **amending proposal**: Rezoning the site as shown in the rezoning plan attached in Appendix A, with the addition of a development area plan.

This option has the ability to better achieve the purpose of the RMA by providing for greater housing options and economic and social wellbeing while minimising adverse effects and the relatively small loss of the rural productive resource.

2.3.12 Efficiency and effectiveness of the proposed provisions

Section 32(1)(b)(ii) requires an examination of the efficiency and effectiveness of the provisions.

The proposed provisions associated with the rezoning are set out in the submission document (in red text). In general terms, the provisions set out generally the same regulatory intervention as the notified PC19 framework, ie. a restricted discretionary activity subdivision with the inclusion of the development area plan as a matter of discretion, where relevant.

Adherence to the development area plan and the matters for consideration as identified in the proposed subdivision policy will create an additional transaction cost for the developer, but is a small cost given the certainty that the development area plan provides for the community overall in terms of expectations for future development.

Transaction costs for future occupants are commensurate with the PC19 framework.

2.3.13 Key reasons for deciding on the provisions

Section 32(1)(b)(iii) requires a summary of the reasons for deciding on the provisions, those reasons are:

- The provisions integrate well with the notified PC19 framework.
- The zoning is a contiguous and coherent extension of the existing Pisa moorings development.
- The provisions identify and appropriately manage the identified sensitivities such as road noise and landscape buffer plantings.
- The bespoke commercial precinct is more effective than relying on resource consents through the notified PC19 local convenience retail rule framework.
- The provisions will ensure that subdivision and development is sustainable and will appropriately manage adverse effects.

2.4 Section 32 (2)

Section 32(2) requires that an assessment under section 32(1)(b)(ii), as part of assessing the efficiency and effectiveness of the provisions in achieving the objectives, identifies and assesses the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the provisions. This

includes the opportunities for economic growth that are anticipated to be provided or reduced, and employment that is anticipated to be provided or reduced.

2.4.1 Benefits and costs including opportunities for economic growth and employment to be provided or reduced

The landscape, reverse sensitivity/road nose, contaminated land, roading and servicing aspects of the proposal have been assessed in the respective technical reports and summarised, and their effects on the environment assessed in the planning assessment. The costs to the environment, including social and cultural costs are able to be appropriately managed so that the benefits outweigh those costs. The benefits are broadly summarised as being:

- Additional housing options at Pisa Moorings, and at a variety of densities to provide flexibility of housing choice which responds to NPSUD and District Plan Section 6 directives for a diversity of housing and the social and economic well being of the community;
- Opportunities to enhance the built and social environment by way of a small scale commercial area at Pisa Moorings;
- Opportunities for a neighbourhood to be connected through a network of pedestrian walkways;
- Employment through the subdivision development activities and construction of housing. Ongoing employment through commercial activities within the Precinct through businesses which serve the local community, such as cafes, early childhood education, a small supermarket (<400m²), and service retail activity.

The costs are increased traffic congestion at the Pisa Moorings Road and SH6 intersection, a small loss of rural productive use and a small loss of rural character.

For the above reasons the benefits of the proposal outweigh the costs.

2.4.2 Risk of Acting or not acting

While the costs and benefits have not been quantified, they have been evaluated by technical reports, and the risk of acting (i.e. the rezoning as proposed taking effect) is considered to be low. There is a high level of information available about the site and the subject matter of the provisions, in particular the likely ecological and landscape effects and traffic effects. By not acting, significant consenting costs will be incurred, and development will be piecemeal, if not limited.

2.5 Section 32(3)

The requirements of section 32(3) have been incorporated into the above evaluation by considering the objectives of PC19 (the existing proposal) and the implications of the rezoning and additional objectives and provisions in the District Plan.

Preliminary Infrastructure and Services Report

Pisa Village Development Ltd & Pisa Moorings Vineyard Ltd

Proposed Rezoning of Lot 2 DP 397990, Lot 2 DP 405431, Lot 19 DP 520912 & Lot 112 DP 546309

Prepared by:

C Hughes and Associates Ltd
Surveying and Resource Management
Central Otago

Table of Contents

1.0 Introduction

Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd have engaged C Hughes and Associates Ltd to prepare an infrastructure and services report in support of their submission on proposed Plan Change 19 to the Central Otago District Plan. Their submission is a request for the site being Lot 2 DP 397990, Lot 2 DP 405431, Lot 19 DP 520912, and Lot 112 DP 546309 to be rezoned from Rural Resource Area and Residential Resource Area (3) and (13) to a mix of Low Density Residential, Medium Density Residential, and a local convenience retail zone or precinct. The 24.3 Ha site is located between Luggate-Cromwell Road (SH 6) and the existing Pisa Moorings residential settlement. This report details the nature of the existing infrastructure in the area, and the potential new infrastructure required for development of the site at a density allowed for by the proposed zoning. In doing so, it provides confirmation that servicing of future development of the site at the density achievable under the proposed rezoning can be provided in accordance with Central Otago District Council (CODC) standards.

2.0 Site and Soils

The existing site land use is agricultural and horticultural, in the form of an orchard and packhouse in the northern portion of the site and a vineyard in the southern portion. Given this existing land use, Claude Midgley of Insight Engineering was engaged to undertake a detailed environmental site investigation (DSI) to assess the suitability of the site for residential development. Findings of the DSI were that the majority of soil encountered across the site was light brown sandy silt, which is consistent with the geological context of the site as indicated by the GNS New Zealand Geology Webmap as Holocene and Late Pleistocene river deposits. The DSI also identified several potential sources of soil contamination, as to be expected given the existing site use, such as treated timber posts which are known to leach contaminants. Recommendations of the DSI were that residential development of the site would be appropriate with implementation of a suitable Remediation Action Plan (RAP) to formalise the strategy to manage or remediate the contaminated areas during the completion of soil disturbance works.

3.0 Traffic & Road Design

As per the provided structure plan (C1710) indicative roading networks for future development of the site would be accessed via the existing Pisa Moorings local road network, with potential entrances off Stratford Drive and Pony Court. This approach means that future vehicle movements, due to residential development of the site, would gain access to their properties via the existing Pisa Moorings Road intersection with Luggate-Cromwell Road (SH 6). Jason Bartlett of Bartlett Consulting has provided an assessment of the operation and capacity of this intersection with the additional vehicle movements that would occur if the site was developed to the density allowed for by the proposed rezoning. The findings of his assessment were that, following complete development of the site, traffic flow during pm peak times would be at 43% of the intersection's capacity and that the proposed rezoning can be accommodated within the existing state highway infrastructure without the need for improvements.

In relation to the Pisa Moorings local road network, because the site has significant lengths of frontage to both Stratford Drive and Pony Court, and because these roads are formed to the same standard and width as Pisa Moorings Road itself, new intersections can be designed and constructed with ample carriageway widths, kerb return radii, and sight distances etc, so as to provide safe and efficient roading network extension. Given the relatively flat natural topography of the site, the roading network within the site can easily be designed and constructed with longitudinal gradients, carriageway widths, and crossfall in accordance with CODC standards.

4.0 Stormwater

Given the free draining ground conditions of the site, as in the wider Pisa Moorings area, any stormwater run-off from future development of the site can be locally disposed of via soakage pits. Stormwater disposal via soakage pits avoids the need for intensive stormwater reticulation to concentrate the stormwater flow and direct it off site. Stormwater accumulated on the roading network can be directed to and disposed of by soakage pits within the road reserve or other reserve areas. Stormwater accumulated within residential allotments resulting from built development will be required to be disposed of within individual allotments via onsite soakage.

5.0 Wastewater

After completion of a UAV survey to determine ground levels across the site, and investigation of the location and depths of the existing CODC wastewater network within the Pisa Moorings residential area adjoining the site, we have completed calculations to confirm that the entire site can be serviced by extension of the existing CODC gravity wastewater network.

There are existing 150mm uPVC wastewater drainage pipes with standard 1050mm concrete manholes located within Stratford Drive and Pony Court adjacent to the site. This existing wastewater network is at a suitable depth such that a gravity wastewater network extension from these existing manholes can be designed in accordance with CODC standards to service future development.

Ensuring compliance with CODC standards, particularly in terms of minimum grades of pipes and the maximum distances between manholes, we have determined that the gravity network can be extended such that it will service all lots across the site if it is developed in accordance with the proposed rezoning. Our calculations have also confirmed that all pipes within the extension to the network can be provided with suitable cover between the top of pipes and finished surface level under both potential future trafficable and non-trafficable surfaces.

We understand that CODC have engaged Mott MacDonald to complete modelling of the existing wastewater and water networks across Pisa Moorings and the wider Cromwell basin area. Whilst we have not yet received information regarding the outcomes of this modelling, the CODC Engineering department have previously advised that they agree in principle with the serviceability of a future development of the site at a residential density. Development

concept plans, including indicative servicing plans for the entire site, were previously tabled at meetings with CODC Engineering and Planning department staff, and the serviceability of the site was never raised as a concern. The finer design details, and wider network connection options, will obviously be worked through during future resource consenting processes.

6.0 Water Supply

Potable water reticulation to service future residential development of the site can be connected to the existing CODC water reticulation within the Pisa Moorings residential area adjoining the site. There are existing CODC water mains located in Pisa Moorings Road, Stratford Drive, and Pony Court to which reticulation to service development of the site can be connected.

The site has the advantage of having access to existing CODC water reticulation at both the southern and northern ends of the site. Future water reticulation can therefore be looped through the site, connected at both the southern and northern ends to the existing network, including to the 300mm diameter trunk water main within Pisa Moorings Road (if considered appropriate by the CODC Engineering department). Looped water reticulation has the advantages of reducing the risk of water stagnation and improving the ability to isolate and repair faults in the network, minimising loss of service if faults do occur.

As noted above, we understand that CODC have engaged Mott MacDonald to complete modelling of the existing wastewater and water networks across Pisa Moorings and the wider Cromwell basin area. Whilst we have not yet received information regarding the outcomes of this modelling, the CODC Engineering department have previously advised that they agree in principle with the serviceability of a future development of the site at a residential density. Development concept plans, including indicative servicing plans for the entire site, were previously tabled at meetings with CODC Engineering and Planning department staff, and the serviceability of the site was never raised as a concern. The finer design details, and wider network connection options, will obviously be worked through during future resource consenting processes.

7.0 Electricity & Telecommunications

It is anticipated that, given the location of the site directly adjoining existing residential activity and Aurora Energy and Chorus New Zealand (network utility operator) networks, residential development of the site, at a density allowed for by the proposed zoning, will be serviceable in terms of electricity and telecommunications. Aurora Energy have an extensive network of high and low voltage electrical infrastructure in the immediate area, and we understand that Chorus New Zealand also have an extensive high bandwidth fibre optic telecommunications network immediately adjacent to the site. Extension of both the electricity and telecommunications networks are being considered through consultation with the network utility operators and their approved contractors, and these extensions will be subject to final designs and approvals at resource consenting stage.

8.0 Summary

Following our investigations into the nature of the existing infrastructure in the area, and the potential infrastructure required to service development of the site at a density allowed for by the proposed rezoning we have found that servicing of future development of the site can be achieved in accordance with CODC standards.

30 August 2022

Pisa Village Development Ltd & Pisa Moorings Vineyards Ltd

C/- Town Planning Group
PO Box 2559
Wakatipu
Queenstown, 9349

Attention: Craig Barr

Dear Craig,

Pisa Moorings, Luggate-Cromwell Road (SH6) Proposed Zone Change, Access Assessment

The purpose of this letter is to assess the operation and capacity of the existing Pisa Moorings Road intersection with Luggate-Cromwell Road (SH6) and this intersection's ability to support a proposed rezoning submission.

1 Background

The Submitters, Pisa Village Development Ltd & Pisa Moorings Vineyards Ltd, propose to extend the residential zoning at Pisa Moorings to include Lot 2 DP397990 and Lot 112 DP546309, the site. These lots are located between Luggate-Cromwell Road (SH6) and the existing Pisa Moorings residential area. A small commercial precinct is sought in the northern extent of the site to provide for local convenience retail and service activities. The site is generally within the Rural Resource Area within the CODC Operative District Plan (ODP).

The site is currently used for horticulture, the northern part of the site (828 Luggate-Cromwell Road) includes a fruit packing facility. The onsite activities are accessed from Luggate-Cromwell Road (SH6) at two locations. It is also possible to access the site via the Pisa Moorings local road network via Stratford Drive and Pony Court.

The proposed rezoning will utilise the existing local road network and will obtain access onto SH6 via the Pisa Road intersection. The two existing accesses onto SH6 would be closed.

2 Transport Network

2.1 Luggate-Cromwell Road (SH6)

The site is currently accessed via 2 accesses from Luggate-Cromwell Road, SH6. SH6 is a state highway managed by Waka Kotahi (NZTA) and provides a transport link between the east and west coast of the South Island via Haast Pass. At the site SH6 has an estimated traffic flow of 3480vpd with 8.5% heavy vehicles[1]. The traffic flow estimate increases to the south of the site, between Cromwell and the intersection with Pisa Moorings Road to 4704vpd[2]. SH6 has a posted speed limit of 100km/hr, no speed survey has been undertaken

[1] From Mobile Road (mobileroad.org) – 3480vpd with 8.459% heavy vehicles dated 24/12/2020.
[2] From Mobile Road (mobileroad.org) – 4704vpd with 8.459% heavy vehicles dated 24/12/2020

PO Box 1383 | Queenstown | 9348
jason@bartlettconsulting.co.nz | 027 555 8824 | 03 442 3103

at the site, based on the generally straight and flat alignment of SH6 it is likely that the upper operating speed could be slightly higher than the posted speed limit, say 110km/hr.

SH6 is has a general carriageway width of approximately 8.5m and is marked with 2 (opposing) traffic lanes.

Traffic count data for SH6 is collated by Waka Kotahi. There are two traffic counts near to the site that can be used to gain an understanding of the current state highway traffic and historic growth rates. The following, Table 1, below provides a summary of the latest traffic count data nearest to the site. This traffic count data is provided as Average Annual Daily Traffic (AADT).

Table 1 – SH6 Traffic Count Data, source NZTA State Highway Traffic Volumes 2013 – 2017

Site	2016	2017	2018	2019	2020
SH6 – Albertburn (before Albertburn Bridge), ID:00600917	2298	2508	2617	2806	2719
SH6 – Lowburn, ID:00600939	4398	4628	5541	6006	5622

The Albertburn traffic count site is located north of Pisa Moorings, and the Lowburn traffic count is located to the south, between Pisa Moorings and Cromwell

The Lowburn traffic data shows an average pre-Covid19 averaged annual growth rate over 5 years (2014-2019) of 10.2%, this traffic growth will have been heavily influenced by residential development and growth at Pisa Moorings, and traffic between Cromwell and Pisa Moorings.

The Albertburn traffic count is less influenced by the growth of Pisa Moorings and is more representative of the background traffic and growth. For the same 5 year period (pre-Covid19, 2014-2019) this data shows an averaged annual growth rate of 8.5%.

The above traffic flow data is affected by the traffic reduction in 2020 from the Covid19 pandemic which included border restrictions and reduced foreign tourism. Typically, 2022 traffic counts are similar or slightly less than the peak 2018/19 traffic flows as the country recovers from the Covid19 pandemic and international tourism returns.

It is noted that future traffic growth will be reliant on elements including tourism (domestic and foreign) and other commercial and residential subdivisions enabled under the ODP. For this traffic assessment a future traffic generation rate of 4% has been adopted which is generally applicable where the extent of future development is unknown.

2.2 Pisa Moorings Road

Pisa Moorings Road provides the only access to the residential area of Pisa Moorings. The existing zoned area currently (July 2021) includes approximately 384 constructed homes including 24 apartments. The residential zoning (Residential Resource Area) allows for a potential (permitted) 495 homes[3]. Pisa Moorings Road is classified as an urban local road within the CODC transport network (refer ODP). The estimated traffic flow on Pisa Moorings Road is 1000vpd with 6% heavy vehicles[4]. Given the number of residential dwellings served (384 in July 2021) it is likely that the current, 2022, daily traffic flow will be higher than the current estimates.

Pisa Moorings Road has a general carriageway width of 7.5m which provides the trafficked carriageway width of a residential collector road with no allowance for roadside parking on the sealed carriageway. The posted speed limit of Pisa Moorings Road is 50km/hr, the general

[3] Based on information provided by C. Hughes & Associates.
[4] From Mobile Road (mobileroad.org) – 1000vpd with 6% heavy vehicles dated 28/05/2018.

alignment of Pisa Moorings Road and the level of roadside development suggests an operating speed of approximately 50km/hr to match the speed limit.

2.3 Pisa Mooring Access Intersection

Access to Pisa Moorings is provided via the Pisa Moorings Road intersection with Luggate-Cromwell Road, SH6. This intersection is formed as a cross intersection with Clark Road opposite, the alignment of Pisa Moorings Road with Clark Road opposite introduces a slight left-right stagger which is not ideal. A review of the NZTA crash data suggests only a single crash has occurred at this intersection in the last 5 years, this was a 2 car crash at the intersection resulting in a minor injury in 2018[5].

2.3.1 Existing Traffic (2021)

To assess the capacity and operational efficiency of this intersection a traffic survey was undertaken on 27 July 2021. This survey showed a peak during the pm peak period which is also a worst case due to the dominance of the right turn traffic from SH6 to Pisa Moorings Road with the conflicting southbound SH6 traffic flow.

During this pm peak period the surveyed traffic using Pisa Moorings Road (311 vehicles per hour, vph) equated to 0.81vph/dwelling based on the current 384 built homes. It is noted that this peak traffic generate rate compares with the 85th percentile (design) traffic generation rate for an outer suburban dwelling of 0.9vph/dwelling[6]. The am peak period traffic for Pisa Moorings Road was 233vph or a rate of 0.58vph/dwelling, significantly less than the pm peak period traffic generation.

The existing traffic (2021) flows and distribution from the traffic survey undertaken are provided in Appendix A. It is noted that this includes the surveyed (2021) peak hour traffic flow on the adjacent SH6.

2.3.2 Permitted Traffic (2022)

It is possible that the current residential zoning could enable the development of up to 495 residential dwellings at Pisa Moorings as permitted development. Using the existing traffic generation rate (0.81vph/dwelling) this could result in a permitted traffic flow of 401vph on Pisa Moorings Road during the pm peak period, a 29% traffic flow increase. This will be distributed as per the existing traffic flows. The permitted traffic (2022) flows are provided in Appendix A which include 4% growth for SH6 traffic.

2.3.3 Traffic Modelling

SIDRA modelling software has been used to investigate the performance of the access intersection. Because of the very low volume of traffic using Clark Road and the dominance of SH6 and right turning traffic to Pisa Moorings this has been modelled as a cross intersection. For this assessment only the pm peak has been modelled as the traffic flows are significantly higher and have a greater influence on the efficiency of the intersection. The following, Table 2, outlines the level of service of the existing intersection in three different pm peak period scenario, including:

- The existing traffic (2021) to compare with observations at the time of the survey to validate the model,

[5] From Waka Kotahi (NZTA) open data portal.
[6] Refer Waka Kotahi (NZTA) Research Report 453 (RR453) Trips and parking related to land use, Table 7.4.

- The permitted traffic (2022) to consider the likely intersection performance given the current residential zoning at Pisa Moorings. This model considers full development under the current planning environment, and
- A future permitted (2032) to consider a future base, design year, performance for the considering effects of an increased residential activities at Pisa Moorings.

The results are based on the right turning manoeuvres as these turning movements will have the lowest level of service (LOS)/greatest delay, which are indicators of the operational efficiency of the intersection.

Table 2 – Intersection Performance for right turners, Permitted pm peak period

Approach	SH6 – Cromwell	Pisa Moorings Rd	SH6 – Luggate	Clark Rd
Existing 2021	LOS A 95% Que – 0.8veh Delay – 8.8 sec	LOS C 95% Que – 0.4veh Delay – 16.2 sec Overall LOS A	LOS A	LOS C 95% Que – 0.1veh Delay – 16.2 sec Overall LOS B
	Overall intersection efficiency 17%			
Permitted 2022 4% SH6 Growth	LOS A 95% Que – 1.1veh Delay – 8.9 sec	LOS C 95% Que – 0.5veh Delay – 19.3 sec Overall LOS A	LOS A	LOS C 95% Que – 0.1veh Delay – 19.4 sec Overall LOS C
	Overall intersection efficiency 22%			
Permitted 2032 4% SH6 Growth	LOS A 95% Que – 1.2veh Delay – 9.7 sec	LOS D 95% Que – 0.7veh Delay – 31.0 sec Overall LOS B	LOS A	LOS D 95% Que – 0.1veh Delay – 31.2 sec Overall LOS C
	Overall intersection efficiency 26%			

The existing (2021) model shows a queue length (95% queue length) for the right turn, from SH6 to Pisa Moorings Road, of 0.8 vehicles. In practical terms this suggests that the queuing would typically be only 1 vehicle. During the surveys it was noted that traffic on the state highway was bunching when approaching the intersection which resulted in the queue lengths of up to 3 vehicles for very short times. It is therefore noted that the 100km/hr speed limit and vehicle bunching result in observed queue lengths which may slightly exceed the modelled queue length for very short time periods. This is for periods of less than 5% of the peak period and therefore not visible in the model. During the surveys it was noted that, overall, there was minimal queuing identified at the intersection. Based on the observed and modelled results the intersection is currently operating with minimal operational delay.

The permitted (2022) model shows that should the existing residential resource area be fully developed there will be a slight change in the operation of the existing intersection. This change results in an additional delay approximately 3 seconds when right turning from either Pisa Moorings Road or Clark Road, although these movements remain at level of service C. For the Clark Road approach the overall level of service B will reduce to level of service C. In reality this is unlikely to have any noticeable traffic effects noting that Clark Road has a very low traffic flow with only 5 vehicle movement on this approach in the pm peak period.

Traffic growth on SH6 over the next 10 years (at 4% per annum) will result in a change in the operational efficiency of the intersection. This is shown by the change in the level of service for the right turns from Pisa Moorings Road and Clark Road approaches. The anticipated traffic growth on SH6 will result in a noticeable change decrease in the Level of Service (C to

D) for these right turn manoeuvres with increased delays to just over 30 seconds. In reality these right turn manoeuvres are very lightly trafficked with a total 12 vehicles turning right from Pisa Moorings Road and 3 vehicles turning right from Clark Road. Overall, the Pisa Moorings Road intersection have a good operational efficiency, operating at 26% of its capacity in 2032.

2.3.4 Sensitivity Testing

As a sensitivity assessment a further traffic model has been considered, this allows for higher SH6 traffic growth rate. As an example a medium growth rate of 5.5% per annum may be considered or a higher traffic growth rate of 8.5% per annum. The higher growth rate is the same as the observed averaged annual traffic growth rate to the north of Pisa Moorings (2014-2019 at Albertburn). The following Table 3 provides a summary of the sensitivity modelling undertaken. This table also provides the permitted 2032 traffic with 4% state highway growth for comparison.

Table 3 – Intersection Performance for right turners, Sensitivity of pm peak period

Approach	SH6 – Cromwell	Pisa Moorings Rd	SH6 – Luggate	Clark Rd
Permitted 2032 4% SH6 Growth	LOS A 95% Que – 1.2veh Delay – 9.7 sec	LOS D 95% Que – 0.7veh Delay – 31.0 sec Overall LOS B	LOS A	LOS D 95% Que – 0.1veh Delay – 31.2 sec Overall LOS C
	Overall intersection efficiency 26%			
Permitted 2032 5.5% SH6 Growth	LOS B 95% Que – 1.4veh Delay – 10.3 sec	LOS E 95% Que – 0.8veh Delay – 40.0 sec Overall LOS B	LOS B 95% Que – 0.0veh Delay – 10.5 sec	LOS E 95% Que – 0.1veh Delay – 40.2 sec Overall LOS D
	Overall intersection efficiency 29%			
Permitted 2032 8.5% SH6 Growth	LOS B 95% Que – 1.9veh Delay – 12.4 sec	LOS F 95% Que – 1.5veh Delay – 81.8 sec Overall LOS C	LOS B 95% Que – 0.0veh Delay – 12.3 sec	LOS F 95% Que – 0.2veh Delay – 80.0 sec Overall LOS F
	Overall intersection efficiency 39%			

The slight increase in the growth on SH6 (5.5% per annum) will have a noticeable effect on the operational efficiency of the Pisa Mooring access intersection suggesting that the right turn from Pisa Moorings Road would reduce to a level of service E (40 second delay). The higher (8.5% per annum) will have a further reduction in right turning level of service reducing to F (81.8 seconds delay).

However, each of these assessments maintain the 95% right turn queue, from SH6 to Pisa Moorings, to less than 2 queued vehicles with a delay of less than 12.4 seconds.

Overall, this sensitivity testing suggests that the overall operational capacity of the intersection of SH6 with Pisa Moorings Road is highly sensitive to traffic growth on SH6. However, even at the higher growth rates overall queuing is low with less than 2 vehicles queuing either to or from Pisa Moorings Road and therefore the intersection form is appropriate for the anticipated turning movements and traffic flows.

3 Proposed Development

It is proposed to extend the residential zoning over the site to facilitate further residential development at Pisa Moorings. The proposed extension will allow for low density residential development with a central portion allowing for medium density residential development. The rezoning includes a small section of local convenience retail/commercial and mixed use activities in the portion of the site which includes the existing packing facilities.

The rezoning comprises 18.6ha low density residential zoning, 5.7ha medium density residential zoning and within this 5.7ha area, a local retail/convenience commercial zoning of 1.7ha. It is understood that the proposed rezoning (from Rural Resource Area) would yield approximately 292 residential dwellings and 2 retail/commercial lots (with several small scale commercial activities). The proposed rezoning is provided in Appendix B.

3.1 Proposed Traffic

The proposed development has been modelled as 292 residential dwellings. This assessment is to address potential traffic effects at the intersection of Pisa Moorings Road and SH6 and therefore the peak (hourly) traffic generation is appropriate at this stage of the development. From the traffic surveys the peak traffic generation will be during the pm peak period. To consider a robust assessment the peak pm traffic generation has been based on the design rate from Waka Kotahi (NZTA) Research Report 453 (RR453) Trips and parking related to land use. This document provides a design traffic generation rate for an outer suburban dwelling of 0.9vph/dwelling[7]. The proposed traffic distribution at the intersection of Pisa Moorings Road with SH6 is based on the traffic survey undertaken (refer Appendix A). The proposed traffic generation and distribution is provided in Appendix C.

It is noted that the proposed rezoning also includes a small precinct for retail, community and service activities that will serve the needs of the local community. These activities will not be high traffic generating activities. It is unlikely any noticeable traffic effects at intersection of Pisa Moorings Road with SH6. Specific trips for these activities have been excluded from the overall peak period traffic generation and modelling.

3.2 Proposed Traffic Modelling

The proposed traffic flows have been modelled, with the 4% state highway traffic growth to a design year. The design year is 10 years from now and is to represent a future year when full development traffic may have been completed and traffic is part is within the state highway road network.

The following, Table 4, provides the anticipated intersection performance from modelling. This table also provides the future year permitted traffic modelling at the SH6 intersection for comparison with various SH6 traffic growth for comparison.

Table 4 – Intersection Performance, pm peak period

Approach	SH6 – Cromwell	Pisa Moorings Rd	SH6 – Luggate	Clark Rd
Permitted 2032 4% SH6 Growth	LOS A 95% Que – 1.2veh Delay – 9.7 sec	LOS D 95% Que – 0.7veh Delay – 31.0 sec Overall LOS B	LOS A	LOS D 95% Que – 0.1veh Delay – 31.2 sec Overall LOS C

[7] Refer Waka Kotahi (NZTA) Research Report 453 (RR453) Trips and parking related to land use, Table 7.4.

Approach	SH6 – Cromwell	Pisa Moorings Rd	SH6 – Luggate	Clark Rd
	Overall intersection efficiency 26%			
Permitted 2032 8.5% SH6 Growth	LOS B 95% Que – 1.9veh Delay – 12.4 sec	LOS F 95% Que – 1.5veh Delay – 81.8 sec Overall LOS C	LOS B 95% Que – 0.0veh Delay – 12.3 sec	LOS F 95% Que – 0.2veh Delay – 80.0 sec Overall LOS F
	Overall intersection efficiency 39%			
Proposed 2032 4% SH6 Growth	LOS B 95% Que – 3.0veh Delay – 10.7 sec	LOS F 95% Que – 1.8veh Delay – 52.4 sec Overall LOS C	LOS A	LOS F 95% Que – 0.2veh Delay – 51.7 sec Overall LOS E
	Overall intersection efficiency 43%			

The proposed traffic will increase the right turning traffic which has an effect on the operation efficiency of the Pisa Moorings access intersection. Based on the permitted traffic (4% SH6 growth) the proposed development will represent an overall reduction in the level of service for the right turn manoeuvres. Overall, the intersection will operate at approximately 43% of capacity suggesting that there will be a noticeable change but that the proposed development can be accommodated within the existing intersection design.

The sensitivity test undertaken shows that the proposed development will have a similar effect on the operation of the SH6 intersection as the higher traffic growth rate (8.5% per annum) scenario. In comparison with this scenario the queue length will be similar (less than 2 vehicles) although the proposed development will have less overall delay even though the level of service will be similar.

4 Waka Kotahi Consultation

At an early stage of this scheme development Waka Kotahi were contacted regarding the change in performance and efficiency of their state highway network. In response to the intersection modelling Waka Kotahi have requested a safe systems assessment of effects on the intersection with SH6 with Pisa Moorings Road[8]. No substantive feedback on the rezoning proposal was provided.

A safe systems assessment[9] concentrates on road safety and the reduction of serious and fatal road crashes. The greatest road safety concern at any intersection is speed. Drivers are looking for gaps in the through traffic flow (SH6 traffic flow) to make their turning movements and speed has a direct correlation to the severity of any crash. Therefore, the easiest way to reduce the occurrence of a serious or fatal at this intersection will require that the speed of through traffic on SH6 is reduced from 100km/hr to, ideally, less than 50km/hr. This will reduce the risk of death or serious injury from side impact crashes which are typical at intersections. To achieve this level of speed reduction it is likely by upgrading the existing access intersection to a roundabout intersection where the circulating carriageway and intersection controls (give way) results in an operating speed of approximately 40km/hr.

[8] From Correspondence from Waka Kotahi (NZTA), Julie McMinn dated 7 March 2022.
[9] Refer Austroads Guidance, Safe System Assessment Framework, February 2016.

Although a roundabout intersection is likely to provide a safer access intersection there are a number of alternatives to a roundabout, and considerations associated with installing a roundabout:

- Upgrades to the right turn bay and current intersection are possible within the existing road corridor such as the development of physical islands to further separate the different traffic streams,
- Reducing the posted speed limit at the intersection to reduce any crash severity,
- The potential for other connections the site to the north, ie upgrading the existing packing facility access directly onto SH6,
- Consideration of other transport networks such as walking, cycling and public transport to reduce the overall vehicle traffic between Pisa Moorings and Cromwell.
- The Pisa Moorings access intersection has a high right turn traffic flow from SH6 to Pisa Moorings Road (southern approach). In a roundabout scenario this vehicle movement is unopposed and will therefore dominate the roundabout transferring delay to southbound (to Cromwell) SH6 traffic.
- It is possible that a roundabout will increase the overall number of conflicts at the intersection through the introduction of the circulating carriageway, this may increase the number of minor and non injury crashes at the intersection.

Theoretically, roundabouts reduce the occurrence of serious and fatal crashes at an intersection. However, on a practical level given the current crash history at the intersection, 1 minor injury crash in the last 5 years, it is unlikely that a roundabout intersection will noticeably improve road safety at the site.

The site currently has access directly onto SH6 at the northern boundary. It is possible for an additional intersection to be formed at this location. It is understood that Waka Kotahi prefer that development onto SH6 is consolidated utilising the existing Pisa Mooring access, this is preferred and supported from a traffic safety and road network efficiency perspective.

5 Summary

Pisa Village Development Ltd & Pisa Moorings Vineyards Ltd proposed to rezone the site to low density and medium density residential with allowance for local convenience commercial/retail activities.

The site is currently directly accessed from SH6 at two locations, it is feasible to form a new intersection from the northernmost crossing point which currently services the pack house. It is preferred that the proposed rezoned residential area is accessed from the local road network within the Pisa Moorings. This assessment therefore considers the proposed rezoned residential area being accessed via the Pisa Moorings Road network and utilising the existing Pisa Moorings access intersection of Pisa Moorings Road with Luggate-Cromwell Road (SH6).

The existing intersection is formed with a right turn bay and left turn lane on the state highway. To assess the operation and efficiency of this intersection a traffic survey has been undertaken in July 2021. This showed that the existing intersection is appropriate and operates well below its capacity. The intersection can also accommodate the full, permitted, development of the current zoning both in the current year (2022) and a future design year (2032) allowing for a number of potential state highway growth rates; reasonable 4%, medium growth 5.5% or high growth 8.5% per annum. This assessment shows that the current intersection can accommodate the full development of the current zone, at reasonable state highway traffic growth rate of 4% the intersection will operate at 26% of its capacity.

The proposed rezoning will result in a noticeable change in the performance of the right turn manoeuvres at the intersection and an increase in traffic delay and level of service during the worst case pm peak period. During this peak time the proposed rezoning will result in the intersection operating at 43% of its capacity, the existing intersection will accommodate the proposed traffic flow for the requested rezoning.

A sensitivity test undertaken shows that the proposed development will have similar effects on the intersection, as a state highway growth rate of 8.5% per annum. This is the observed averaged annual state highway traffic growth rate between 2014 and 2019.

Waka Kotahi provided some high level preliminary feedback on the proposal and suggested that a safe systems assessment be undertaken for the intersection of Pisa Moorings Road and SH6. A safe systems assessment is based purely on road safety would suggest that the existing intersection is upgraded to a roundabout. However, when considering the existing crash history, overall intersection efficiency and options available for improvements within the existing road corridor it is considered that a roundabout is not the only viable solution.

Overall, I consider that the proposed development will have a noticeable effect on the current Pisa Moorings access intersection. There will be a noticeable increase in traffic flow and during the pm peak period the intersection operate at 43% of its capacity. I consider that the proposed rezoning can be accommodated within the existing state highway infrastructure without the need for improvements.

Should you require any further information please contact me.

Yours sincerely,

Jason Bartlett

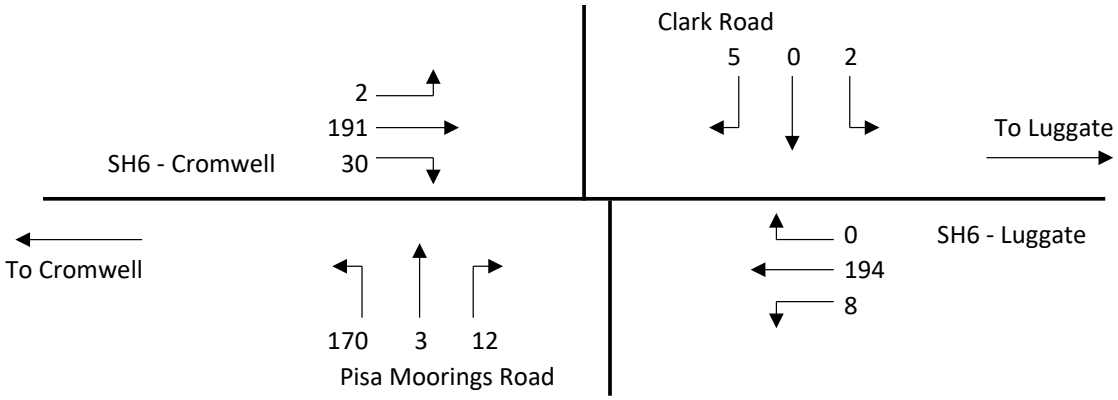
CEng MICE, MEngNZ
Traffic Engineer

Appendix A SH6 intersection with Pisa Moorings Road, Existing

The following are provided:

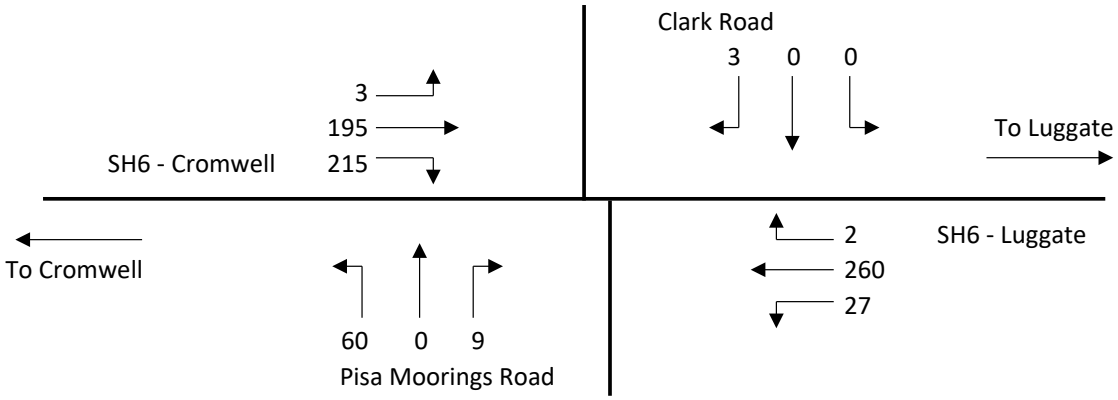
- Existing traffic (2021) from traffic surveys,
- Existing traffic distribution from surveys,
- Permitted traffic (2022),
- Permitted traffic (2032) with 4% per annum SH6 traffic growth.
- Traffic Modelling, site layout
- Traffic Modelling, movement summary, existing 2021 pm
- Traffic Modelling, movement summary, permitted 2022 pm
- Traffic Modelling, movement summary, permitted 2032 pm (4% SH6 growth),
- Traffic Modelling, movement summary, permitted 2032 pm (5.5% SH6 growth), and
- Traffic Modelling, movement summary, permitted 2032 pm (8.5% SH6 growth).

Existing traffic (2021), am peak



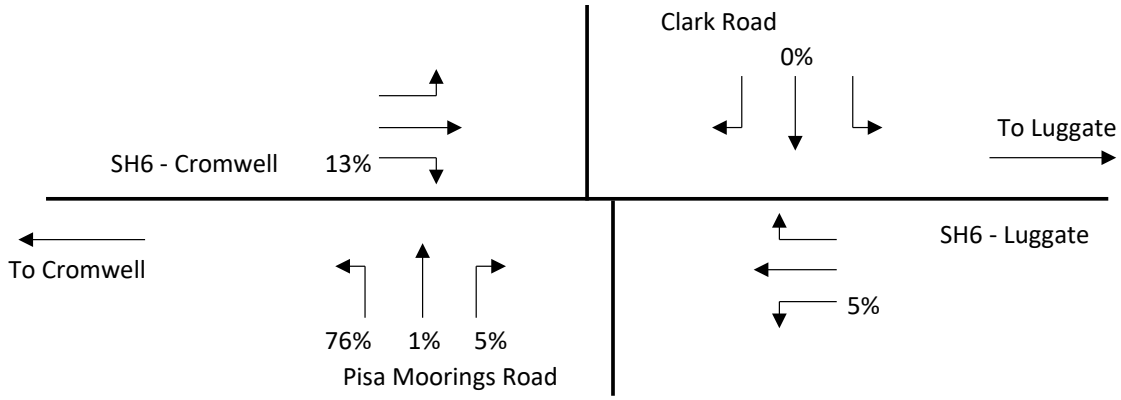
Based on am traffic survey undertaken 28/7/2021 at Pisa Moorings access intersection.
Pisa Moorings has 384 developed lots (dwellings) including 24 apartments at Perriam Cove.
Existing traffic generation during the am peak hour is 0.58vph/dwelling.

Existing traffic (2021), pm peak



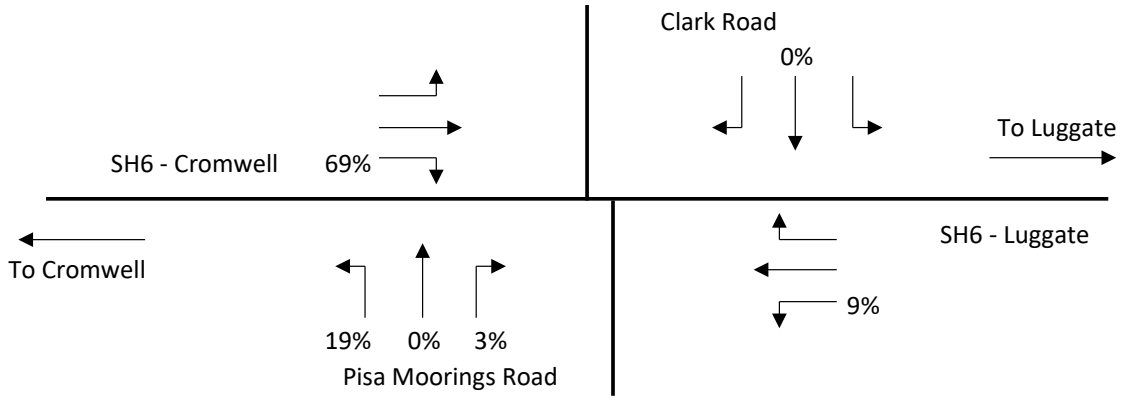
Based on pm traffic survey undertaken 28/7/2021 at Pisa Moorings access intersection.
Pisa Moorings has 384 developed lots (dwellings) including 24 apartments at Perriam Cove.
Existing traffic generation during the pm peak hour is 0.81vph/dwelling.

Existing traffic distribution, am peak



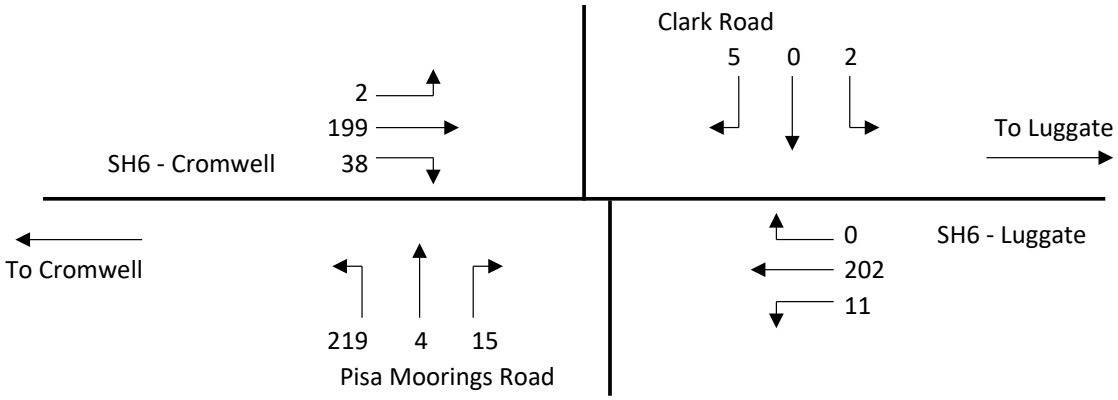
Based on am traffic survey undertaken 28/7/2021 at Pisa Moorings access intersection.

Existing traffic distribution, pm peak



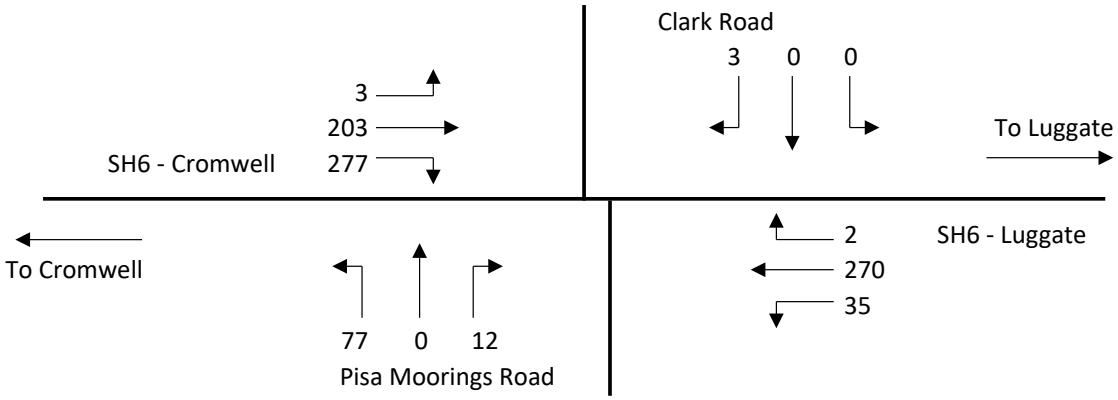
Based on pm traffic survey undertaken 28/7/2021 at Pisa Moorings access intersection.

Permitted traffic (2022), am peak



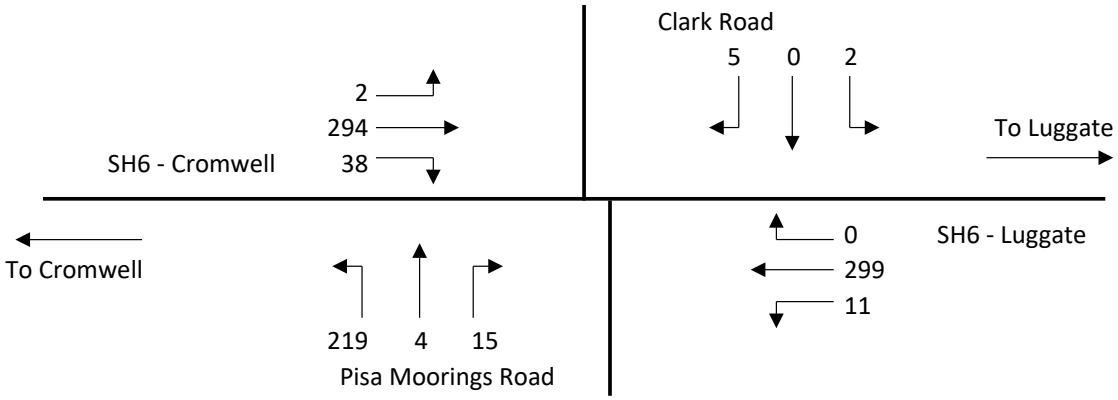
Based on am traffic survey undertaken 28/7/2021 at Pisa Moorings access intersection.
Pisa Moorings has 495 permitted lots (dwellings) including 24 apartments at Perriam Cove.

Permitted traffic (2022), pm peak



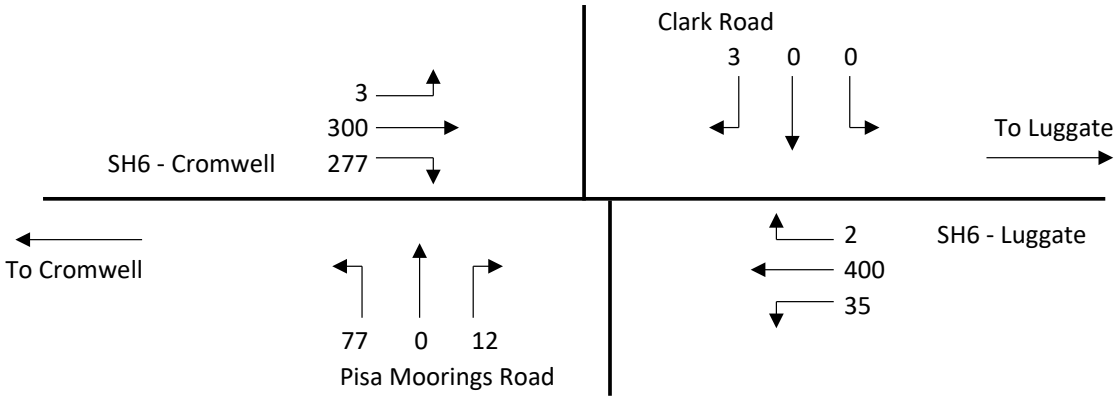
Based on pm traffic survey undertaken 28/7/2021 at Pisa Moorings access intersection.
Pisa Moorings has 495 permitted lots (dwellings) including 24 apartments at Perriam Cove.

Permitted traffic (2032), am peak



Based on am traffic survey undertaken 28/7/2021 at Pisa Moorings access intersection.
Pisa Moorings has 495 permitted lots (dwellings) including 24 apartments at Perriam Cove.
SH6 traffic flows have been increased at an annual traffic growth rate of 4% per annum.

Permitted traffic (2032), pm peak



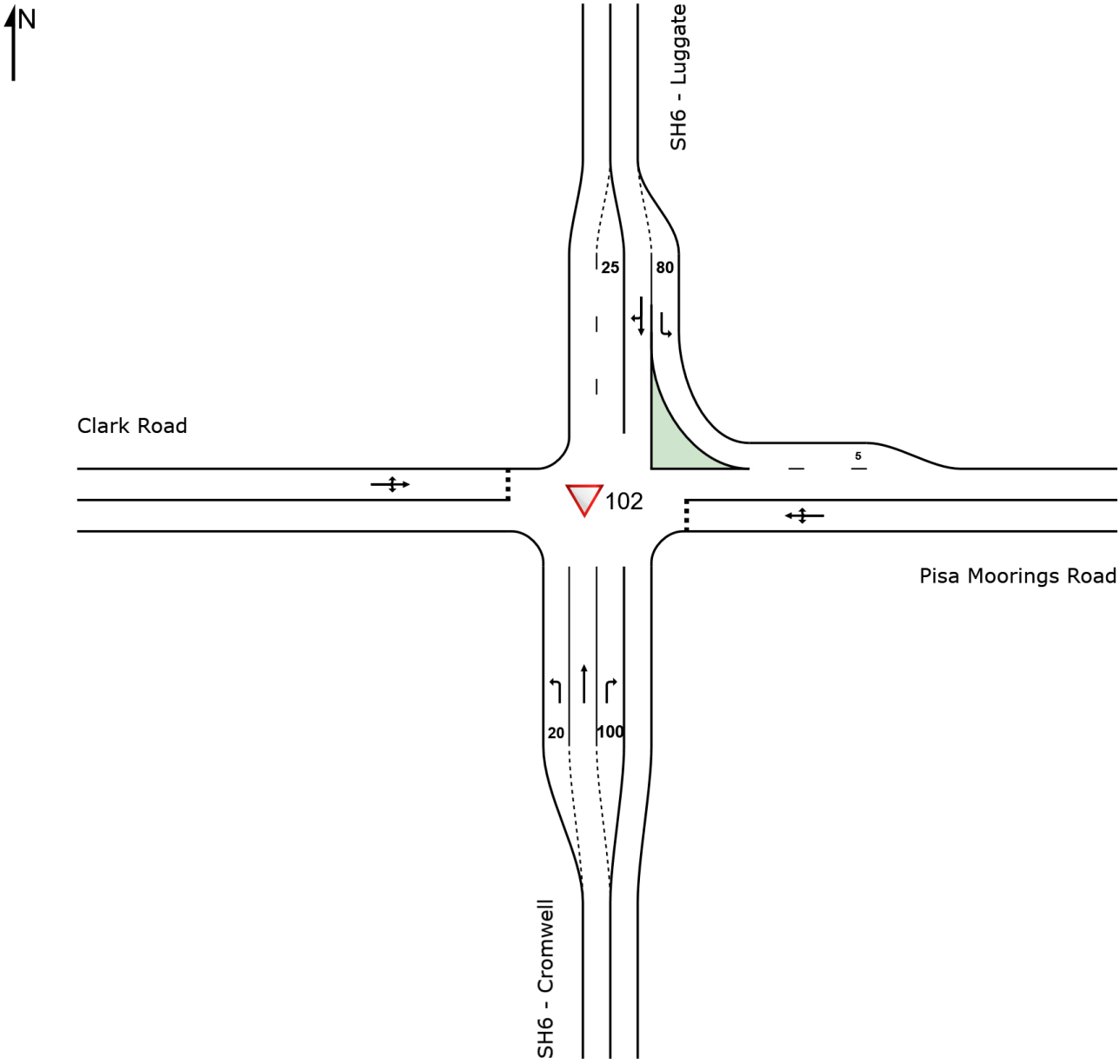
Based on pm traffic survey undertaken 28/7/2021 at Pisa Moorings access intersection.
Pisa Moorings has 495 permitted lots (dwellings) including 24 apartments at Perriam Cove.
SH6 traffic flows have been increased at an annual traffic growth rate of 4% per annum.

SITE LAYOUT

Site: 102 [Pisa Moorings Existing 21 pm (Site Folder: General)]

Existing 2021 pm traffic flows
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 102 [Pisa Moorings Existing 21 pm (Site Folder: General)]

Existing 2021 pm traffic flows
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: SH6 - Cromwell														
1	L2	3	6.0	3	6.0	0.002	8.0	LOS A	0.0	0.0	0.00	0.66	0.00	72.3
2	T1	195	8.5	205	8.5	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
3	R2	215	6.0	226	6.0	0.170	8.8	LOS A	0.8	6.0	0.41	0.67	0.41	56.1
Approach		413	7.2	435	7.2	0.170	4.6	NA	0.8	6.0	0.21	0.36	0.21	70.9
East: Pisa Moorings Road														
4	L2	60	6.0	63	6.0	0.101	5.9	LOS A	0.4	2.7	0.43	0.63	0.43	53.3
5	T1	1	6.0	1	6.0	0.101	13.1	LOS B	0.4	2.7	0.43	0.63	0.43	45.3
6	R2	9	6.0	9	6.0	0.101	16.2	LOS C	0.4	2.7	0.43	0.63	0.43	53.3
Approach		70	6.0	74	6.0	0.101	7.4	LOS A	0.4	2.7	0.43	0.63	0.43	53.2
North: SH6 - Luggate														
7	L2	27	6.0	28	6.0	0.016	8.9	LOS A	0.0	0.0	0.00	0.63	0.00	72.5
8	T1	260	8.5	274	8.5	0.148	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	99.7
9	R2	2	6.0	2	6.0	0.148	9.0	LOS A	0.0	0.2	0.01	0.01	0.01	65.7
Approach		289	8.2	304	8.2	0.148	0.9	NA	0.0	0.2	0.01	0.06	0.01	96.0
West: Clark Road														
10	L2	1	6.0	1	6.0	0.016	5.5	LOS A	0.1	0.4	0.61	0.70	0.61	49.1
11	T1	1	6.0	1	6.0	0.016	12.4	LOS B	0.1	0.4	0.61	0.70	0.61	42.2
12	R2	3	6.0	3	6.0	0.016	16.2	LOS C	0.1	0.4	0.61	0.70	0.61	49.1
Approach		5	6.0	5	6.0	0.016	13.3	LOS B	0.1	0.4	0.61	0.70	0.61	47.6
All Vehicles		777	7.5	818	7.5	0.170	3.5	NA	0.8	6.0	0.16	0.27	0.16	75.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Pisa Moorings Permitted 22 pm (Site Folder: General)]

Permitted 2022 pm traffic flows
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: SH6 - Cromwell														
1	L2	3	6.0	3	6.0	0.002	8.0	LOS A	0.0	0.0	0.00	0.66	0.00	72.3
2	T1	203	8.5	214	8.5	0.115	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
3	R2	277	6.0	292	6.0	0.222	8.9	LOS A	1.1	8.0	0.43	0.69	0.43	56.0
Approach		483	7.1	508	7.1	0.222	5.2	NA	1.1	8.0	0.25	0.40	0.25	68.9
East: Pisa Moorings Road														
4	L2	77	6.0	81	6.0	0.140	6.0	LOS A	0.5	3.7	0.46	0.65	0.46	52.9
5	T1	1	6.0	1	6.0	0.140	15.5	LOS C	0.5	3.7	0.46	0.65	0.46	45.0
6	R2	12	6.0	13	6.0	0.140	19.3	LOS C	0.5	3.7	0.46	0.65	0.46	52.9
Approach		90	6.0	95	6.0	0.140	7.9	LOS A	0.5	3.7	0.46	0.65	0.46	52.8
North: SH6 - Luggate														
7	L2	35	6.0	37	6.0	0.020	8.9	LOS A	0.0	0.0	0.00	0.63	0.00	72.5
8	T1	270	8.5	284	8.5	0.154	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	99.7
9	R2	2	6.0	2	6.0	0.154	9.1	LOS A	0.0	0.2	0.01	0.01	0.01	65.7
Approach		307	8.2	323	8.2	0.154	1.1	NA	0.0	0.2	0.01	0.08	0.01	95.3
West: Clark Road														
10	L2	1	6.0	1	6.0	0.019	5.5	LOS A	0.1	0.5	0.66	0.75	0.66	47.6
11	T1	1	6.0	1	6.0	0.019	14.4	LOS B	0.1	0.5	0.66	0.75	0.66	41.1
12	R2	3	6.0	3	6.0	0.019	19.4	LOS C	0.1	0.5	0.66	0.75	0.66	47.6
Approach		5	6.0	5	6.0	0.019	15.6	LOS C	0.1	0.5	0.66	0.75	0.66	46.2
All Vehicles		885	7.3	932	7.3	0.222	4.1	NA	1.1	8.0	0.19	0.31	0.19	73.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Pisa Moorings Permitted 32 pm 5.5% (Site Folder: General)]

Permitted 2032 pm traffic flows
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: SH6 - Cromwell														
1	L2	3	6.0	3	6.0	0.002	8.0	LOS A	0.0	0.0	0.00	0.66	0.00	72.3
2	T1	346	8.5	364	8.5	0.197	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
3	R2	277	6.0	292	6.0	0.285	10.3	LOS B	1.4	10.2	0.58	0.81	0.60	55.1
Approach		626	7.4	659	7.4	0.285	4.6	NA	1.4	10.2	0.26	0.36	0.26	73.4
East: Pisa Moorings Road														
4	L2	77	6.0	81	6.0	0.230	7.8	LOS A	0.8	5.9	0.64	0.83	0.66	49.7
5	T1	1	6.0	1	6.0	0.230	31.0	LOS D	0.8	5.9	0.64	0.83	0.66	42.7
6	R2	12	6.0	13	6.0	0.230	40.0	LOS E	0.8	5.9	0.64	0.83	0.66	49.7
Approach		90	6.0	95	6.0	0.230	12.4	LOS B	0.8	5.9	0.64	0.83	0.66	49.6
North: SH6 - Luggate														
7	L2	35	6.0	37	6.0	0.020	8.9	LOS A	0.0	0.0	0.00	0.63	0.00	72.5
8	T1	462	8.5	486	8.5	0.263	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	99.8
9	R2	2	6.0	2	6.0	0.263	10.5	LOS B	0.0	0.2	0.01	0.00	0.01	65.7
Approach		499	8.3	525	8.3	0.263	0.7	NA	0.0	0.2	0.01	0.05	0.01	97.0
West: Clark Road														
10	L2	1	6.0	1	6.0	0.041	6.3	LOS A	0.1	0.9	0.85	0.88	0.85	39.6
11	T1	1	6.0	1	6.0	0.041	28.2	LOS D	0.1	0.9	0.85	0.88	0.85	35.1
12	R2	3	6.0	3	6.0	0.041	40.2	LOS E	0.1	0.9	0.85	0.88	0.85	39.7
Approach		5	6.0	5	6.0	0.041	31.0	LOS D	0.1	0.9	0.85	0.88	0.85	38.7
All Vehicles		1220	7.7	1284	7.7	0.285	3.7	NA	1.4	10.2	0.18	0.27	0.19	78.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 102 [Pisa Moorings Permitted 32 pm 8.5% (Site Folder: General)]

Permitted 2032 pm traffic flows
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: SH6 - Cromwell														
1	L2	3	6.0	3	6.0	0.002	8.0	LOS A	0.0	0.0	0.00	0.66	0.00	72.3
2	T1	459	8.5	483	8.5	0.261	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
3	R2	277	6.0	292	6.0	0.359	12.4	LOS B	1.9	14.1	0.66	0.93	0.83	53.5
Approach		739	7.6	778	7.6	0.359	4.7	NA	1.9	14.1	0.25	0.35	0.31	75.3
East: Pisa Moorings Road														
4	L2	77	6.0	81	6.0	0.391	13.1	LOS B	1.5	10.9	0.80	1.00	1.07	43.5
5	T1	1	6.0	1	6.0	0.391	61.3	LOS F	1.5	10.9	0.80	1.00	1.07	38.1
6	R2	12	6.0	13	6.0	0.391	81.8	LOS F	1.5	10.9	0.80	1.00	1.07	43.5
Approach		90	6.0	95	6.0	0.391	22.8	LOS C	1.5	10.9	0.80	1.00	1.07	43.4
North: SH6 - Luggate														
7	L2	35	6.0	37	6.0	0.020	8.9	LOS A	0.0	0.0	0.00	0.63	0.00	72.5
8	T1	611	8.5	643	8.5	0.347	0.0	LOS A	0.0	0.4	0.01	0.00	0.01	99.8
9	R2	2	6.0	2	6.0	0.347	12.3	LOS B	0.0	0.4	0.01	0.00	0.01	65.7
Approach		648	8.4	682	8.4	0.347	0.5	NA	0.0	0.4	0.01	0.04	0.01	97.6
West: Clark Road														
10	L2	1	6.0	1	6.0	0.085	7.2	LOS A	0.2	1.8	0.93	0.94	0.93	30.2
11	T1	1	6.0	1	6.0	0.085	52.5	LOS F	0.2	1.8	0.93	0.94	0.93	27.5
12	R2	3	6.0	3	6.0	0.085	80.0	LOS F	0.2	1.8	0.93	0.94	0.93	30.2
Approach		5	6.0	5	6.0	0.085	59.9	LOS F	0.2	1.8	0.93	0.94	0.93	29.6
All Vehicles		1482	7.8	1560	7.8	0.391	4.2	NA	1.9	14.1	0.18	0.25	0.23	79.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix B Development Drawings

The following drawings by C. Hughes & Associates have been reviewed when undertaking this assessment:

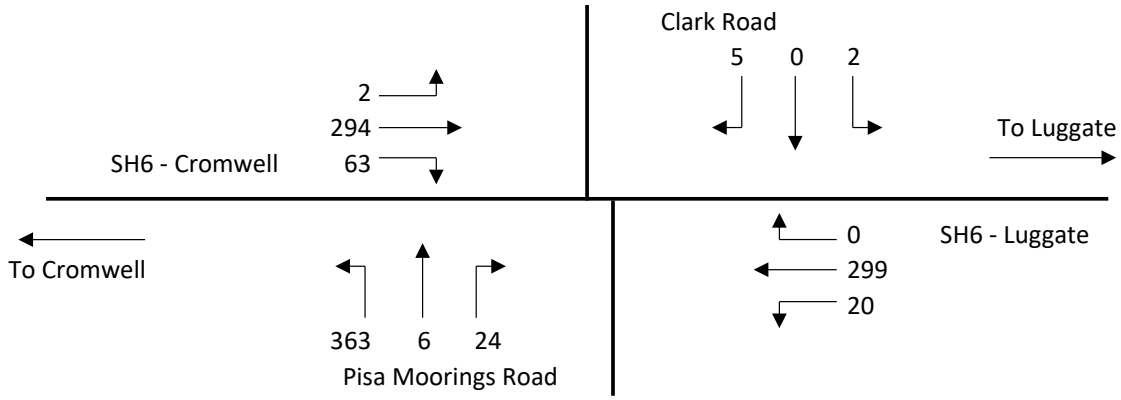
- Proposed Rezoning, Rezoning Plan, C1715, Revision A Dated 25/08/2022, and
- Proposed Structure, Structure Plan, C1710, Revision A Dated 01/08/2022.

Appendix C Proposed Traffic

The following are provided:

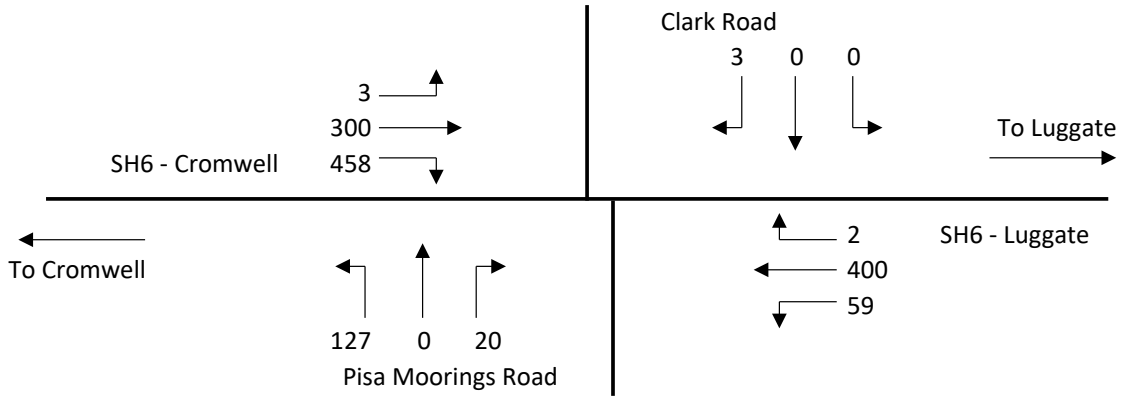
- Proposed traffic (2032) with 4% per annum SH6 traffic growth, and
- Traffic Modelling, movement summary, permitted 2032 pm (4% SH6 growth).

Proposed traffic (2032), am peak



Traffic Flows for Design			
	Right turn in		Left turn in
Q_R	63	Q_L	20
Q_M	613	Q_M	299

Proposed traffic (2032), pm peak



Traffic Flows for Design			
	Right turn in		Left turn in
Q_R	458	Q_L	59
Q_M	761	Q_M	400

MOVEMENT SUMMARY

Site: 102 [Pisa Moorings Proposed 32 pm (Site Folder: General)]

Proposed 2032 pm traffic flows
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: SH6 - Cromwell														
1	L2	3	6.0	3	6.0	0.002	8.0	LOS A	0.0	0.0	0.00	0.66	0.00	72.3
2	T1	300	8.5	316	8.5	0.171	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	99.9
3	R2	458	6.0	482	6.0	0.432	10.7	LOS B	3.0	22.0	0.60	0.84	0.76	54.8
Approach		761	7.0	801	7.0	0.432	6.5	NA	3.0	22.0	0.36	0.51	0.46	66.8
East: Pisa Moorings Road														
4	L2	127	6.0	134	6.0	0.399	9.5	LOS A	1.8	13.4	0.67	0.94	0.93	47.6
5	T1	1	6.0	1	6.0	0.399	40.7	LOS E	1.8	13.4	0.67	0.94	0.93	41.2
6	R2	20	6.0	21	6.0	0.399	52.4	LOS F	1.8	13.4	0.67	0.94	0.93	47.7
Approach		148	6.0	156	6.0	0.399	15.5	LOS C	1.8	13.4	0.67	0.94	0.93	47.6
North: SH6 - Luggate														
7	L2	59	6.0	62	6.0	0.035	9.0	LOS A	0.0	0.0	0.00	0.63	0.00	72.5
8	T1	400	8.5	421	8.5	0.228	0.0	LOS A	0.0	0.2	0.01	0.00	0.01	99.8
9	R2	2	6.0	2	6.0	0.228	10.0	LOS A	0.0	0.2	0.01	0.00	0.01	65.7
Approach		461	8.2	485	8.2	0.228	1.2	NA	0.0	0.2	0.01	0.08	0.01	94.9
West: Clark Road														
10	L2	1	6.0	1	6.0	0.053	6.0	LOS A	0.2	1.1	0.87	0.89	0.87	36.5
11	T1	1	6.0	1	6.0	0.053	33.7	LOS D	0.2	1.1	0.87	0.89	0.87	32.6
12	R2	3	6.0	3	6.0	0.053	51.7	LOS F	0.2	1.1	0.87	0.89	0.87	36.5
Approach		5	6.0	5	6.0	0.053	39.0	LOS E	0.2	1.1	0.87	0.89	0.87	35.7
All Vehicles		1375	7.3	1447	7.3	0.432	5.8	NA	3.0	22.0	0.28	0.41	0.36	70.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Central Otago District Council Plan Change 19
PISA MOORINGS REZONING

Landscape Comments

September 2022

Prepared for Pisa Moorings
Vineyard Limited and Pisa
Village Development Limited by

bridget**gilbert**
landscapearchitecture

Contents

Figures

1.0 Introduction

1.1 Bridget Gilbert Landscape Architecture Limited (**BGLA**) has been engaged by Pisa Moorings Vineyard Limited and Pisa Village Development Limited to provide landscape comment with respect to the potential rezoning of land at 828 Luggate Cromwell Road (State Highway 6, SH6) and the site to the north (located between SH6 and the existing Pisa Moorings residential settlement, collectively referred to as "the site"), from Rural Resource Area and Large Lot Residential Zone to a mix of Low Density Residential, Medium Density and a local convenience Retail Zone or Precinct.

1.2 Pisa Moorings is an urban settlement amidst a rural area on the west side of Lake Dunstan, approximately 9km northeast of Cromwell and approximately 45km south of Wanaka.

1.3 From a landscape perspective and at a macro level, the site is reasonably well suited to urban development as a consequence of the following characteristics:

a. its location on a relatively narrow low-lying terrace between the highway and established settlement of Pisa Moorings;

b. its enclosure to the north by a working quarry;

c. its enclosure to the south by the established Pisa Moorings settlement;

d. the absence of notable landscape features and values within the site and local area that could be adversely affected by such development (described shortly); and

e. the absence of landscape related overlays under the Central Otago District Plan (CODP).

1.4 As such, the site forms somewhat of a 'left-over' piece of land between the established urban development and the state highway and is well contained by defensible edges (thus avoiding the risk of development creep).

Scope of Landscape Report

1.5 With this context in mind, BGLA has been asked to comment on the following matters:

a) The key landscape character and visual amenity characteristics and values associated with the site and local area.

b) Drawing from the preceding analysis, what landscape planning tools may be appropriate to manage landscape related effects at a more fine-grained level.

c) Conclusions with respect to the landscape related effects of urban development.

1.6 The location and context of the site is depicted in Figures 1, 2 and 3 below.

1.7 I confirm that I have visited the site and study area. Due to the very poor weather conditions during my site visit, the photographs used in this report are sourced from Google Streetview.

1.8 I have read the following documents in preparing this report:

a) Letter from Acoustic Engineering Services, Initial Traffic Noise Review, dated 9 November 2021.

b) The Central Otago District Council's PC 19 documentation including the section 32 evaluation report and the proposed chapter text.

c) Pisa District Community Plan, August 2009.

1.9 A summary of my expert qualifications and experience is attached in **Appendix A**.

Figure 1: Site Location and Context. (SH6 along western boundary; existing Pisa Moorings urban area to the east and south; Parkburn Quarry to the north.)

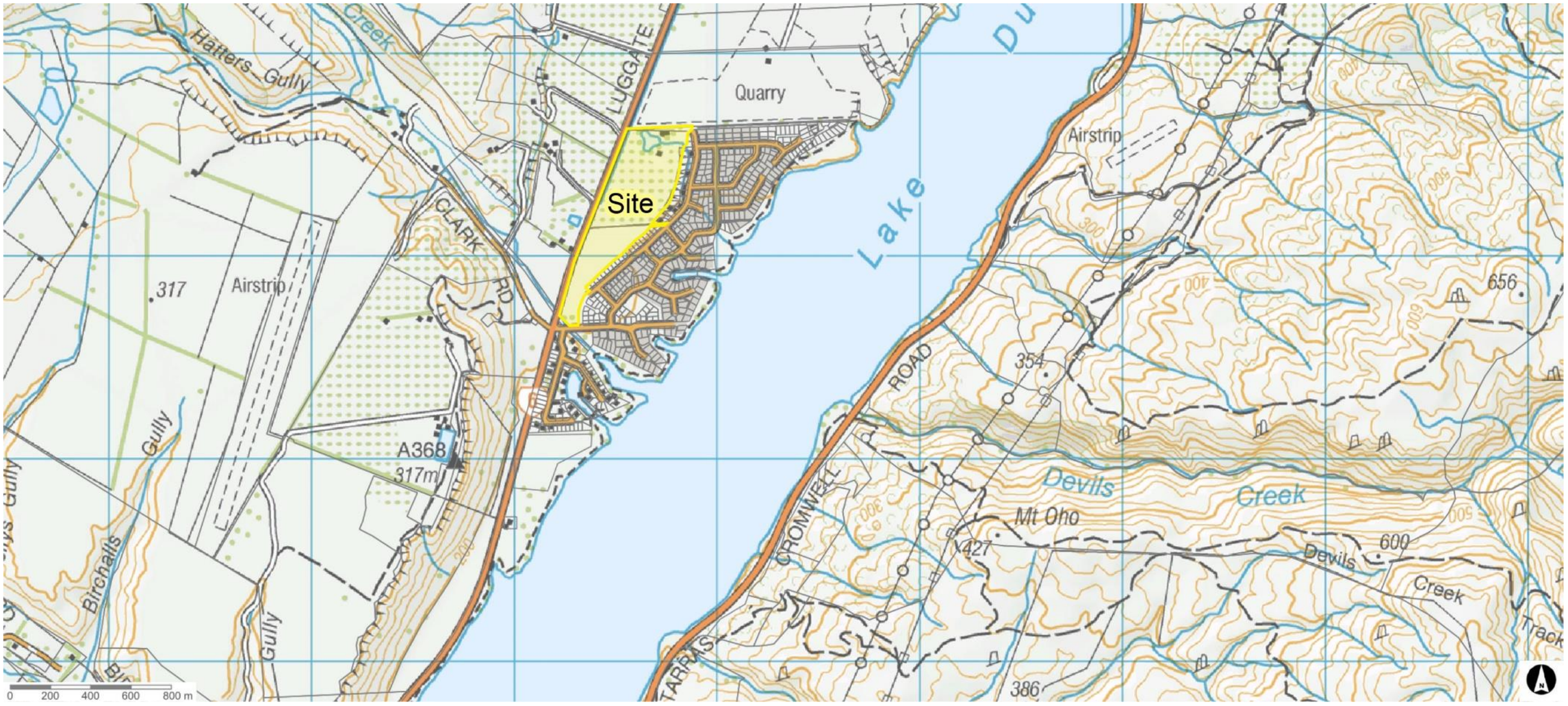


Figure 2: Site Context (LINZ Topographic Map base)

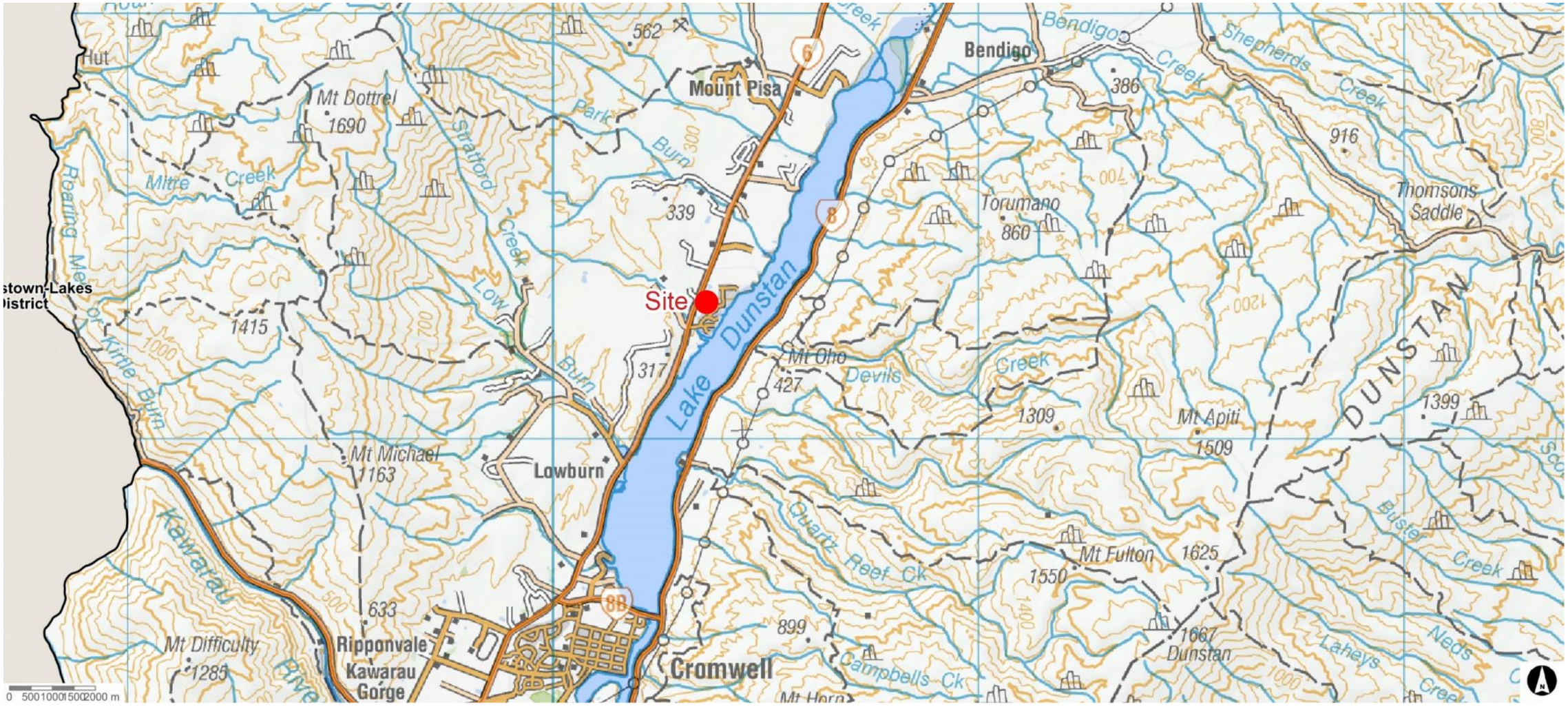


Figure 3: Site Context (Broad scale) (LINZ Topographic Map)

2.0 Landscape Character and Visual Amenity of the Site and Local Area

2.1 The key landscape and visual amenity characteristics and values of the site and local area are summarised as follows:

a) With respect to **landform patterning**, the site is located within the distinctive patterning of a relatively flat glacial and fluvial terrace landforms, along the western side of Lake Dunstan. Localised hollows across the site are testament to previous flooding and farming/horticultural activities, however the broadly planar arrangement of the terrace landform pattern is strongly legible.

Along the eastern side of the site, is a steep embankment that drops some 5 to 10m to a 'lower' terrace where the established settlement of Pisa Moorings is located.

The schist mountain slopes of the Pisa Range enclose the valley to the west. The Pisa/Criffel Range comprises the westernmost and highest element of the characteristic 'basin and range' fault block landscape that stretches across Central Otago. The parallel schist ranges of this sequence are characterised by broad planar crests and frequent tors.

To the southwest, framing the southside of the Five Mile Creek valley (and Clark Road, refer Figure 2), is the distinctive elevated and flat topped glacial terrace known as the Sugar Loaf.

b) **Hydrological features** include Lake Dunstan, a manmade lake and reservoir formed on the Clutha River as a result of construction of the Clyde Dam. Lake Dunstan also provides irrigation

for nearby horticultural and viticultural developments and is a major recreational asset with facilities for boating, waterskiing, fishing, parapenting and rowing.

A series of steeply incised stream valleys drain the east faces of the Pisa Range, to cross the terrace (often as a far more shallow and meandering feature), eventually discharging to the lake. One such stream, Five Mile Creek, passes across the southern limit of the site, taking the form of an overland flow path/flood prone area, rather than a permanent channel where it coincides with the site (refer **Appendix B Indicative Landscape Concept Plan** for the location of the flood-prone area).

Towards the northern end of the site is a small stormwater pond associated the Central Pac facility (described shortly).

c) The **soils** of the site are characterised by till and outwash gravels.

d) **Vegetation features** include a cherry orchard throughout the northern portion of the site (with an artificial shelterbelt), grapevines throughout the central area, shelterbelts and scattered exotic trees and shrubs in places and exotic pasture grasses. Overall the site has little to no native vegetation evident.

Photograph 1: View from SH6 to southern end of site (overland flow path/flood prone area).

Photograph 2: View northwards along SH6 with the central portion of the site to the right of view. The Dunstan Mountains and the Pisa Range frame the right and left sides of the valley respectively (noting that Lake Dunstan is not visible from this stretch of the highway).

Photograph 3: View southwards along SH6, with the northern portion of the site to the left of view. The distinctive flat topped glacial river terrace of the Sugar Loaf is seen to the right of view backdropped by the snow-capped Pisa Range.

Photograph 4: View from SH6 north-westwards to the mulberry orchard roughly opposite the central portion of the site. The snow-capped Pisa Range forms the backdrop.

Photograph 5: Looking south eastwards from SH6 towards the distinctive flat topped Sugar Loaf landform. The site is to the left of view.

A similar vegetative character prevails around the site, with a vineyard on the opposite side of the highway adjacent the northern portion of the site, a mulberry orchard opposite (roughly) the central part of the property and low intensity pastoral farming opposite the southern portion of the site.

This mosaic of horticultural, viticultural and pastoral land uses with roadside shelterbelt plantings in places, characterises the majority of the rural land to the north of the site.

Further, to the south, the very close proximity of the established Pisa Mooring settlement to the eastern side of highway means that where evident, roadside plantings comprise a scattered and highly variable mix of amenity trees, hedging and shrub species.

Photograph 6: Typical character of the highway interface with the existing Pisa Moorings development to the south of the site (looking northwards along SH6).

Photograph 7: Typical character of the highway interface with the existing Pisa Moorings development to the south of the site (looking southwards along SH6).

Within the existing Pisa Moorings settlement, there is a wide-ranging approach to street tree planting and garden planting with no particular style or character dominating.

Photograph 8: Typical character of Pisa Moorings streetscape, with street tree plantings, no footpaths, swale drainage, no street lighting and low fencing.

Photograph 9: Typical character of Pisa Moorings streetscape, with no street tree plantings, no footpaths, swale drainage, suburban street lighting and a variable approach to fencing.

Photograph 10: Typical character of Pisa Moorings streetscape, with some street tree plantings, a footpath on one side of the street, mountable kerb and channel stormwater management, column street lighting and no fencing.

Photograph 11: Typical character of Pisa Moorings streetscape, with limited street tree plantings, footpaths on either side of the street, mountable kerb and channel stormwater management, suburban street lighting and limited fencing.

e) There are no known **Cultural features and values** associated with the area.

f) There are no **historic features** identified in the CODP on the site or within the immediate area.

g) The are no **Outstanding Natural Landscape, Outstanding Natural Feature, Significant Natural Value** or **Significant Amenity Landscape** overlays applying to the site under the CODP. All of the identified landscape overlay areas shown in **Figure 4** apply to elevated land that is, for the most part located at a considerable distance from the site (i.e. Pisa Range, Dunstan Mountains and terraces on the eastern side of Lake Dunstan: ONL; Sugar Loaf southeast and north escarpments: ONF; Sugar Loaf 'top': Significant Amenity Landscape). This is important as it means that development change on the site will not influence the characteristics and values of these high value areas of the District. It is acknowledged that the site is proximate to the steep ONF slopes of Sugar Loaf. However, the established Pisa Moorings settlement to the south of the site, is closer still and has not detracted from the values associated with the ONF.

The **Esplanade Provision** overlay signals the importance of public access to the lake edge. The existing continuous lake margin reserve network at Pisa Moorings aligns well with this broader landscape strategy.

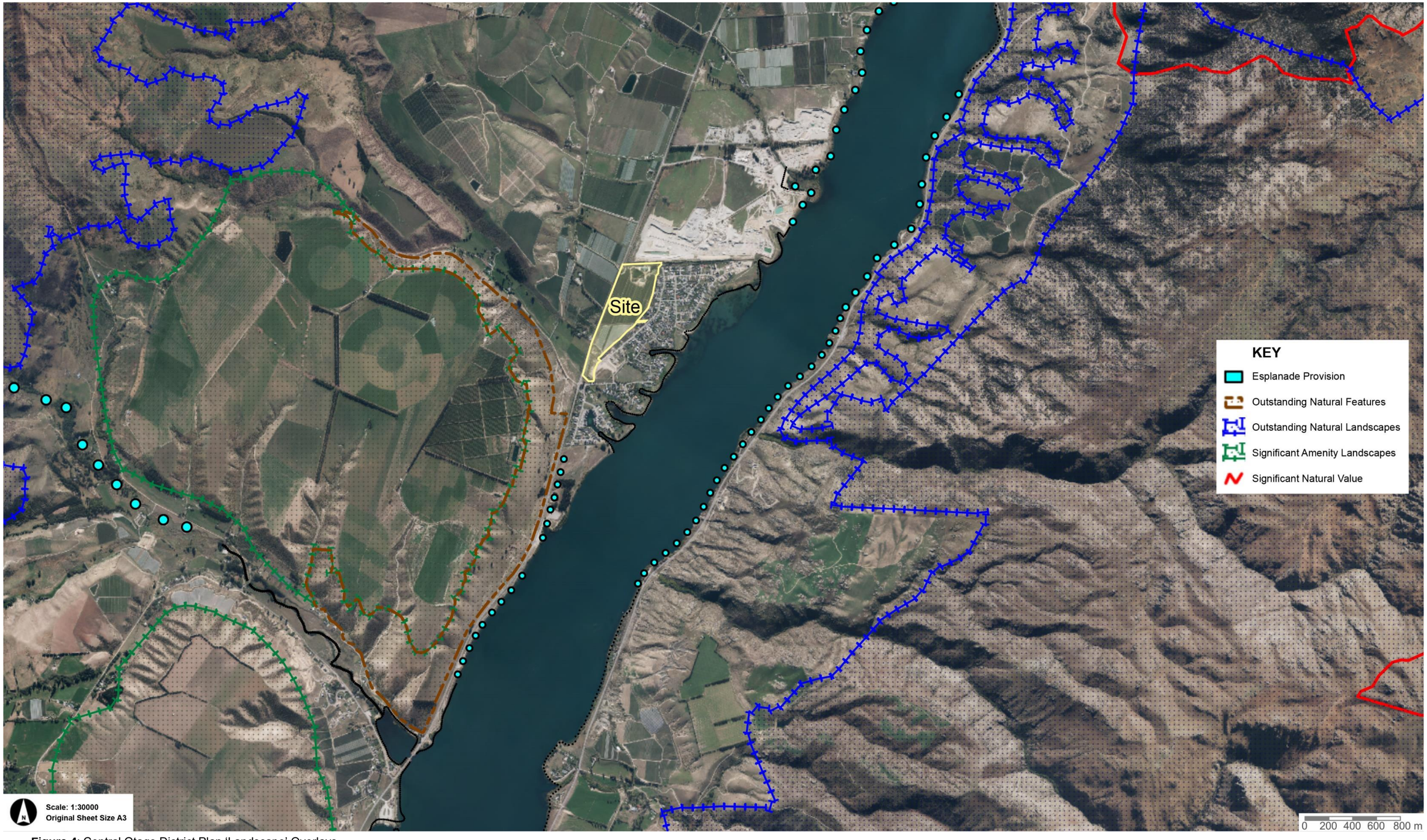


Figure 4: Central Otago District Plan 'Landscape' Overlays

h) With respect to **settlement patterning**, Pisa Moorings comprises a mix of permanent and holiday homes on lots ranging in size from around 600m² to 1,000m². The western edge of the settlement is generally aligned along an embankment (approximately 5 to 10m high) with a mix of single and two storey dwellings generally located at the toe or lower level of the slope. While many of the dwellings would appear to be sited and designed to optimise the highly attractive eastern views (away from the site), it would also appear that outdoor living areas are oriented north westwards towards the site (presumably to optimise the northern aspect). The eastern site boundary roughly follows the upper edge of this embankment.

To date, urban residential development at Pisa Moorings is generally dominated by single storey dwellings. An area of high density, two storey development is configured around the marina, along with a small commercial node. A continuous open space network has been established along the lake edge and short 'inlets', with a more fragmented open space network throughout the balance of the urban area. A quite varied approach to urban development elements such as footpaths, stormwater management, lighting, fencing and the like is evident throughout the settlement. Refer **Photographs 8** to **11** above.

As alluded to above, the established settlement abuts the highway south of the site. Here, some private landowners appear to have adopted a range of measures to screen views to the highway and/or mitigate road noise. A variety of planting and fencing styles are evident, with some properties incorporating (localised) earth mounding along their highway frontage. Overall, there is an impression of a reasonably chaotic and 'exposed' interface between the settlement and highway.

There are a mix of working rural, horticultural, viticultural and rural living properties on the terraces and lower slopes to the northwest of the site. Dwellings tend to be reasonably well integrated by amenity plantings and/or set well back from the highway. Rural sheds tend to be positioned closer to the highway and take on a more 'exposed' appearance. A network of low key rural (and largely dead end) roads provide access to these properties and the network of walking tracks winding across the Pisa Range.

Parkburn Quarry (approximately 120ha property) is located immediately to the north of the site where sand and roading gravels are extracted (refer **Figure 5**). Earth bunding and evergreen tree plantings screen the quarry from the highway and site.

Within the site itself is a Central Pac cherry packhouse facility and orchard management business.

Looking further afield, the 'settlements' of both Lowburn and Cromwell 'front' the highway with a range of treatments evident. In general, the more successful settlement/highway interfaces (from a landscape perspective), are characterised by a comprehensive and cohesive landscape strategy that combines a mix of earth-mounding and native tree and shrub planting along with visual permeable fencing. An example of such a treatment is evident in the recently developed Summerset Retirement Village to the southwest of the entrance to Cromwell from the highway (refer **Photograph 12**).

Photograph 12: Glimpse of the Summerset Village SH6 bunding and planting at Cromwell.

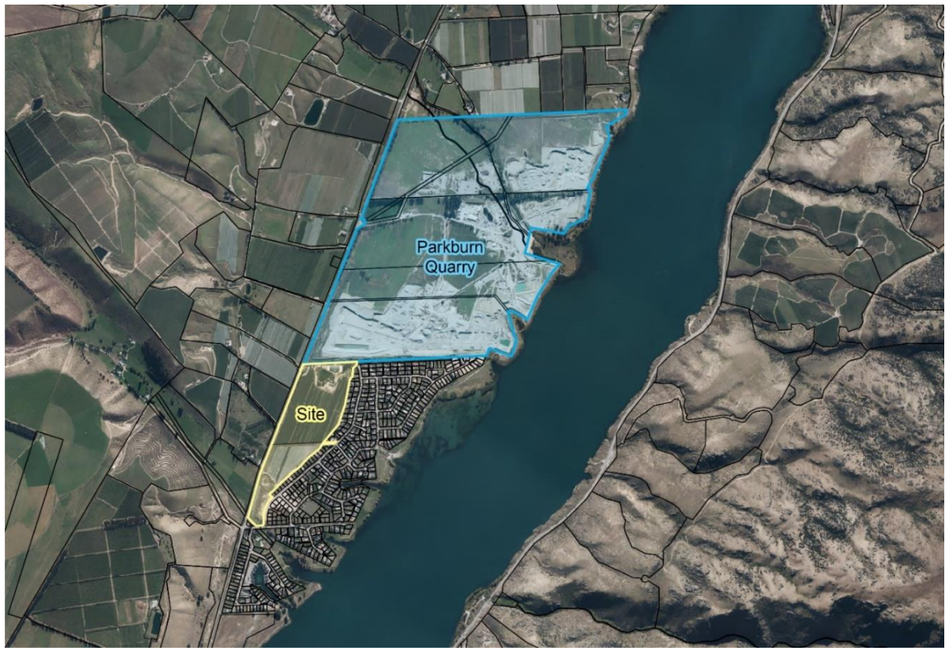


Figure 5: The site and the Parkburn Quarry

i) Important **views** within the study area relate to:

   i. **Views from SH6 adjacent the southern and central parts of the site**, eastwards over the grapevines and rough land (at the southern end of the site) to the Dunstan Mountains (noting that for the stretch of highway adjacent the site, there are no views of the lake itself). In these views, the majority of existing residential development at Pisa Moorings is screened by intervening landform or vegetation. However this is not the case slightly further to the south on the highway where the existing settlement is clearly visible. It should also be note that for the stretch of highway adjacent the cherry orchard/northern end, an artificial shelterbelt obstructs long range eastern views.

   ii. **Views from the local road network in Pisa Moorings abutting the southern part of the site.** In these views, the site reads as a left-over piece of land sandwiched between the existing settlement and highway.

   iii. **Views from the roads, tracks and rural / rural living dwellings to the northwest of the site**. From this orientation it is expected that where the site is visible, it reads as a wedge of rural between the highway and settlement set within a vast high value landscape setting. The diminishing influence of distance combined with the scale of the site within the broader panoramic outlook means that it is likely to play a reasonably limited role in shaping the visual amenity values for these audiences.

j) **Landscape change** occurring in local area relates to the ongoing residential dwelling construction within Pisa Moorings (particularly around the Pisa Moorings Road, Wakefield Lane, Begg Lane, and southern Stratford Drive area).

3.0 Landscape Planning Tools

3.1 Drawing from the preceding analysis of the landscape character and visual amenity characteristics of the site and local area, for the rezoning of the site to be acceptable from a landscape perspective, it needs to:

a) Manage the outlook from the highway and low lying rural and rural living dwellings to the northwest so that views of new built form are limited or screened by an attractive and cohesive native planting character, while retaining long range views to the Dunstan Mountains.

b) Ensure new built development is not prominent in views from roads, tracks, and rural / rural living dwellings throughout elevated areas to the northwest.

c) Screen the adjacent quarry from the site.

d) Ensure new development does not overlook or encroach on the sense of privacy enjoyed by existing residential properties along the eastern edge of the site.

3.2 On this basis it is recommended that the following series of landscape planning tools are integrated into the proposed zone provisions for the site, to ensure that it sits comfortably into the landscape setting:

a) The integration of a **highway landscape buffer** along the highway frontage that serves to ground, filter and frame views of any new built development on the site in the outlook from the highway, while maintaining long range views to the Dunstan Mountains. This buffer should comprise earth mounding with a mix of locally appropriate, eco sourced native tree and shrub planting to form a green edge. Any fencing required in the buffer should comprise visually permeable black fencing, so that it is effectively 'lost' in the planting in views from the road. The highway landscape buffer could also be integrated with/have a dual role of providing road noise attenuation from the state highway for future dwellings within the site.

b) The requirement for **building roofs to have a maximum LRV of 30%**. This will ensure that the new built development is not prominent in views from elevated roads, tracks and rural/rural living dwellings to the northwest.

c) The integration of a **boundary landscape buffer** along the northern edge of the site to form an appreciable evergreen screen to the adjacent quarry. This buffer should comprise a minimum 3.0m width band of locally appropriate, eco sourced native trees and shrubs.

d) The incorporation of a **terrace interface strategy** along the eastern edge of the site that avoids the impression of new built development dominating or overlooking the existing development on the lower terrace (while enabling framed and filtered longer range eastern views from the dwelling to Lake Dunstan etc). This interface strategy should include: a requirement for buildings to be set back a minimum of 5m from the upper terrace edge; a 1.0m width band of locally appropriate native trees and shrubs; and a requirement for all fencing along the upper edge of the terrace to comprise visually permeable black fencing to a maximum height of 1.2m set into the planting.

3.3 I have 'tested' how these buffer and interface tools might work using an **Indicative Concept Plan** and **Indicative Sketch Sections** as shown **Appendix B** attached.

3.4 These various graphics illustrate how the site might be developed in a manner that integrates the recommended landscape planning tools (and other more 'traditional' urban development strategies such as a cohesive footpath network and street tree planting strategy).

3.5 This testing process provides confidence that the recommended landscape planning tools can be integrated into the proposed zoning layout, including the zoning typologies promoted by the Council in Plan Change 19, while accommodating the physical constraints of the site and its immediate surrounds (e.g. levels, nearby residential dwellings, flood prone area, reserve network links, views from the highway and surrounds etc).

4.0 Landscape Effects of the Proposed Rezoning

4.1 Assuming the landscape planning tools described above are integrated into the proposed provisions, I consider that the proposed rezoning will sit comfortably into the Pisa Moorings setting and is appropriate from a landscape perspective.

Bridget Gilbert
Landscape Architect
B. Hort. Dip. L.A. ALI ANZILA (Registered)
M 021 661650 **E** bridget@bgla.nz

Appendix A: Bridget Gilbert: Qualifications and Experience

Bridget holds the qualifications of Bachelor of Horticulture from Massey University and a postgraduate Diploma in Landscape Architecture from Lincoln College, is an associate of the Landscape Institute (UK) and a registered member of the New Zealand Institute of Landscape Architects.

Bridget has practised as a Landscape Architect for over twenty-five years in both New Zealand and England. Upon her return to New Zealand, Bridget worked with Boffa Miskell Ltd in their Auckland office for seven years. She has been operating her own practice for the last seventeen years, also in Auckland.

During the course of her career, Bridget has been involved in a wide range of work in expert landscape evaluation, assessment, and advice throughout New Zealand, including:

- landscape assessment in relation to Regional and District Plan policy;
- preparation of structure plans for rural, coastal, and urban developments;
- conceptual design and landscape assessment of infrastructure, rural, coastal, and urban development; and
- detailed design and implementation supervision of infrastructure, rural, coastal, and urban projects.

Bridget has provided landscape advice in relation to rural settlements throughout many parts of New Zealand, including: Northland; Whangarei District; Rodney; Waiheke and Great Barrier Islands; Clevedon; Franklin; Matamata-Piako District; Waipa District; Thames-Coromandel District; Waitomo District; Tasman District; Central Otago District; and Queenstown Lakes District.

Bridget is currently a panel member of the Auckland Urban Design Panel (with a Chair endorsement).

Bridget is also an Independent Hearing Commissioner for Auckland Council.

Appendix B: Indicative Landscape Concept Plan and Sketch Sections

LEGEND

- Highway Landscape Buffer.
  Refer Indicative Sketch Section A
- Boundary Landscape Buffer
  Refer Indicative Sketch Section B
- Terrace Interface Strategy
  Refer Indicative Sketch Section C
- Large stature street tree planting
- Small stature reserve tree planting
- Flood prone land with native riparian planting
- Commercial Zone
  Existing and proposed buildings with amenity tree and shrub planting
- Footpath network
- Terrace Interface Strategy - 5m building setback
- Site Boundary

0 30 60 90 120 m

Revisions Notes

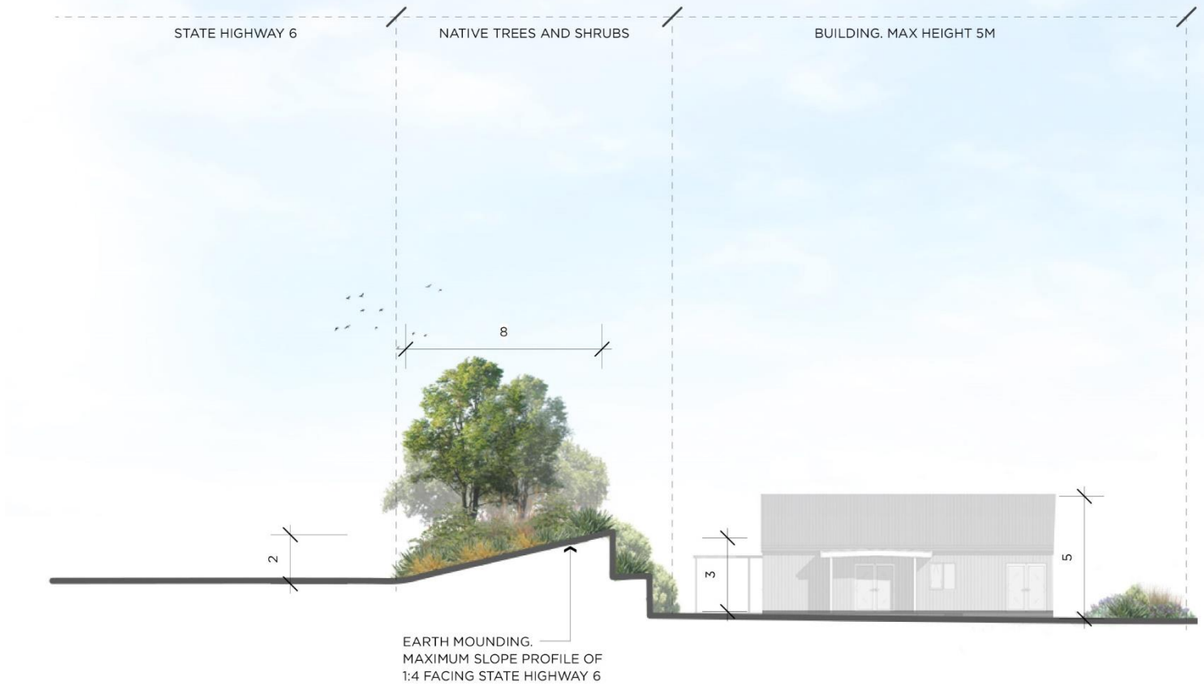
Revision	Date	Notes
B	30/08/2022	Preliminary Concept

Drawing Number	**LP01**
Scale	1:3,500 @ A3
Drawn	K.Holyoake
Approved	B.Gilbert
Client	-
Issue	Plan Change
Project Address	LOT 2 DP 397990, LOT DP 405431 LOT 19 DP 520912 & LOT 112 DP 546309

Indicative Landscape Concept

Pisa Moorings - Proposed Plan Change

bridgetgilbert
landscapearchitecture
m 021 661 650 **e** bridget@bgla.nz



0 2 4 6 8 10 m

Revisions Notes

Revision	Date	Notes
B	30/08/2022	Preliminary Concept

Drawing Number	**LP02**
Scale	1:250 @ A3
Drawn	K.Holyoake
Approved	B.Gilbert
Client	-
Issue	Plan Change Application
Project Address	LOT 2 DP 397990, LOT DP 405431 LOT 19 DP 520912 & LOT 112 DP 546309

Indicative Sketch Section A

Highway Landscape Buffer

Pisa Moorings - Proposed Plan Change

bridget**gilbert**

landscapearchitecture

m 021 661 650 **e** bridget@bgla.nz

0 1 2 m

Revisions Notes

Revision	Date	Notes
B	30/08/2022	Preliminary Concept

Drawing Number	**LP03**
Scale	1:50 @ A3
Drawn	K.Holyoake
Approved	B.Gilbert
Client	-
Issue	Plan Change Application
Project Address	LOT 2 DP 397990, LOT DP 405431 LOT 19 DP 520912 & LOT 112 DP 546309

Indicative Sketch Section B

Boundary Landscape Buffer

Pisa Moorings - Proposed Plan Change

bridgetgilbert
landscapearchitecture
m 021 661 650 **e** bridget@bgla.nz

0 2 4 6 8 10 m

Revisions Notes

Revision	Date	Notes
B	30/08/2022	Preliminary Concept

Drawing Number	**LP04**
Scale	1:250 @ A3
Drawn	K.Holyoake
Approved	B.Gilbert
Client	-
Issue	Plan Change Application
Project Address	LOT 2 DP 397990, LOT DP 405431 LOT 19 DP 520912 & LOT 112 DP 546309

Indicative Sketch Section C

Terrace Interface Strategy

Pisa Moorings - Proposed Plan Change

bridgetgilbert
landscapearchitecture
m 021 661 650 **e** bridget@bgla.nz

www.aeservices.co.nz
office@aeservices.co.nz
Auckland +64 9 917 0369
Wellington +64 4 890 0122
Christchurch +64 3 377 8952

File Ref: AC21327 – 02 – R1

9 November 2021

Jack Peszynski and Alan McKay
c/- Campbell Hills
C. Hughes and Associates Ltd
PO Box 51
Cromwell 9342

Email: campbell@chasurveyors.co.nz

Dear Campbell,

Re: Pisa Moorings Private Plan Change, Pisa Moorings
Initial traffic noise review

Further to our correspondence, we have undertaken initial analysis on the traffic noise associated with the proposed plan change (future residential subdivision development) of an existing rural site at Pisa Moorings.

Our analysis is based on the following:

- Concept plan titled *Proposed Private Plan Change, Lot 2 DP 397990, Lot 2 DP 405431, Lot 19 DP 520912 & Lot 112 DP 546309, Pisa Moorings*, Revision D, as prepared by C. Hughes & Associates Ltd and dated the 25th of August 2021.

Please find our analysis below.

1.0 BACKGROUND

The future residential subdivision located at Pisa Moorings, adjacent to the State Highway 6, as shown in figure 1.1 below.

Figure 1.1 – Location of the future subdivision

2.0 NEW ZEALAND TRANSPORT AGENCY'S (NZTA) REVERSE SENSITIVITY GUIDANCE

New Zealand Transport Agency's (NZTA) *Guide to the management of effects on noise sensitive land use near to the state highway network* (Version 1.0, and dated September 2015) states that the following noise designed noise levels associated with the dwellings within 100 metres of a State Highway:

- Internal noise levels: The dwellings need to be designed and constructed to achieve an internal noise level of 40 dB $L_{Aeq\ (24h)}$ for living and sleeping spaces. We note that if windows must be closed to achieve the internal noise level of 40 dB $L_{Aeq\ (24h)}$, the building must be designed, constructed and maintained with a ventilation and cooling system.

- Noise levels in the outdoor living area: Where development occurs within the buffer area, a maximum external design noise level of 57 dB $L_{Aeq\ (24h)}$ should be applied to the main outdoor living space.

3.0 PREDICTED NOISE LEVELS AND RECOMMENDATIONS

Based on the concept plan, we understand that the closest boundary of the subdivision is approximately 6 metres away from the nearest edge of the carriageway of SH6.

We have based our analysis on the following information associated with the traffic along SH6:

- An AADT of 5,622 (with 7.6% heavy vehicles) based on the NZTA volume count data from 2020 and an adjustment of 3% increase in traffic volume between 2020 and 2021.
- A speed limit of 100 km/h.
- Road surface of Grade 6 VFILL Chip Seal as indicated by the Mobile Road database.
- 3 dB has been added to the predicted noise levels to account for future permitted use, as required by NZTA.

Based on correspondence, we understand that a 3 m high acoustic barrier will be constructed between the SH6 and subdivision, as shown by the blue lines in figure 3.1 below.

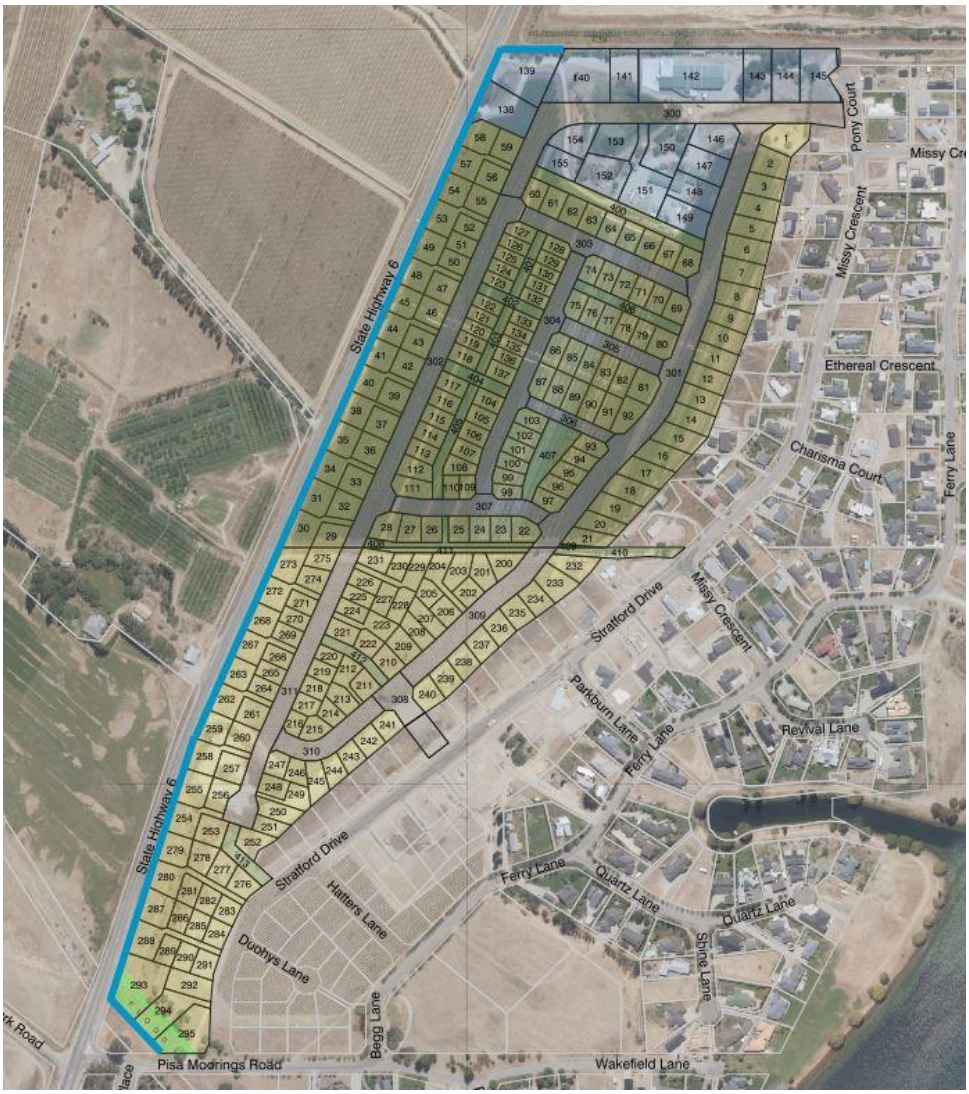


Figure 3.1 – Location of acoustic fencing

The acoustic barrier should meet the following minimum standards:

- Surface mass – at least 10 kg/m^2
- The barriers must be continuous and maintained with no gaps or cracks. For timber fences, this will require palings to be well overlapped (25 mm minimum) or a "board and batten" system, and a sleeper rail connecting the base of the palings to the ground. We also recommend a paling thickness of at least 25 mm to help resist warping.
- Suitable fencing materials which are commonly used include 25 mm timber, 9 mm fibre cement, 21 mm plywood, masonry, concrete and earth bund (or a combination – for example 1.8 metre timber fence atop a 1.2 metre earth bund).

Based on above, the predicted traffic noise contours are shown in figure 3.2 below.

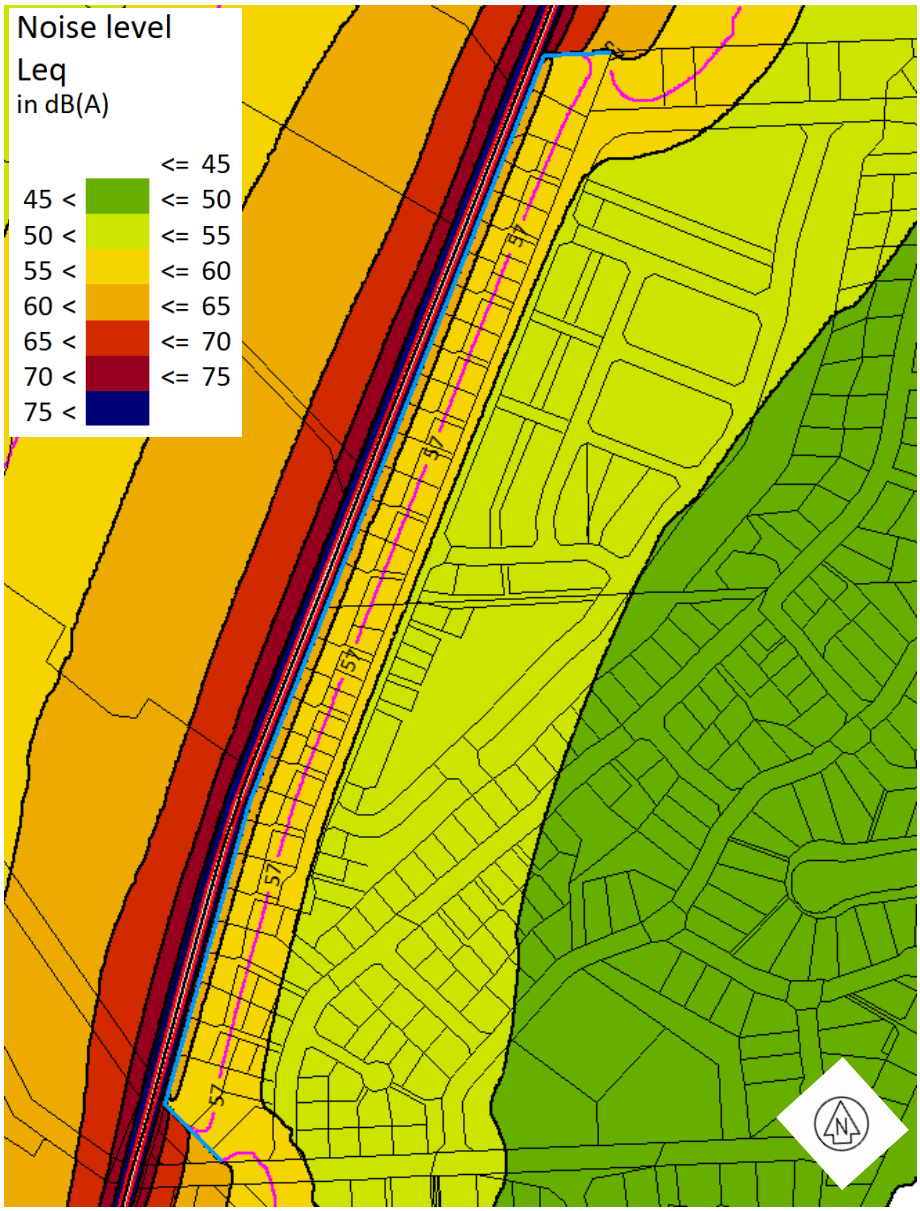


Figure 3.2 – Expected noise levels in the subdivision (shown at ground floor level)

Based on above, we have the following comments:

- Noise levels of up to 61 dB $L_{Aeq\ (24h)}$ are expected to be received on the ground floor level of dwellings in the subdivision. It is realistic to construct single storey dwellings to achieve an internal noise level of 40 dB $L_{Aeq\ (24h)}$ based on this external level.

  Where external noise levels are more than 57 dB $L_{Aeq\ (24h)}$ and no more than 61 dB $L_{Aeq\ (24h)}$, upgrades to the constructions of the dwellings may not be required to achieve an internal noise level of 40 dB $L_{Aeq\ (24h)}$ depending on the selected cladding products. However, noise levels received in the habitable spaces of the dwellings may be higher than 40 dB $L_{Aeq\ (24h)}$ with windows open for ventilation. Therefore, a ventilation and cooling system may be required for these dwellings.

  Where external noise levels are no more than 57 dB $L_{Aeq\ (24h)}$ no dwelling upgrades are likely to be required and therefore we have shown the 57 dB $L_{Aeq\ (24h)}$ contour line in pink in figure 3.2 above, which is located at approximately 40 metres away from the nearest marked lane of SH 6.

- Higher noise levels (up to 74 dB $L_{Aeq\ (24h)}$) will be experienced at the second storey of dwellings, and therefore only single level dwellings may be appropriate on the sites closest to the State Highway.

- It is realistic to achieve the traffic noise level requirement of 57 dB $L_{Aeq\ (24h)}$ in an outdoor living area with the shielding of the dwellings.

4.0 SUMMARY

Based on our initial review on the traffic noise levels received in the subdivision, it is realistic to comply with the internal noise levels of 40 dB $L_{Aeq\ (24h)}$ and external noise levels of 57 dB $L_{Aeq\ (24h)}$ in an outdoor living area, with a 3 metre high acoustic barrier as shown in figure 3.1 above. Only single level dwellings may be appropriate on the sites closest to the State Highway, and the construction of dwelling within 40 metres of the State Highway should be reviewed.

Please do not hesitate to contact us if you have any queries.

Kind Regards,

Aaron Zhao
ME (Mech)
Acoustic Engineer
Acoustic Engineering Services

11 March 2022

Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd
c/- C. Hughes and Associates
PO Box 51
Cromwell 9342

Re. Preliminary and Detailed Environmental Site Investigation for Proposed Subdivision at 828 Luggate Cromwell Road, Mount Pisa

Our Reference: 21055

1 Introduction

Campbell Hills at C. Hughes and Associates Ltd requested, on behalf of Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd, that JKCM Ltd, trading as Insight Engineering (IE), undertake a preliminary and detailed environmental site investigation (PSI and DSI) of the property at 828 Luggate Cromwell Road, Mount Pisa as well as the neighbouring property towards the south (herein collectively referred to as "the site") as outlined in our Short Form Agreement (reference P21055, fully executed on 15 October 2021).

We understand that the site is proposed to be subdivided into 233 new residential Lots, 18 new commercial Lots as well as additional roads and reserve Lots and this report will be provided to Central Otago District Council (CODC) as part of the Resource Consent application.

The purpose of this combined PSI and DSI was to assess the suitability of the site for the proposed subdivision and development for residential or commercial purposes, as required by the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations[1] (herein referred to as the NES). This investigation was undertaken in general accordance with the Ministry for the Environment (MfE) *Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand*[2].

Figure 1 (Appendix 1) indicates the location of the site. The proposed subdivision plan is provided in Appendix 2.

2 Objectives of the Investigation

The objectives of this PSI/DSI were to investigate the site history, in terms of potentially contaminating activities, and assess whether a risk to human health is likely to result from the activity of disturbing soil at the piece of land, as well as changing the land use of that piece of land from agricultural to residential or commercial.

2.1 Approach

2.1.1 Review of Site Information

Several sources were contacted for information relating to the sites past and present uses and to identify any other environmental issues which may be on record. This consisted of:

- Undertaking a site walkover to describe current site conditions and assess whether any visual or olfactory evidence of contamination is present at the site;
- Interviewing the current site owners / operators, to obtain information relating to potentially contaminating activities that may have been undertaken at the site;
- Review of publicly available data describing the local geology and hydrogeology;
- Reviewing publicly available Resource Consent information held by the Otago Regional Council (ORC);
- Review of the ORC Hazardous Activities, Industries and Bore Search database in terms of any property specific records of hazardous activities or industries that are held in their database of potentially contaminated sites;
- Reviewing the CODC NES Records Search statement to determine whether any records of contamination at the site are held in their database; and
- Reviewing publicly available historical aerial photographs and maps of the site and surrounding area.

2.1.2 Intrusive Investigation

The following scope of work was undertaken upon completion of the review of site information:

- Obtain twenty (20) soil samples from 20 locations across the site where potential for contamination impacts had been identified;
- Visual and olfactory inspection of soil samples in the field;
- Submit 20 soil samples to Hill Laboratories for analysis of various contaminants associated with each location;
- Assess laboratory results for the soil samples against the adopted human health criteria for residential or commercial land use and excavation activities or maintenance of underground services; and
- Present a combined PSI / DSI report outlining our findings, the suitability of the site for residential or commercial development / use, as well as recommendations to manage impacted areas (if any).

3 Site Description

Site information is summarised in Table 1.

Table 1: Site Information

Location	828 Luggate Cromwell Road, Mount Pisa
Legal Description	LOT 2 DP 397990, LOT 2 DP 405431, LOT 19 DP 520912 & LOT 112 DP 546309
Property Owner	Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd
Site Area	Approximately 241,648 m^2 (24.1648 ha)
Current Site Use	Agricultural (orchard and vineyard) and industrial (packhouse)
Proposed Site Use	Residential and commercial
Territorial Authorities	Central Otago District Council Otago Regional Council
Zoning	Rural Resource Area with Scheduled Activity 127 covering proposed Lots 294 and 295

The site setting is summarised in Table 2.

Table 2: Site Setting

Topography	The majority of the site is relatively flat, with only minor localised undulations. The southern area, directly south of the main vineyard, contains a localised hollow area which appears to function as a stormwater retention pond. Beyond that area, towards the south, three soil stockpiles and other minor localised undulations are located along an informal culvert that drains towards Pisa Moorings Road. A large earth bund, measuring approximately 150 m long by 10 m wide and 2 m tall, is located directly west of the main vineyard area. The northern area, north east of the orchard, contains a localised low zone land in the north eastern corner which is approximately 2 m below the remainder of the surrounding towards the south and west.
Local Setting	The site is located on the western edge of Pisa Moorings. The surrounding areas consist generally of agricultural / horticultural land towards the west, industrial land (Parkburn Quarry) towards the north and residential land towards the east and south.
Nearest Surface Water & Use	A pond covering approximately 4,000 m^2 is located within the site boundary, near to the northern site boundary. The site is located between Five Mile Creek at the southern end of the site and Park Burn towards the north. Both streams discharge into Lake Dunstan, which is used as a source of potable water as well as for recreational and irrigation purposes. The nearest portion of Lake Dunstan is located between approximately 175 m and 500 m east of the site.
Geology	The GNS New Zealand Geology Webmap[3] indicates that the site covers two geological units. The northern portion, including the north eastern portion of the vineyard area, is within the “Holocene river deposits” geological unit described as *unweathered to slightly weathered, loose, sandy to silty, well rounded gravel gravel usually on large outwash plains.*’

Table 2(cont.): Site Setting

Geology (cont.)	The southern portion is within the "Late Pleistocene river deposits" geological unit described as '*unconsolidated gravel, sand, silt, clay, and minor peat of modern to postglacial flood plains, may be terraced.*'The surface material observed during the site visit is described as light brown gravelly silt in the northern and southern areas.
Hydrogeology	Groundwater depth at the site, which is expected to be marginally higher than the level of Lake Dunstan, is estimated to be between 7 m and 11 m below ground level. Predicted groundwater flow direction is based on an ORC[4] report. The aquifer is not named in the report, but is referred to as the Pisa Alluvium Aquifer elsewhere. Local groundwater is expected to behave in a similar way to the Cromwell Terrace Aquifer and groundwater is therefore considered likely to flow generally towards Lake Dunstan, east of the site.
Groundwater Abstractions [5]	Four groundwater abstraction consents were issued for properties located at, or within 250 m of, the site: • Consent number RM18.378.01 was issued in 2019 for Centralpac Limited to take and use ground water for the purpose of irrigation and frost fighting, until 16 May 2034. The subject site of this investigation is located on the property that this consent relates to. • Consent number RM17.138.01 was issued in 2017 Central Otago District Council to take and use groundwater for the purpose of communal domestic supply, until 1 July 2052. The subject site of this investigation is located on the property that this consent relates to. • Consent number RM17.254.01 was issued in 2017 for Epicurious Limited to take and use groundwater from the Pisa Groundwater Management Zone for the purpose of irrigation and domestic supply, until 27 September 2047. The property associated with this consent is located west of the site. • Consent number RM15.093.01 was issued in 2015 for Cherry Futures Limited to take and use groundwater from the Pisa Alluvial Aquifer for the purpose of irrigation, frost fighting and domestic supply, until 20 April 2050. The property associated with this consent is located west of the site. • Consent number RM15.093.01 was issued in 2015 for Cherry Futures Limited to take and use groundwater from the Pisa Alluvial Aquifer for the purpose of irrigation, frost fighting and domestic supply, until 20 April 2050. The property associated with this consent is located west of the site. • Consent number 2002.326.V1 was issued in 2010 for David Hall-Jones to take and use up to 4.2 litres per second of groundwater for the purpose of vineyard irrigation and domestic supply, until 1 August 2022. The property associated with this consent is located west of the site. • Consent number RM17.155.01 was issued in 2017 for Pisa Moorings Vineyard Limited to take and use ground water for the purpose of irrigation, until 1 July 2052. The property associated with this consent is located east of the site.
Discharge Consents [5]	No discharge consents are recorded within 250 m of the site

3.1 Current Site Conditions

Claude Midgley of IE completed a site walkover inspection on 19 October 2021. Observations made at that time are summarised in Table 3 and photographs are presented in Appendix 3.

Table 3: Current Site Conditions

Visible signs of contamination	Several indicators of potential contamination were observed on site: • Stained soil in the driveway area south of the fruit packing shed in the north of the site; • Stained soil beneath and around two above ground fuel storage tanks south east of the dam in the north of the site; • Stacked treated timber in several parts of the yard area south east of the dam in the north of the site; • A fenced hole in the ground near to the entrance of the orchard, south of the dam in the north of the site, with signage reading "Poison" and "Keep Off"; • Blue / turquoise stained soil in two areas within the orchard in the north of the site; • Stacked treated timber posts near to a shipping container in the southern portion of the site, south of the vineyard area; and • A shipping container, painted with marine grade antifouling paint, in the area south of the vineyard in the southern portion of the site.
Surface water appearance	Surface water in the dam was clear and showed no signs of contamination, such as a sheen or chemical odour.
Current surrounding land use	The site is surrounded by horticultural and agricultural land (vineyards and paddocks) towards the west, commercial / industrial land towards the north and residential land towards the east and south.
Local sensitive environments	Five Mile Creek, which crosses the southern corner of the site, Park Burn (~1.35 km towards the north east) and Lake Dunstan (located between approximately 175 m and 500 m east of the site) are considered sensitive environments.
Visible signs of plant stress	No visible signs of plant stress were noted.
Additional Observations (if any)	A large hollow area, which appears to be a stormwater retention area with a water source originating from the neighbouring property on the opposite (western) side of Luggate Cromwell Road, was observed in the area directly south of the large vineyard in the southern portion of the site. Signage on the fence surrounding stacked treated timber posts in the southern portion of the site stated "Danger, Poison, Pindone pellet bait, do not touch or remove, keep all pets away."

3.2 Interview with Site Owner / Operator

Tim Hope (*pers. comm.*) provided the following information related to the management of the orchard in the northern portion of the site:

- Mr Hope has been involved with managing the orchard in the northern portion of the site for approximately 2 years.

- Agrichemicals used and stored in the greatest volumes are nutrient sprays (Phoztrac, Magflo, various seaweeds and calcium). Copper is the next most used product, for anti-fungal purposes. Various other fungicides and pesticides are stored and used in very small volumes.
- Mr Hope is not aware of any efforts to control rabbits within the northern portion of the site.
- The hole labelled “Poison” near to the entrance of the orchard is used to capture the runoff generated when cleaning and washing down mechanical equipment.
- Mr Hope is not aware of any other waste disposal to ground, or any other potentially contaminating activities within the northern portion of the site.

James Dicey (*pers. comm.*) provided the following information related to the management of the vineyard in the southern portion of the site:

- Mr Dicey has been involved with managing the vineyard in the southern portion of the site for approximately 10 years, but was not involved with establishing the vineyard;
- Mr Dicey provided the 2021 spray diary, which demonstrates that no persistent contaminants are used for the management of the vineyard;
- Agrichemicals are stored in a shipping container that is not know to have any leaks;
- Waste generated at the site is disposed of at Victoria Flat landfill and no waste is burned or buried at the site;
- Rabbits are controlled by exclusion netting, poisoning with Magtoxin then filling the burrows, dogs, ferrets and monitoring rabbit numbers with a thermal scope.
- No equipment maintenance has been undertaken on the site.

3.3 ORC Property Database

IE reviewed the ORC Hazardous Activities, Industries and Bore Search database[6] on 22 February 2022. The search confirmed that the site is not currently on the ORC database.

The nearest site recorded on the database (Site number HAIL.00359.01), an asphalt or bitumen manufacture or bulk storage facility, is located approximately 1.15 km north east of the site.

No other properties located within 2 km of the site are recorded on the database.

3.4 CODC NES Records Search

The NES Records Searches were completed by Planning Officers - Consents Adam Vincent and Ruth MacKay, are provided in Appendix 4. In summary, the record search provided the following relevant information:

Northern area:

- The document indicates that the area is known to have an orchard present within the boundaries, which suggests that persistent pesticides could have been used and/or stored in bulk. Additionally, bulk quantities of treated timber are known to have been stored on the site.
- A land use consent for the construction of a cherry packhouse contains a record that “*there has historically been outdoor storage of general farm materials and implements. Such materials and implements may include storage [of] fuel or chemical tanks or drums, treated timber or materials containing heavy metals*.”

- No environmental investigations are known to have been undertaken at the site and aerial photographs confirm that the presence of horticultural activities and storage of a range of unidentified materials to the south of the workers accommodation buildings.

- The document concludes with a disclaimer that Council does not hold records directly relating to activities on the Hazardous Activities and Industries List[6] (HAIL) and recommends that further investigation is undertaken to determine whether any HAIL activities exist on the site.

Southern Area:

- The document indicates that the majority of the site is located in the rural resource area with portions of the site located in the residential resource area. The site also contains a Scheduled Activity area, ref: SA 127, "Commercial facilities and Shop as defined in Section 18."

- All Resource Consent records relate to properties that are no longer part of the site. However the records mention the presence of vineyards and associated pest control activities.

- A preliminary site investigation report was prepared in relation to Resource Consent 160069 in 2016. The report concluded that the site was suitable for the proposed subdivision and hat no further detailed site investigations were deemed necessary. It was determined that the potential effects in terms of potential soil contamination were minor.

- The document concludes with a disclaimer that Council does not hold records directly relating to activities on the Hazardous Activities and Industries List[7] (HAIL) and recommends that further investigation is undertaken to determine whether any HAIL activities exist on the site.

3.5 Review of Historical Aerial Photographs and Maps

Photographs in the Crown Collection[8], and Google Earth[9] as well as topomaps on the MapsPast[10] website, have been reviewed to obtain information on the past uses of the site. Aerial photographs taken between 1958 and 2021, as well as maps created between 1939 and 2019, have been reviewed.

Table 4 summarises the features visible in each image.

Table 4: Historical Aerial Photographs

1939 [10]	The site is located on the western side of two blocks of land. The northern block is labelled with '7' and '200,0,23'. The southern block is labelled '6' and '193,1,00'. An informal track, crossing the site along an east / west axis near to the southern corner, is marked with two parallel dashed black lines. Another set of solid parallel lines run along a north west / south east axis, just beyond the southern site boundary. A label towards the north west identifies the solid parallel lines as a 'Sludge Channel' and the lines lead to a block labelled 'Tailings' towards the south east. No other significant features are visible at the site or in the surrounding area.
1949 [10]	There are no significant changes compared with the 1939 map.
1958 [8]	The site is visible as part of a large undeveloped paddock with a dwelling and established trees located towards the east. An irregular shaped area near to the centre of the southern portion of the site is a lighter colour than the surrounding land. The area appears to be a stormwater retention pond, with water channelled from the neighbouring property on the western side of Luggate Cromwell Road. A small channel leads from the retention pond to the 'Sludge Channel' at the southern site boundary. A small stand of trees is also located approximately 100 m north of the stormwater collection pond. A track / driveway leads from Luggate Cromwell Road,

Table 5 (cont.): Historical Aerial Photographs

1958 [8] (cont.)	between the retention pond and the small stand of trees, to the dwelling east of the site. The northern portion of the site contains irregular shaped areas that are a darker colour than the surrounding land, with light coloured tracks around the perimeter of the darker areas. Apart from orchards on the property towards the west and a couple of small buildings surrounded by established trees towards the south, all other surrounding properties appear to be undeveloped paddocks.
1964 [8]	The image does not cover the southern corner of the site. No significant changes are apparent at the site or in the surrounding areas.
1968 [8]	Darker patches of land with light coloured parallel linear features indicate that a flood irrigation area has been established on a neighbouring property towards the south west. No other significant changes are apparent at the site or in the surrounding areas.
1969 [10]	Apart from a symbol indicating the presence of a terrace embankment on the eastern edge of the site, there are no significant features marked on the site. In the surrounding land, trees, a building and additional embankments are marked in the area east of the site. No other significant features are visible at the site or in the surrounding area.
1976 [8]	New flood irrigation areas have been established at the north western and south eastern ends of the site. Additional flood irrigation areas are visible towards the south east. No other significant changes are apparent at the site or in the surrounding areas.
1978 [8]	No significant changes are apparent at the site or in the surrounding areas.
1979 [10]	There are no significant changes compared with the 1969 map.
1982 [8]	No significant changes are apparent at the site or in the surrounding areas.
1983 [8]	No significant changes are apparent at the site or in the surrounding areas.
1984 [8]	No significant changes are apparent at the site or in the surrounding areas.
1989 [10]	There are no significant changes compared with the 1979 map.
1999 [10]	Apart from the outline of Lake Dunstan being added in the area east of the site, there are no significant changes compared with the 1989 map.
2001 [8]	The southern portion of the site appears unchanged. A dam, an access track, a parking area and several trees have been established in the northern portion of the site. Two small structures are visible between the dam and the parking area. Another small structure is located on the south eastern edge of the parking area. An unidentifiable crop can be seen growing in a long and narrow area directly south of the dam. In the surrounding land, new roads and a few scattered dwellings are visible in the area south east of the site. No other significant changes are visible at the site or in the surrounding area.
2003 [8]	Apart from a few additional new dwellings in the land towards the south east and new vineyards west of the northern portion of the site, no significant changes occur at the site or surrounding area compared with the 2001 photograph.
2007 [9]	The majority of the northern portion of the site has been developed with an orchard. A large building has been constructed near to the northern site boundary, north east of the dam. More new roads and dwellings have been constructed in the land east of the site. A quarry has been established on the neighbouring property north east of the site. No other significant changes are apparent at the site or in the surrounding area.
2009 [10]	Dams are marked near to the northern edge of the site and adjacent to the western boundary near to the southern corner of the site. Horticultural activities are marked in

Table 5 (cont.): Historical Aerial Photographs

	the southern corner of the site and in the land on the opposite (western) side of Luggate Cromwell Road. No other significant changes are apparent compared with the 1999 map
2010 [9]	The majority of the southern portion of the site has been developed with a vineyard. New buildings are constructed, and storage of unidentifiable objects occurs, in the area south east of the dam in the northern portion of the site. Vineyards have also been established in the neighbouring land east of the southern portion of the site. More new dwellings have been constructed in the land east of the site. The quarry on the neighbouring property towards the north east of the site has been expanded towards the west. No other significant changes are apparent at the site or in the surrounding area.
2011 to 2019 [9]	The vineyard area east of the southern corner of the site becomes progressively developed with new dwellings until the vineyard in that area is completely removed. No other significant changes occur in the surrounding area during this time. Earthworks in the surrounding land towards the east of the southern portion of the site appear to generate spoil that gets placed between the vineyard area and Luggate Cromwell Road at the north western edge of the southern portion of the site. No other significant changes are apparent at the site or in the surrounding area.
2019 [10]	The majority of the site is marked with symbols indicating horticultural activities. No other significant changes are apparent at the site or in the surrounding area.

3.6 Summary of Identified Hazardous Activities and Industries

The following activities noted on the HAIL[7] have been identified during review of the site history:

Category A1 – Agrichemicals including commercial premises used by spray contractors for filling, storing or washing out tanks for agrichemical application.

> This category is represented by the storage and application of agrichemicals, including herbicides and fertilisers, within the horticultural portions of the site. The risk to health from these sources is considered to be very low.

Category A6 – Fertiliser manufacture or bulk storage.

> This category is represented by the bulk storage of fertiliser in a shed in the northern portion of the site. The risk to health from this source is considered to be very low.

Category A10 – Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.

> This category is represented by the storage and application of herbicides and pesticides in isolated portions of the site. The risk to health from these sources is considered to be very low.

Category A11 - Pest control including the premises of commercial pest control operators or any authorities that carry out pest control where bulk storage or preparation of pesticide occurs, including preparation of poisoned baits or filling or washing of tanks for pesticide application.

> This category is represented by the use of Pindone pellets in the area south of the main vineyard in the southern portion of the site. The risk to health from this source is considered to be very low.

Category A13 - Petroleum or petrochemical industries including a petroleum depot, terminal, blending plant or refinery, or facilities for recovery, reprocessing or recycling petroleum-based materials, or bulk storage of petroleum or petrochemicals above or below ground.

> This category is represented by two above ground fuel storage tanks in the area south east of the dam in the northern portion of the site.

Category A17 – Storage tanks or drums for fuel, chemicals or liquid waste.

> This category is represented by the storage and dispensing of fuel in the area south east of the dam in the northern portion of the site, as well as the storage of chemicals in drums in the yard area south east of the dam. The risk to health from this source is considered to be very low.

Category A18 - Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside.

> This category is represented by the storage of stacked treated timber posts in the yard area south east of the dam in the northern portion of the site, as well as adjacent to the shipping container in the southern portion of the site. The risk to health from these sources is considered to be moderate.

Category B2 - Electrical transformers including the manufacturing, repairing or disposing of electrical transformers or other heavy electrical equipment.

> This category is represented by the presence of an electrical transformer between the dam and the packing shed in the northern portion of the site. The risk to health from this source is considered to be very low.

Category G5 – Waste disposal to land (excluding where biosolids have been used as soil conditioners).

> This category is represented by disposal of poison and other agrichemicals in the fenced off hole south of the dam in the northern portion of the site. The risk to health from this source is considered to be moderate.

Category I - Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment.

> This category is represented by the use of treated timber posts in the vineyard and orchard areas, which result in contamination micro hotspots within 0.2 m of the post holes. The risk to health from these sources is considered to be moderate.

According to Regulation 5 of the NES[1], the Regulations apply if a HAIL[7] activity has been undertaken, or currently is being undertaken on the property.

4 Intrusive Investigation

Under the NES, the proposed activity is considered to meet the definitions provided under Regulation 5(6) changing the use of a piece of land that has Regulation 5(7) a HAIL activity undertaken on it.

The application for a change of land use across the majority of the site, from agricultural to residential, could not be considered to qualify as a Permitted Activity under Regulation 8(4), because it is not highly unlikely that there will be a risk to human health if the activity is done to the piece of land.

Furthermore, based on visual and olfactory indicators of contamination impacts within the existing commercial / industrial use area of the site, it could not be concluded that it is highly unlikely that there will be a risk to human health if the area is subdivided.

Therefore, a detailed environmental investigation was undertaken to assess whether the identified hazardous activities have resulted in an unacceptable risk to human health.

Targeted discrete soil surface samples were collected from strategic locations. The samples were submitted to RJ Hill Laboratories (Hills) for analysis of the relevant contaminants at each location (refer to Table 5). Sample locations are displayed in Figures 2 and 3.

4.1 Methodology

The following was undertaken during the soil sampling works:

- Samples were given individual names that corresponded to specific locations recorded on a site plan (refer to Figures 2 and 3);
- Visual and olfactory inspection of each sample for indicators of contamination;
- Samples were compressed directly into laboratory supplied containers using a new pair of nitrile gloves for each sample. Prior to sampling, the equipment (hand trowel) was decontaminated using a triple wash procedure with potable water, Decon 90 solution and deionised water;
- Placement of samples into a chilly bin and transport, under standard IE chain of custody procedures, to Hills for analysis;
- IE requested that Hills analyse samples for contaminants detailed in Table 5.

Table 5: Sample Names, Locations and Analytes

Sample Name	Location	Analytes
TT1	Beneath stacked treated timber posts in the southern portion of the fenced area, south of the vineyard.	Arsenic, chromium and copper.
TT2	Beneath stacked treated timber posts in the northern portion of the fenced area, south of the vineyard.	Arsenic, chromium and copper.
SC1	Adjacent to the southern end of the shipping container, south of the vineyard.	Arsenic, cadmium, chromium, copper, lead, nickel and zinc.
SWP1	South eastern portion of the stormwater pond south of the vineyard.	Arsenic, cadmium, chromium, copper, lead, nickel, zinc and organochlorine pesticides.
SWP2	North western portion of the stormwater pond south of the vineyard.	Arsenic, cadmium, chromium, copper, lead, nickel, zinc and organochlorine pesticides.
SY1	South western portion of the storage yard, south east of the dam in the northern portion of the site.	Arsenic, chromium and copper.

Table 5 (cont.): Sample Names, Locations and Analytes

SY2	Southern portion of the storage yard, south east of the dam in the northern portion of the site.	Arsenic, chromium and copper.
SY3	South eastern portion of the storage yard, south east of the dam in the northern portion of the site.	Arsenic, chromium and copper.
SY4	Eastern portion of the storage yard, south east of the dam in the northern portion of the site.	Arsenic, chromium and copper.
SY5	North eastern portion of the storage yard, south east of the dam in the northern portion of the site.	Arsenic, chromium and copper.
H1	Hole used for the disposal of poison at the entrance to the orchard in the area south of the dam in the northern portion of the site.	Arsenic, cadmium, chromium, copper, lead, nickel, zinc and petroleum hydrocarbons.
PH1	Western side of the driveway on the southern side of the fruit packing shed.	Petroleum hydrocarbons.
PH2	Eastern side of the driveway on the southern side of the fruit packing shed.	Petroleum hydrocarbons.
FT1	Beneath the southern corner of the bunded above ground fuel storage tank located south east of the dam in the northern portion of the site.	Petroleum hydrocarbons.
FT2	Beneath the eastern corner of the bunded above ground fuel storage tank located south east of the dam in the northern portion of the site.	Petroleum hydrocarbons.
FT3	Beneath the drain outlet (west) of the bunded area of the above ground fuel storage tank located south east of the dam in the northern portion of the site.	Petroleum hydrocarbons.
FT4	At the southern edge of the non-bunded above ground fuel storage tank located south east of the dam in the northern portion of the site.	Petroleum hydrocarbons.
OR1	Within the area of stained soil at the entrance to the orchard in the area south of the dam in the northern portion of the site.	Petroleum hydrocarbons.
OR2	Within an area of blue-stained soil near to the north western corner of the orchard.	Cadmium
OR3	Within an area of blue-stained soil near to the north western corner of the orchard.	Cadmium

4.1.1 Quality Assurance / Quality Control

The quality assurance / quality control (QA / QC) procedures employed during the works included:

- Standard sample registers and chain of custody records have been kept for all samples;
- The use of Hills, accredited by International Accreditation New Zealand (IANZ), to conduct laboratory analyses; and
- During the site investigation every attempt was made to ensure that cross contamination did not occur through the use of the procedures outlined within this document.

4.2 Investigation Criteria

4.2.1 Soil Criteria

The investigation criteria referenced in this report have been selected from the NES to assess risks to human health. Where a soil contaminant standard (SCS) was not available, the hierarchy detailed in the MfE *Contaminated Land Management Guidelines No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values*[11] was used to select applicable criteria.

SCSs, or other appropriate criteria for either residential land use with an anticipated ingestion of 10% produce grown on the site, or commercial / industrial land use in the applicable areas, have been selected considering the proposed end uses of the site.

Criteria for commercial / industrial use have also been presented to assess the risks to human health during the disturbance of soil associated with installation of underground services and other construction works, referred to as maintenance / excavation, required as part of the site development.

Landcare Research produced a report[12] on naturally occurring (referred to as 'background') concentrations of heavy metals in New Zealand. Naturally occurring concentrations were correlated with geological units to enable estimation of the mean and 95% upper confidence limits (UCL) of selected heavy metals. Laboratory results below the 95% UCL estimates for the geological unit described as 'gravel' in the north and 'mudstone Pakihi' in the south are considered to qualify as 'cleanfill' according to the MfE definition[13].

4.3 Results

4.3.1 Soil Encountered

Near surface soil encountered across the majority of the site was described as light brown sandy gravelly silt. The soils at the base of the poison disposal hole were described as wet sandy silt with common organic inclusions.

4.3.2 Laboratory Test Results

Tables 6 and 7 compare soil contaminant concentrations in the samples with the adopted investigation criteria described in Section 4.2.1. The full analytical results are included in Appendix 5.

Table 6: Laboratory Results for the Proposed Commercial Use Area Compared with Investigation Criteria

Analyte	Investigation Criteria		Investigation Results														
	Predicted Background Concentrations [A]	Soil Contaminant Standards (SCSs)[B] / Human Health Criteria	SY1	SY2	SY3	SY4	SY5	H1	PH1	PH2	FT1	FT2	FT3	FT4	OR1	OR2	OR3
Landuse		Commercial / Industrial and Maintenance / Excavation															
Heavy Metals																	
Arsenic	12.06	70	8	15	20	30	5	4	-	-	-	-	-	-	-	-	-
Cadmium [C]	0.34	1,300	-	-	-	-	-	0.57	-	-	-	-	-	-	-	0.22	0.18
Chromium [D]	80.15	6,300	13	27	22	24	15	11	-	-	-	-	-	-	-	-	-
Copper	42.85	>10,000	36	58	35	42	37	**12,300**	-	-	-	-	-	-	-	-	-
Lead	44.34	3,300	-	-	-	-	-	15.2	-	-	-	-	-	-	-	-	-
Nickel	44.96	6,000 [E]	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-
Zinc	182.8	400,000 [E]	-	-	-	-	-	7,000	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons																	
C7 – C9	<LOR	120 [m]	-	-	-	-	-	< 30	< 20	< 20	< 20	< 20	< 20	< 20	< 20	-	-
C10 – C14	<LOR	1,500 [G,x]	-	-	-	-	-	220	< 20	< 20	**830**	460	105	< 20	< 20	-	-
C15 – C36	<LOR	>20,000 [H]	-	-	-	-	-	5,400	91	< 40	**23,000**	11,300	14,500	620	**40,000**	-	-

Notes:

All values in mg/kg unless otherwise indicated.

Bold text indicates concentration exceeds Commercial / Industrial and Maintenance / Excavation Criteria.

Underlined text indicates concentration exceeds the estimated background concentration (gravel).

A Landcare Research predicted concentrations (upper 95% confidence limit) [12].

B The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health [1].

C Assumes soil pH of 5.

D Criteria for Cr6 presented as criteria for Cr3 are non limiting.

E Australian National Environmental Protection Council (NEPC) National Environmental Protection (Assessment of Site Contamination) Measure Schedule B(1): Guideline on the investigation levels for soil and groundwater [14]. Health Investigation Levels: HIL D (Commercial / Industrial and Maintenance / Excavation).

F MfE Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand: Module 4 – Tier 1 Soil Screening Criteria [15]. Guideline values adopted conservatively for sandy surface soils.

G Values exceed threshold likely to correspond to formation of residual separate phase hydrocarbons [F].

H Estimated criteria exceeds 20,000 mg/kg. At 20,000 mg/kg residual separate phase is expected to have formed in soil matrix and some aesthetic impact may be noted [F].

- Indicates that the analyte wasnot tested at that sample location.

< LOR Indicates less than laboratory level of reporting.

NA indicates that the contaminant is not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site [F].

NE induicates that a concentration has not been established.

Limiting pathway [F] for each Petroleum Hydrocarbon criterion:

x - PAH surrogate

m - Maintenance / Excavation

Table 7: Laboratory Results for Samples from the Proposed Residential Use Area Compared with Human Health Criteria

Analyte	Investigation Criteria			Investigation Results				
	Predicted Background Concentrations	Human Health SCSs [A]		TT1	TT2	SC1	SWP1	SWP2
Land Use		Maintenance / Excavation	Residential (10% Produce Ingestion)					
Arsenic	9.97	70	20	**38**	***80***	4	4	< 2
Cadmium [C]	0.33	1,300	3	-	-	< 0.10	< 0.10	< 0.10
Chromium [D]	56.88	6,300	460	33	33	4	25	13
Copper	48.14	>10,000	>10,000	47	56	12	28	15
Lead	25.83	3,300	160	-	-	9.5	24	12.5
Nickel	35.15	6,000 [B]	400 [B]	-	-	4	26	14
Zinc	97.97	400,000 [B]	7,400 [B]	-	-	15	102	55

Notes:

All values in mg/kg. Full laboratory results are provided in Hill Laboratories Certificate.

Italics indicates concentration exceeds Maintenance / Excavation Criteria.

Bold text indicates concentration exceeds Residential Criteria

Underlined text indicates concentration exceeds the estimated background concentration (mudstone Pakihi).

A The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health [1].
Australian National Environmental Protection Council (NEPC) National Environmental Protection (Assessment of Site Contamination) Measure Schedule

B B(1): Guideline on the investigation levels for soil and groundwater [14]. Health Investigation Levels: HIL A (Residential with 10% produce ingestion) and HIL D (Maintenance / Excavation).

C Assumes soil pH of 5.

D Criteria for Cr_6 presented as criteria for Cr_3 are non limiting.

4.4 Discussion

4.4.1 Northern Area

The northern portion of the site includes the orchard, equipment storage and staff accommodation areas, the fruit packing shed, driveways and parking areas, agrichemical storage sheds, above ground fuel tanks and the dam.

Several contaminants were found at concentrations that exceed the relevant SCSs and therefore pose a risk to human health in the northern area. Furthermore, the concentrations of several contaminants exceeded the expected naturally occurring concentrations. Soil in those areas cannot be considered to qualify as cleanfill[13].

4.4.2 Southern Area

The southern portion of the site includes the vineyard, stormwater retention pond, stacked treated timber, a shipping container and soil stockpiles of unknown origin. Significant concentrations of arsenic were encountered in the fenced-off area containing stacked treated timber posts.

Furthermore, according to recent studies focused on assessing the contaminant distribution pattern resulting from the use of treated timber posts in vineyards and kiwifruit orchards[16, 17], the presence of contamination 'micro-hotspots' at the location of each timber post result in short term and long term exposures that pose significant risks to human health if they are not remediated or managed appropriately.

The soil from the southern paddock is therefore not considered to qualify as cleanfill[13].

5 Conceptual Site Model

A contamination conceptual site model, presented in Table 5, consists of three primary components to allow the potential for risk to be determined. These are:

- Source of contamination;
- Pathway to allow the contamination to mobilise; and
- Sensitive receptors which may be impacted by the contamination.

Table 5: Conceptual Site Model

Source	Pathway	Receptor
Heavy metals	Inhalation of dust Dermal absorption (direct contact) Ingestion of soil and / or produce grown in the soil	Maintenance / Excavation workers Site workers Current and future residents / visitors
Herbicides		
Acceptable risk to human health	Residential Use Yes: The proposed residential use is not considered likely to result in significant risks to human health. Earthworks associated with land development Yes: A site management plan could be implemented to minimize the risks to human health if any potentially contaminated materials are unearthed during decommissioning of the wastewater disposal system.	

6 Conclusions

Information obtained as part of this investigation (refer to Section 3) indicates that the northern area was developed with an orchard and associated ancillary buildings between 2004 and 2007. A large portion of the southern area was developed with a vineyard between 2008 and 2010.

Northern Area

Several indicators of contamination hotspots, such as odorous or stained soil, were identified during the site walkover inspection. Laboratory analysis of targeted soil samples confirmed that contamination impacts pose risks to human health in various parts of the northern portion of the site (refer to Figure 4).

Resource Consent will be required to subdivide this part of the site, as well as to disturb soil within the identified contaminated areas.

Southern Area

Treated timber vineyard posts are known[16, 17] to result in highly localised and isolated contamination impacts in the soil. Significant horizontal impacts from the leaching of arsenic, copper and chromium are reportedly limited to within 200 mm of the post footprints. Vertical impacts are expected to be limited to 200 mm below the base of the posts. Vineyard posts and the zone of contamination around them take up an area of 0.05% of the total vineyard area and the distribution of contaminants around the posts has been well documented[16, 17]. Therefore, it was not considered beneficial to undertake a detailed site investigation of the vineyard area to quantify the concentrations of the heavy metals used to treat the timber posts. Instead, it can be assumed that 0.05% of the soil volume within a given area contains arsenic at concentrations exceeding the Soil Contaminant Standard (SCS) for residential land use. Concentrations of copper and chromium are not expected to exceed their respective SCSs, and those contaminants are significantly less toxic than arsenic.

It is anticipated that the micro-hotspots[16, 17] associated with treated timber posts will pose a significant risk to human health if they are not remediated or managed appropriately within the proposed residential use areas.

Based on the current contamination status of the site, given the potential sources identified, it is considered highly unlikely that there will be a risk to human health if the following activities are done:

- Prepare a formal strategy to manage or remediate the areas impacted with contamination and confirm that CODC approves of the proposed approach;
- Prepare a Remediation Action Plan (RAP) to formalise the strategy to manage or remediate the contaminated areas, as well as to provide controls that will minimise or eliminate the risks to human health during the completion of the soil disturbance works;
- Changing the land use from agricultural to residential or commercial / industrial; and
- Future use of the proposed new lots for residential or commercial purposes.

7 Recommendations

It is recommended that the subdivision and change of land use be allowed as a Restricted Discretionary Activity under NES Regulation 10, because a detailed site investigation has concluded that the soil contamination exceeds the applicable standard in Regulation 7.

A Remediation Action Plan (RAP) is recommended to formalise the strategy to manage or remediate the contaminated areas, as well as to provide controls that will minimise or eliminate the risks to human health during the completion of the soil disturbance works.

If any material showing signs of potential contamination (visual or olfactory) is unearthed during any soil disturbance events at the site, work should stop immediately and a suitably qualified environmental practitioner should be engaged to assess the risk to human health prior to recommencing earthworks.

8 References

1. Ministry for the Environment 2012: Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health
2. Ministry for the Environment 2021: Contaminated Land Management Guidelines No.1: Reporting on Contaminated Sites in New Zealand
3. GNS Webmap Institute of Geological and Nuclear Sciences 2013: 1:250,000 Geology. Viewed at: http://data.gns.cri.nz/geology/
4. Otago Regional Council 2012: Cromwell Terrace Aquifer Study.
5. Otago Regional Council 2017: Otago Regional Council Resource Consent Database. Viewed at: http://data.orc.govt.nz/
6. Otago Regional Council 2021: Mapping Resource Hazardous Activities, Industries and Bores Search. Viewed at: https://maps.orc.govt.nz/portal/apps/MapSeries/index.html?appid=052ba04547d74dc4bf070e8d97fd6819
7. Ministry for the Environment 2011: Ministry for the Environment Hazardous Activities and Industries List
8. Local Government Geospatial Alliance 2017: Retrolens - Historical Image Resource Project. Viewed at: http://retrolens.nz
9. Google Earth v7.3.4.8248. Mt Pisa, Central Otago, New Zealand. -44.973152° lon, 169.239834° lat, Eye alt 1.74 km. DigitalGlobe 2022. http://www.earth.google.com. [March 2022]
10. Mapspast 2017: Current and Historical Topographic Maps (Topomaps) of New Zealand. Viewed at: http://www.mapspast.org.nz/
11. Ministry for the Environment 2011: Contaminated Land Management Guidelines No.2 - Hierarchy and Application in New Zealand of Environmental Guideline Values.
12. Landcare Research New Zealand Limited and the Institute of Geological and Nuclear Sciences Limited 2015: Background Soil Concentrations of Selected Trace Elements and Organic Contaminants in New Zealand.
13. Ministry for the Environment 2002: A Guide to the Management of Cleanfills.
14. Australian National Environmental Protection Council 2013: National Environmental Protection (Assessment of Site Contamination) Measure Schedule B(1): Guideline on the investigation levels for soil and groundwater.
15. Ministry for the Environment 2011: Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand.
16. Waikato Regional Council 2018: Making Good Decisions: Risk Characterisation and Management of CCA Post Hotspots at Vineyards and Kiwifruit Orchards. Document Reference: 12606189. Viewed at: https://www.waikatoregion.govt.nz/services/publications/tr201811/
17. Otago Regional Council 2019: CCA Treated Timber Vineyard Posts: Ceres Vineyard Sampling. Document Reference: A1143902

9 Limitations

i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.

ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.

iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.

iv. This Limitation should be read in conjunction with the IPENZ/ACENZ Standard Terms of Engagement.

v. This report is not to be reproduced either wholly or in part without our prior written permission.

We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on 021 556 549 if you require any further information. The author is a Certified Environmental Practitioners (CEnvP) under the Environment Institute of Australia and New Zealand (EIANZ) accreditation system.

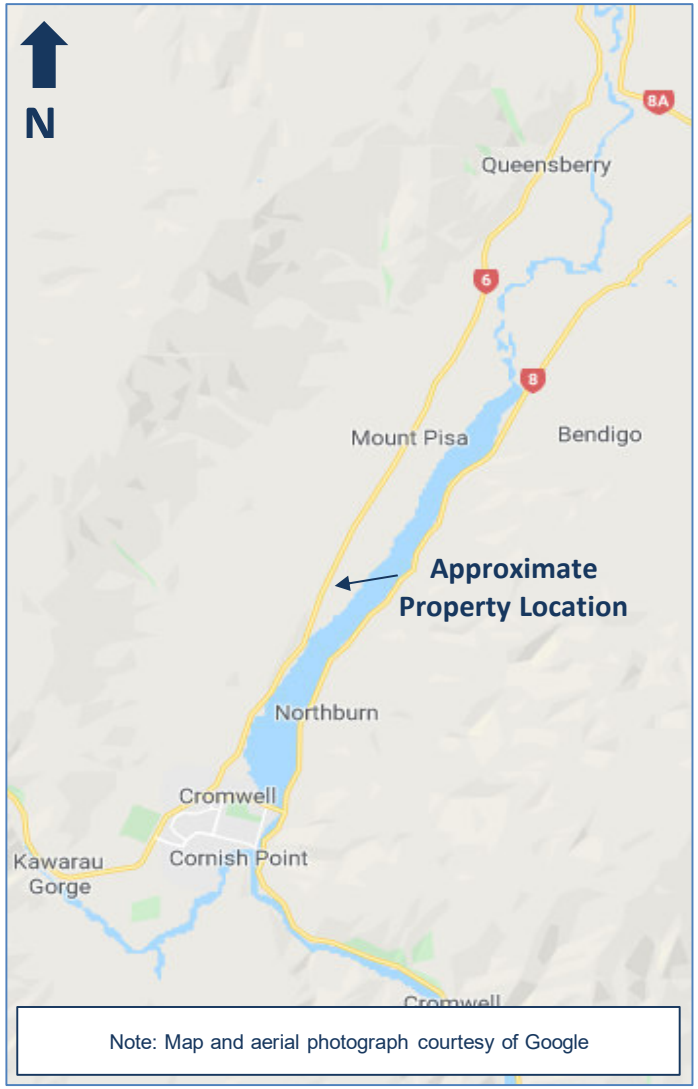
Report prepared by

Claude Midgley, CEnvP

Associate Environmental Scientist

APPENDIX 1

Figures



Note: Map and aerial photograph courtesy of Google

Description	Site Location Plan	**Figure Number**	1
Project	Preliminary and Detailed Environmental Site Investigation 828 Luggate Cromwell Road, Mount Pisa	**Date**	Mar-22
Client	Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd	**Drawn by**	CM
Project Number	21055	**Approved by**	JK

Description	Sample Location Plan: Southern Area	**Figure Number**	2
Project	Preliminary and Detailed Environmental Site Investigation 828 Luggate Cromwell Road, Mount Pisa	**Date**	Mar-22
Client	Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd	**Drawn by**	CM
Project Number	21055	**Approved by**	JK

Description	Sample Location Plan: Northern Area	**Figure Number**	3
Project	Preliminary and Detailed Environmental Site Investigation 828 Luggate Cromwell Road, Mount Pisa	**Date**	Mar-22
Client	Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd	**Drawn by**	CM
Project Number	21055	**Approved by**	JK

APPENDIX 2

Proposed Subdivision Plan

NOTES:

1. LOT 2 DP 397990 OWNED BY J. B. & J. H. PESZYNSKI AND LOT 2 DP 405431 OWNED BY PISA VILLAGE DEVELOPMENT LTD.

1.1. LOTS 1 - 137 ARE PROPOSED RESIDENTIAL LOTS.

1.2. LOTS 138 - 155 ARE PROPSOED RETAIL / COMMERCIAL LOTS.

1.3. LOTS 300 - 307, 311 & 312 TO VEST AS ROAD TO CODC.

1.4. LOTS 400 - 409 TO VEST AS RESERVE TO CODC.

2. LOTS 19 DP 520912 AND 112 DP 546309 OWNED BY PISA MOORINGS VINEYARD LIMITED.

2.1. LOTS 200 - 295 ARE PROPOSED RESIDENTIAL LOTS.

2.2. LOTS 308 - 311 AND LOT 19 DP 520912 TO VEST AS ROAD TO CODC.

2.3. LOTS 410 - 413 TO VEST AS RESERVE TO CODC.

3. AREAS ARE SUBJECT TO SURVEY.

Revision	Amendments	Date
B	Lots 73/74 boundary	19/05/2021
C	Layout change	12/07/2021
D	Additional lots and change layout	25/08/2021

C. HUGHES & ASSOCIATES LTD
Surveying and Resource Management • Central Otago

CROMWELL
17A MURRAY TERRACE
P.O. BOX 51
03 445 0376

WANAKA
LEVEL 3, 80 ARDMORE ST
P.O. BOX 599
03 443 5052

www.chasurveyors.co.nz

Project:

PROPOSED PRIVATE PLAN CHANGE

LOT 2 DP 397990, LOT 2 DP 405431

LOT 19 DP 520912 & LOT 112 DP 546309

PISA MOORINGS

Title:

OVERALL CONCEPT PLAN

LOTS 1 - 155, 200 - 295, 300 - 312 & 400 - 413

INDICATIVE

Scale: 1:5000 (A3)

Job No:	Drawn By:	Datum:	
6182	SR	-	
Drawing No:	**Sheet No:**	**Revision:**	**Date Created:**
C1584	CP_001	D	17/05/2021

APPENDIX 3

Site Photographs

Photo 1: Shipping container, stacked treated timber and soil stockpile in the southern portion of the site.

Photo 2: Stormwater retention pond, viewed from the south east facing north west.

Photo 3: Earth bund west of the vineyard, viewed from the north facing south.

Photo 4: Vineyard, viewed from the east facing south west.

Photo 5: Gully along the southern site boundary, viewed from the north west facing south east.

Photo 6: Soil stockpiles south of the shipping container, viewed from the south east facing north west.

Description	Site Photographs	**Photos**	1 to 6
Project	Preliminary and Detailed Environmental Site Investigation 828 Luggate Cromwell Road, Mount Pisa	**Date Taken**	19/10/21
Client	Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd	**Taken by**	CM
Project Number	21055	**Approved by**	JK

Photo 7: Driveway south of the fruit packing shed, viewed from the north west facing east.

Photo 8: Site surface adjacent to an above ground fuel storage tank.

Photo 9: Outlet of the bunded area beneath an above ground fuel storage tank.

Photo 10: Site surface adjacent to an above ground fuel storage tank.

Photo 11: Site surface at the sentrance to the orchard.

Photo 12: Chemical tanks and poison hole (left) at the orchard entrance.

Description	Site Photographs	**Photos**	7 to 12
Project	Preliminary and Detailed Environmental Site Investigation 828 Luggate Cromwell Road, Mount Pisa	**Date Taken**	19/10/21
Client	Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd	**Taken by**	CM
Project Number	21055	**Approved by**	JK

Photo 13: Southern portion of the storage yard, viewed from the north west facing south east.

Photo 14: Southern portion of the storage yard, viewed from the north facing south.

Photo 15: Drums and treated timber in the storage yard.

Photo 16: Treated timber in the eastern portion of the storage yard.

Photo 17: Treated timber in the eastern portion of the storage yard.

Photo 18: Blue-stained soil in the northern portion of the orchard.

Description	Site Photographs	**Photos**	13 to 18
Project	Preliminary and Detailed Environmental Site Investigation 828 Luggate Cromwell Road, Mount Pisa	**Date Taken**	19/10/21
Client	Pisa Village Development Ltd and Pisa Moorings Vineyard Ltd	**Taken by**	CM
Project Number	21055	**Approved by**	JK

APPENDIX 4

CODC NES Records Search

NES RECORD SEARCH

Application

JKCM Limited PO Box 456, Cromwell 9342	Number Application date Phone Mobile Email	NES210045 19/10/2021 021 556 549 claude@insighteng.co.nz

Property

Valuation No.	2842184865
Location	Luggate-Cromwell Road (SH 6), Cromwell
Legal Description	LOT 112 DP 546309
Area (hectares)	7.9919

Resource consents

Resource Area: The majority of the site is located in the RURAL RESOURCE AREA

With portions of the site located in the RESIDENTIAL RESOURCE AREA

The site also contains a Scheduled Activity area, ref: SA 127, *"Commercial facilities and Shop as defined in Section 18"*

Consents:

14/03/2016 **RESOURCE CONSENT 160069** : Subdivision consent to create 83 allotments in the Rural Resource Area and Residential Resource Area (13).

(Found on related property: X2842184800).

This record indicates that parts of the land are used for productive purposes as a vineyard. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as item A10 on the HAIL and may trigger NES requirements.

29/06/2011 **RESOURCE CONSENT P110001** : Plan Change 7 - To change resource area from Rural and Residential Resource Area (11) to a new Resource Area.

(Found on related property: X2842184800).

This record indicates that parts of the land are used for productive purposes as a vineyard and that the vineyard area has been subject to persistent use of herbicides, pesticides and fungicides. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as item A10 on the HAIL and may trigger NES requirements.

Pest control including the premises of commercial pest control operators or any authorities that carry out pest control where bulk storage or preparation of pesticide occurs, including preparation of poisoned baits or filling or washing of tanks for pesticide application is listed as item A11 on the HAIL and may trigger NES requirements.

Pesticide manufacture (including animal poisons, insecticides, fungicides or herbicides) including the commercial manufacturing, blending, mixing or formulating of pesticides is listed as item A12 on the HAIL and may trigger NES requirements.

07/11/2007 **RESOURCE CONSENT 070423** : Subdivision creating (41) residential allotments in Rural and RRA (11) resource areas varying from 629m^2 to 975m^2.

(Found on related property: X2842184800).

This record indicates that parts of the land are used for productive purposes as a vineyard. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as item A10 on the HAIL and may trigger NES requirements.

12/10/2000 **RESOURCE CONSENT 001129** : Proposed subdivision creating 3 residential allotments.

(Found on related property: X2842184800).

This record indicates that parts of the land are used for productive purposes as a vineyard. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as item A10 on the HAIL and may trigger NES requirements.

11/07/1997 **RESOURCE CONSENT 970076** : 57 lot residential subdivision & land-use consent to erect dwellings.

(Found on related property: X2842184800).

This record indicates that parts of the land are used for productive purposes as a vineyard. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as item A10 on the HAIL and may trigger NES requirements.

This record also confirms that the only chemicals used in Central Otago vineyards are those required for the control of powdery mildew. Glyphosate (Roundup) is to be used for weed control and Mr Dicey considered that this has a low toxicity rating and would not present any problems for neighbours.

Building

Consents/Permits/Compliance Schedules:

No information in regards to the above could be found on the property file.

Preliminary Site Investigations and Detailed Site Investigations

In relation to RC160069 - A Preliminary Site Investigation Report (PSI) from Opus International Consultants Limited dated January 2016, was submitted as part of the application. The Opus PSI concluded that the site is considered suitable for the proposed subdivision in accordance with the NES; and that no further detailed site investigations were deemed necessary. Having regard to the Opus PSI it was determined that any potential effects in terms of potential soil contamination were minor.

Aerial Photographs

Council's aerial photographs date back to 2006. The aerial photographs indicate that a large portion of the land has been planted out as a vineyard. As mentioned previously, this activity may trigger NES requirements in relation to those areas listed as items A10, A11 and A12 on the HAIL.

Disclaimer: The Council does not hold records directly relating to activities on the Hazardous Activities and Industries List (HAIL). In the event some information is available it cannot be guaranteed as correct or complete and therefore may not satisfy your request. We therefore recommend you undertake further investigation to determine whether any HAIL activities exist on the site.

Ruth Mackay
Planning Officer - Consents

Date: 29 October 2021

NES RECORD SEARCH

Application

JKCM Limited PO Box 456, Cromwell 9342	Number NES210046 Application date 19/10/21 Phone Mobile 021 556 549 Email claude@insighteng.co.nz

Property

Valuation No.	2842114500
Location	828 Luggate-Cromwell Road (State Highway 6), Cromwell
Legal Description	Lot 2 DP 397990
Area (hectares)	16.1729

Resource consents

Resource Area: Rural Resource Area, Residential Resource Area (3)

Consents:

07/08/2007 RC 070274: Subdivision creating (26) allotments in RRA(3) with two balance allotments and one road to vest in council; Subdivision to be completed in four stages

This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.

10/07/2007 RC 070226: Land use consent to construct workers accommodation facility for maximum (26) people

This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.

16/08/2005 RC 050311: Land use consent to construct cherry packhouse

This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.

This record indicates that there has historically been outdoor storage of general farm materials and implements. Such materials and implements may include storage fuel or chemical tanks or drums, treated timber or materials containing heavy metals. These are items A17, A18 and G4 on the HAIL respectively and may trigger NES requirements.

19/07/2004 RC 040282: Certificate of compliance to cover cherry orchard with crop protective canopy net, 16mm quad crossover, colour blue.

This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.

19/03/2004	RC 040119: Variation to RC030115 - conditions 22 48 & 72 (water supply) & conditions 7 & 9 (roading). *No evidence regarding HAIL activities could be found on this record*
11/09/2003	RC 030265: Variation of RC030115-conditions 10 41 & 65(street lighting) & conditions 20 48 & 72 (water supply). *No evidence regarding HAIL activities could be found on this record*
17/7/2003	RC 030115: Subdivision creating 2 rural lots 60 residential lots (in 3 stages) & 4 lots to vest as road. *This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Other land to the south of the site of interest is identified as having been used for viticultural purposes. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.*

Building

Consents/Permits/Compliance Schedules:

05/09/2018	BC 180614: Three bay extension to existing cherry packhouse *This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.*
29/05/2017	BC 170649: Two bay extension to existing cherry packhouse *This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.*
30/05/2013	BC 130027: Additions to existing shed *This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.*
17/04/2012	CS0287: Central Cherries Ltd (Accommodation/Packing Shed) *This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.*
12/09/2007	BC 070655: Relocate accommodation buildings onto property & associated site works *This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.*
26/10/2005	BC 050718: Erect a new pack-house *This record indicates that parts of the land have been used for horticultural development (Cherry orchard). Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds are listed as Item A10 on the HAIL and*

	may trigger NES requirements. If bulk quantities of treated timber were stored on the site of interest, this is Item A18 on the HAIL and may trigger NES requirements.
14/05/1998	BC 980228: New hay implement shed
	Note: This building was confirmed to have been demolished 10/11/2011
	No evidence regarding HAIL activities could be found on this record
08/07/1996	BC 960431: New farm building
	Note: This building was confirmed to have been demolished 10/11/2011
	No evidence regarding HAIL activities could be found on this record
15/12/1992:	BP K30322: Erect a new hay-shed.
	Note: This building is understood to have been blown down in the mid-1990's
	No evidence regarding HAIL activities could be found on this record

Preliminary Site Investigations and Detailed Site Investigations

No information in regards to the above could be found on the property file.

Aerial Photographs

Council's aerial photographs date to 2006. Aerial photographs confirm the site's use for horticultural activities. They also identify the outdoor storage of a range of unidentified materials to the south of the workers accommodation buildings.

Figure 1: Outdoor Storage Area (Source: CODC GIS Viewer. Image dated 2018)

Disclaimer: The Council does not hold records directly relating to activities on the Hazardous Activities and Industries List (HAIL). In the event some information is available it cannot be guaranteed as correct or complete and therefore may not satisfy your request. We therefore recommend you undertake further investigation to determine whether any HAIL activities exist on the site.

Adam Vincent
Planning Officer - Consents

Date: 5 November 2021

APPENDIX 5

Laboratory Results and Chain of Custody Documentation

Hill Laboratories
TRIED, TESTED AND TRUSTED

R J Hill Laboratories Limited
28 Duke Street Frankton 3204
Private Bag 3205
Hamilton 3240 New Zealand

T 0508 HILL LAB (44 555 22)
T +64 7 858 2000
E mail@hill-labs.co.nz
W www.hill-laboratories.com

Certificate of Analysis

Client:	Insight Engineering	**Lab No:**	2848224 SPv2
Contact:	Claude Midgley	**Date Received:**	01-Feb-2022
	C/- Insight Engineering	**Date Reported:**	11-Feb-2022
	PO Box 456	**Quote No:**	100740
	Cromwell 9384	**Order No:**	
		Client Reference:	21055
		Submitted By:	Claude Midgley

Sample Type: Soil

Sample Name:		PH1 28-Jan-2022	PH2 28-Jan-2022	FT1 28-Jan-2022	FT2 28-Jan-2022	FT3 28-Jan-2022
Lab Number:		2848224.1	2848224.2	2848224.3	2848224.4	2848224.5
Individual Tests						
Dry Matter	g/100g as rcvd	96	97	92	98	83
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 20	< 20	< 20	< 20	< 20
C10 - C14	mg/kg dry wt	< 20	< 20	830	460	105
C15 - C36	mg/kg dry wt	91	< 40	23,000	11,300	14,500
Total hydrocarbons (C7 - C36)	mg/kg dry wt	94	< 80	23,000	11,800	14,600

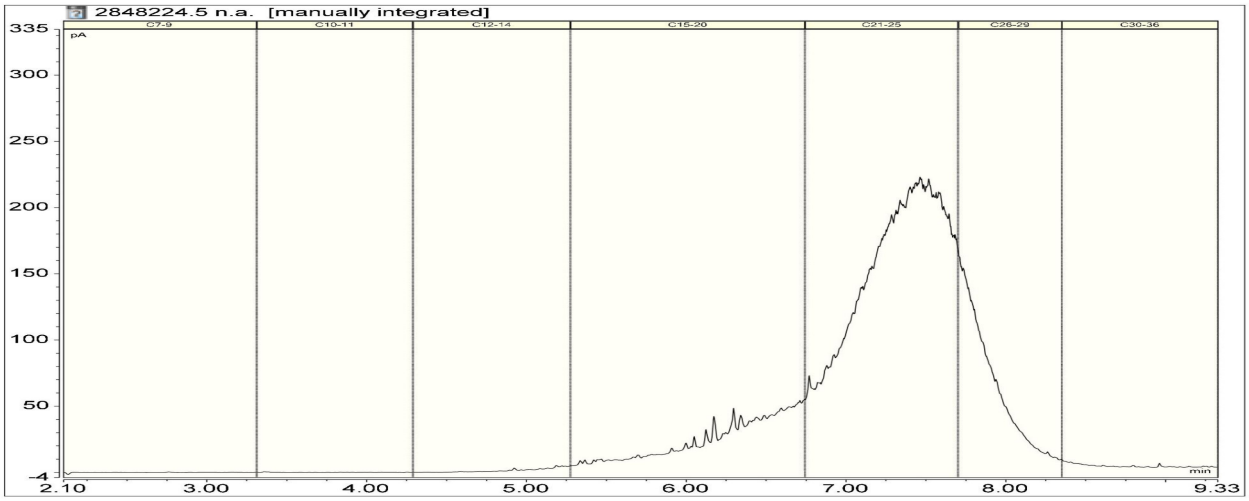
Sample Name:		FT4 28-Jan-2022	SY1 28-Jan-2022	SY2 28-Jan-2022	SY3 28-Jan-2022	SY4 28-Jan-2022
Lab Number:		2848224.6	2848224.7	2848224.8	2848224.9	2848224.10
Individual Tests						
Dry Matter	g/100g as rcvd	89	-	-	-	-
CCA by ICP-MS						
Total Recoverable Arsenic	mg/kg dry wt	-	8	15	20	30
Total Recoverable Chromium	mg/kg dry wt	-	13	27	22	24
Total Recoverable Copper	mg/kg dry wt	-	36	58	35	42
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	< 20	-	-	-	-
C10 - C14	mg/kg dry wt	< 20	-	-	-	-
C15 - C36	mg/kg dry wt	620	-	-	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	620	-	-	-	-

Sample Name:		SY5 28-Jan-2022	H1 28-Jan-2022	OR1 28-Jan-2022	OR2 28-Jan-2022	OR3 28-Jan-2022
Lab Number:		2848224.11	2848224.12	2848224.13	2848224.14	2848224.15
Individual Tests						
Dry Matter	g/100g as rcvd	-	62	98	-	-
Total Recoverable Cadmium	mg/kg dry wt	-	-	-	0.22	0.18
CCA by ICP-MS						
Total Recoverable Arsenic	mg/kg dry wt	5	-	-	-	-
Total Recoverable Chromium	mg/kg dry wt	15	-	-	-	-
Total Recoverable Copper	mg/kg dry wt	37	-	-	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	-	4	-	-	-
Total Recoverable Cadmium	mg/kg dry wt	-	0.57	-	-	-
Total Recoverable Chromium	mg/kg dry wt	-	11	-	-	-
Total Recoverable Copper	mg/kg dry wt	-	12,300	-	-	-
Total Recoverable Lead	mg/kg dry wt	-	15.2	-	-	-
Total Recoverable Nickel	mg/kg dry wt	-	14	-	-	-
Total Recoverable Zinc	mg/kg dry wt	-	7,000	-	-	-

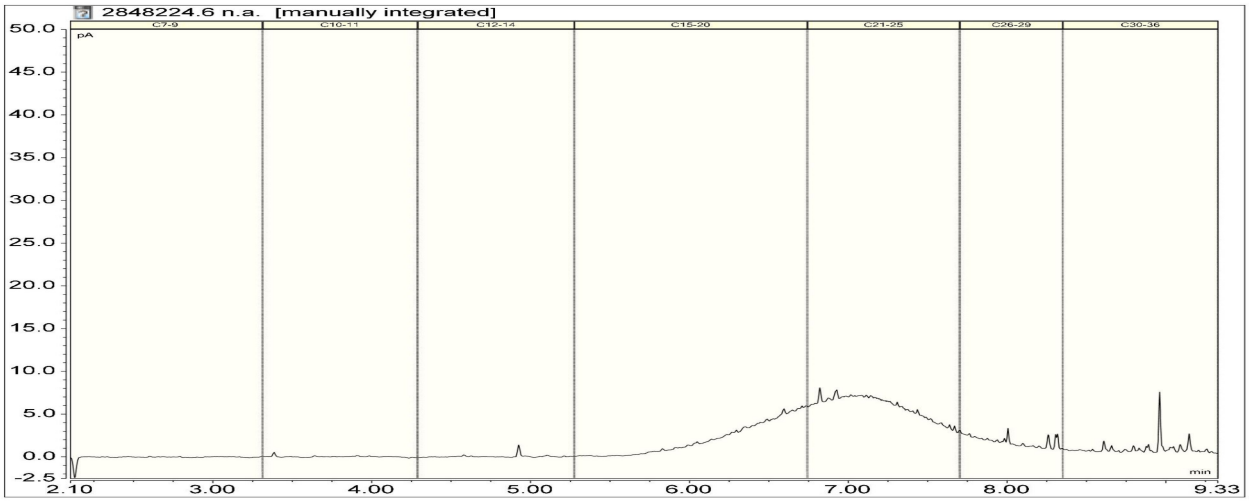
Sample Type: Soil						
Sample Name:		SY5 28-Jan-2022	H1 28-Jan-2022	OR1 28-Jan-2022	OR2 28-Jan-2022	OR3 28-Jan-2022
Lab Number:		2848224.11	2848224.12	2848224.13	2848224.14	2848224.15
Total Petroleum Hydrocarbons in Soil						
C7 - C9	mg/kg dry wt	-	< 30	< 20	-	-
C10 - C14	mg/kg dry wt	-	220	< 20	-	-
C15 - C36	mg/kg dry wt	-	5,400	40,000	-	-
Total hydrocarbons (C7 - C36)	mg/kg dry wt	-	5,600	40,000	-	-

Sample Name:		TT1 28-Jan-2022	TT2 28-Jan-2022	SC1 28-Jan-2022	SWP1 28-Jan-2022	SWP2 28-Jan-2022
Lab Number:		2848224.16	2848224.17	2848224.18	2848224.19	2848224.20
Individual Tests						
Dry Matter	g/100g as rcvd	-	-	-	94	99
CCA by ICP-MS						
Total Recoverable Arsenic	mg/kg dry wt	38	80	-	-	-
Total Recoverable Chromium	mg/kg dry wt	33	33	-	-	-
Total Recoverable Copper	mg/kg dry wt	47	56	-	-	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	-	-	4	4	< 2
Total Recoverable Cadmium	mg/kg dry wt	-	-	< 0.10	< 0.10	< 0.10
Total Recoverable Chromium	mg/kg dry wt	-	-	4	25	13
Total Recoverable Copper	mg/kg dry wt	-	-	12	28	15
Total Recoverable Lead	mg/kg dry wt	-	-	9.5	24	12.5
Total Recoverable Nickel	mg/kg dry wt	-	-	4	26	14
Total Recoverable Zinc	mg/kg dry wt	-	-	15	102	55
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	-	-	< 0.011	< 0.010
alpha-BHC	mg/kg dry wt	-	-	-	< 0.011	< 0.010
beta-BHC	mg/kg dry wt	-	-	-	< 0.011	< 0.010
delta-BHC	mg/kg dry wt	-	-	-	< 0.011	< 0.010
gamma-BHC (Lindane)	mg/kg dry wt	-	-	-	< 0.011	< 0.010
cis-Chlordane	mg/kg dry wt	-	-	-	< 0.011	< 0.010
trans-Chlordane	mg/kg dry wt	-	-	-	< 0.011	< 0.010
2,4'-DDD	mg/kg dry wt	-	-	-	< 0.011	< 0.010
4,4'-DDD	mg/kg dry wt	-	-	-	< 0.011	< 0.010
2,4'-DDE	mg/kg dry wt	-	-	-	< 0.011	< 0.010
4,4'-DDE	mg/kg dry wt	-	-	-	< 0.011	< 0.010
2,4'-DDT	mg/kg dry wt	-	-	-	< 0.011	< 0.010
4,4'-DDT	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Total DDT Isomers	mg/kg dry wt	-	-	-	< 0.07	< 0.06
Dieldrin	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Endosulfan I	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Endosulfan II	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Endosulfan sulphate	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Endrin	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Endrin aldehyde	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Endrin ketone	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Heptachlor	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Heptachlor epoxide	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Hexachlorobenzene	mg/kg dry wt	-	-	-	< 0.011	< 0.010
Methoxychlor	mg/kg dry wt	-	-	-	< 0.011	< 0.010

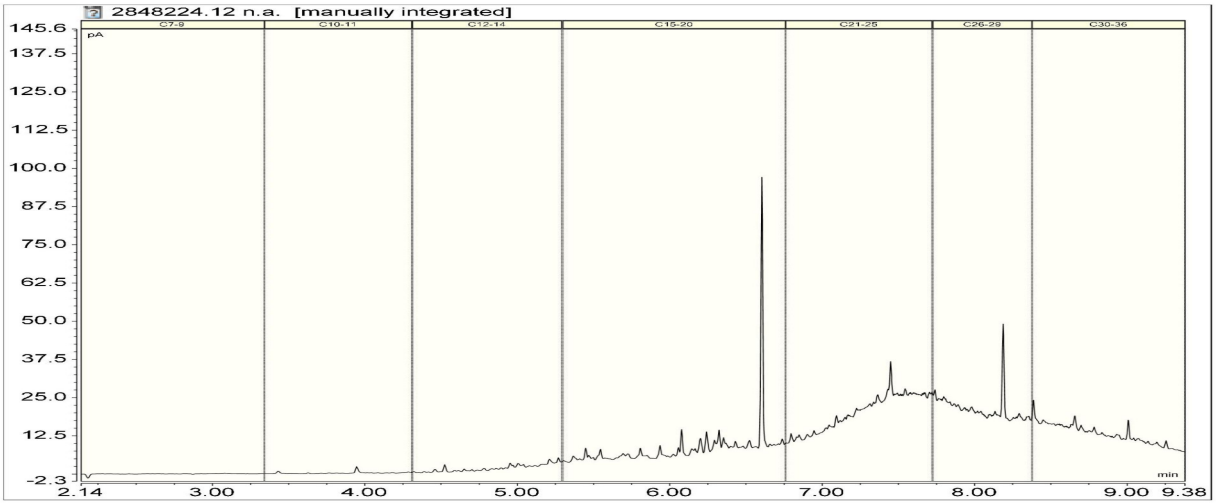
2848224.5
FT3 28-Jan-2022
Client Chromatogram for TPH by FID



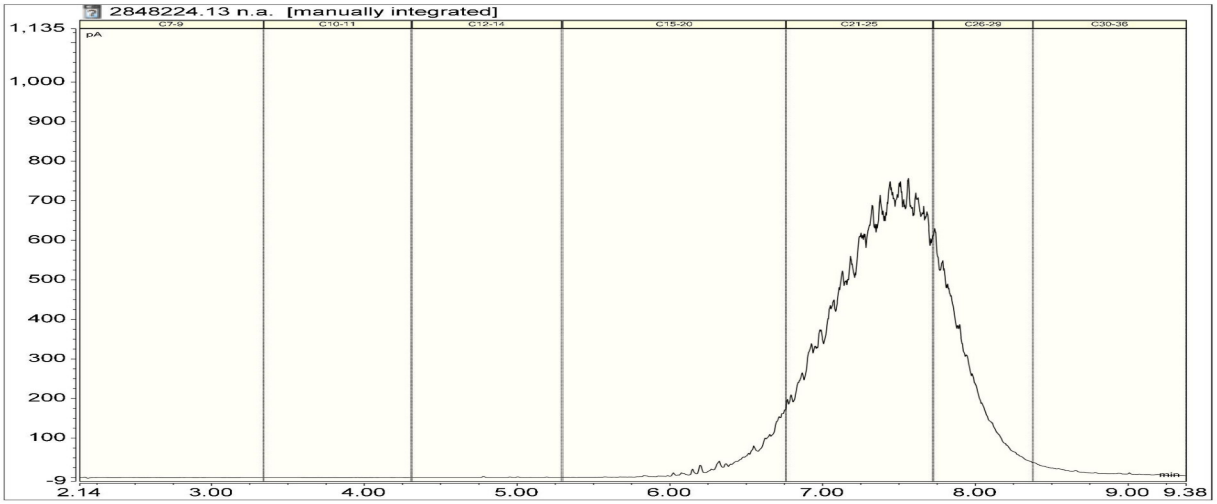
2848224.6
FT4 28-Jan-2022
Client Chromatogram for TPH by FID



2848224.12
H1 28-Jan-2022
Client Chromatogram for TPH by FID



2848224.13
OR1 28-Jan-2022
Client Chromatogram for TPH by FID



Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request.
Unless otherwise indicated, analyses were performed at Hill Laboratories, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil

Test	Method Description	Default Detection Limit	Sample No
Individual Tests			
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	7-12, 14-20
Environmental Solids Sample Preparation	Air dried at 35°C and sieved, <2mm fraction. Used for sample preparation May contain a residual moisture content of 2-5%.	-	7-11, 14-17
Dry Matter (Env)	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	1-6, 12-13, 19-20
Total Recoverable digestion	Nitric / hydrochloric acid digestion. US EPA 200.2.	-	7-11, 14-17
Total Recoverable Cadmium	Dried sample, sieved as specified (if required). Nitric/Hydrochloric acid digestion, ICP-MS, screen level. US EPA 200.2.	0.10 mg/kg dry wt	14-15
CCA by ICP-MS	Total recoverable digestion, ICP-MS, screen level.	2 mg/kg dry wt	7-11, 16-17
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion US EPA 200.2. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required.	0.10 - 4 mg/kg dry wt	12, 18-20
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	19-20
Total Petroleum Hydrocarbons in Soil			
Client Chromatogram for TPH by FID	Small peaks associated with QC compounds may be visible in chromatograms with low TPH concentrations. QC peaks are as follows: one peak in the C12 - 14 band, the C21 - 25 band and the C30 - 36 band. All QC peaks are corrected for in the reported TPH concentrations.	-	1, 3-6, 12-13
C7 - C9	Solvent extraction, GC-FID analysis. In-house based on US EPA 8015.	20 mg/kg dry wt	1-6, 12-13
C10 - C14	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	20 mg/kg dry wt	1-6, 12-13
C15 - C36	Solvent extraction, GC-FID analysis. Tested on as received sample. In-house based on US EPA 8015.	40 mg/kg dry wt	1-6, 12-13
Total hydrocarbons (C7 - C36)	Calculation: Sum of carbon bands from C7 to C36. In-house based on US EPA 8015.	70 mg/kg dry wt	1-6, 12-13

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 02-Feb-2022 and 11-Feb-2022. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.

Kim Harrison MSc
Client Services Manager - Environmental

ENVIRONMENTAL Analysis Request Form

Job No: 284 8224 Date Recv: 01-Feb-22 08:12

Hill Laborat

R J Hill Laboratories Limited --- accred
Accreditation NZ

Received by: Nathaniel Sue

1 Clyde Street, Telephone
Private Bag 3205, Facsimile

3128482249

Hill Laboratories office use only

Date In | Job # | No. of Samples

CLIENT

Name **Insight Engineering** [229068]

PO Box 456

Cromwell 9342

Phone: 021 556 549 *Fax:*

Client Reference: 21055 *(Project Code)*

Quote Number: 100740 ***Order No:*** *(Cost Centre)*

Submitted By Claude Midgley [228982]

Charge To: Insight Engineering [229068]

RESULTS TO

☐ *Mail Client* ☐ *Mail Submitter*

☐ *Fax Results*

X *Email Results* claude@insighteng.co.nz

☑ C.O.C & coversheet to be scanned and emailed back

Additional Information

All samples collected 28/1/22

Chain of Custody Record

Delivered to Hill Laboratories (Depatched by)	Date & Time: 31/01/2022 15:30 Name: Claude Midgley Signature:
Received at Hill Laboratories	Date & Time: Name: Signature:
Condition	☐ Ambient Temp ☐ Chilled 16.8°C

PRIORITY ☐ **Normal** (up to 10 days) ☑ **High** (approx 5 days) ☐ **Urgent** (MUST be pre-arranged)

Results required by: .....

Sample types

GW	Bore/well	**TW**	Trade waste	**S**	Saline water	**ES**	Soil/Solid	**PI**	Plant
SW	Surface water	**E**	Effluent	**O**	Oil	**Sed**	Sediment	**BM**	Fish/shellfish/Biota
P	Potable/DI	**L**	Leachate	**SI**	Sludge	**BS**	Biosolid	**M**	Misc (Specify)

Site ID	Sample type	Tests required	Comments
PH1	ES	TPHOI	
PH2	ES	TPHOI	
FT1	ES	TPHOI	
FT2	ES	TPHOI	
FT3	ES	TPHOI	
FT4	ES	TPHOI	
SY1	ES	CCA	
SY2	ES	CCA	
SY3	ES	CCA	
SY4	ES	CCA	
SY5	ES	CCA	
H1	ES	TPHOI + MSHMs	
OR1	ES	TPHOI	
OR2	ES	Cd	

Site ID	Sample type	Tests required	Comments
OR3	ES	Cd	
TT1	ES	CCA	
TT2	ES	CCA	
SC1	ES	MSHMs	
SWP1	ES	OCPs + MSHMs	
SWP2	ES	" "	