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ECOLOGICAL ASSESSMENT & REPORTING SERVICES

# Memo

|          |  |          |  |
|----------|--|----------|--|
| To:      | Alanya Limmer KC   | Project: | Response to RFI 5 – Clarification of wetland status for southern floodplain area |
| From:    | Ben Robertson; Robertson Enviro Ltd  | Date:    | 24 July 2025   |
| cc:      | Mark Lile; Neil Donaldson  |          |  |
| Subject: | Response to RFI 5 – Clarification of wetland status for southern floodplain area |          |  |

## Maitahi Village FTAA - Response to RFI 5

### Clarification of wetland status for southern floodplain area

#### 1 Purpose

1. This memo addresses the request in Appendix 1 of RFI 5 for clarification on whether the southern floodplain area meets the definition of a natural inland wetland under the National Policy Statement for Freshwater Management 2020 (NPS-FM).
2. The initial assessment was undertaken by REL as part of ecological fieldwork for the Project Ecological Impact Assessment (EclA). The NPS-FM defines a natural inland wetland (NIW) as:

*natural inland wetland means a wetland (as defined in the Act) that is not:*

*(a) in the coastal marine area; or*

*(b) a deliberately constructed wetland, other than a wetland constructed to offset impacts on, or to restore, an existing or former natural inland wetland; or*

*(c) a wetland that has developed in or around a deliberately constructed water body, since the construction of the water body; or*

*(d) a geothermal wetland; or*

(e) a wetland that:

- (i) is within an area of pasture used for grazing; and
- (ii) has vegetation cover comprising more than 50% exotic pasture species (as identified in the National List of Exotic Pasture Species using the Pasture Exclusion Assessment Methodology (see clause 1.8)); unless
- (iii) the wetland is a location of a habitat of a threatened species identified under clause 3.8 of this National Policy Statement, in which case the exclusion in (e) does not apply

3. The Act referred to is the Resource Management Act (RMA) 1991. Its definition of wetland is:

*wetland includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions*

4. This memo first evaluates whether the area is a wetland under the RMA. If that threshold were met, a further assessment is made as to whether the area qualifies as a NIW under the NPS-FM.

## 2 Assessment

### Is the area a wetland under the RMA?

5. In our opinion, the southern floodplain area does not meet the RMA definition of a wetland because:

- REL Assessment (EclA):

The southern floodplain area was visually assessed during ecological fieldwork for the EclA. While formal delineation was not undertaken—due to the clear absence of indicators such as wetland hydrology or wetland vegetation—the area was evaluated in accordance with standard ecological field practice and with reference to the RMA and NPS-FM wetland definitions. In this regard, it is noted that statements in the EclA have been interpreted as suggesting that the potential for wetland within the floodplain was not considered; however, REL confirms that the area was assessed in the field, with consideration of relevant statutory definitions. The subject area is highly modified, elevated above the main valley floor, actively grazed, and dominated by exotic pasture species typical of a well-drained environment. There was no evidence to warrant further wetland delineation.

- Tonkin & Taylor (2021)<sup>1</sup> – PPC28 Ecological Constraints Assessment:

In their assessment of ecological opportunities and constraints for PPC28, Tonkin & Taylor explicitly considered potential wetland constraints under NPS-FM 3.22. While Wetlands 1 and 2 were identified elsewhere in the Project Area, no putative wetlands were mapped or recorded within the southern floodplain.

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<sup>1</sup> Private Plan Change Request Ecological Opportunities and Constraints Assessment for CCKV Maitai Dev Co LP and Bayview Nelson Limited. Report prepared by Tonkin + Taylor. 31 March 2021, refer p. 15, Section 4.1.4; p. 16, Section 4.1.5; **Attachment A**.

- Nelson City Council (NCC) statutory mapping:  
The area was not identified as a confirmed or potential wetland during NCC's NIW mapping process in accordance with NPS-FM 3.8. This has been confirmed in writing to both the Applicant and the EPA<sup>2</sup>.

6. In addition;

- Historical and landscape context:  
The area lies outside the Pre-human Wetlands layer<sup>3</sup>, and LENZ ecosystem modelling classifies it as historically supporting rimu–broadleaf–beech forest, not swamp or wetland forest. Its location on an elevated terrace relative to the Maitai River further reduces the likelihood of historical wetland formation.
- Soil and hydrological evidence (Tonkin & Taylor)<sup>4</sup>:  
Subsurface investigations confirmed that the fine near-surface soils overlie well-drained alluvial gravels. Test pits did not encounter any significant layers, organic material including root mass that would typically indicate a former natural wetland.

### If the area were a wetland, does it qualify as a NIW?

7. Even if the area were to meet the RMA wetland definition, we are of the opinion it would still not qualify as a NIW under the NPS-FM due to the following two exclusions:

- Exclusion (c) – deliberately constructed water body:  
The Lower Kākā Hill Tributary has been intentionally realigned through this area<sup>5</sup> (see overview of former, current and proposed alignments in Figure A1; **Annexure A**), with associated excavation and accessway construction altering the original floodplain topography. If it were determined that the area includes a wetland or wetland features, it is our opinion they would have developed in or around the realigned stream since it was constructed. As a result, it would fall within exclusion (c).
- Exclusion (e) – grazed pasture dominated by pasture species:  
We consider the area is within actively grazed pasture and dominated by exotic pasture species listed on the pasture exclusion list (e.g., *Poa pratensis*, *Trifolium repens*, *Plantago lanceolata*). There is no known habitat of threatened species present that would override this exclusion.

<sup>2</sup> via email attachment from Pete Keyanonda (NCC) to Mark Lile (Project Planner for the Applicant) dated 7 July 2025.

<sup>3</sup> <https://ourenvironment.scinfo.org.nz/maps-and-tools/app>

<sup>4</sup> Based on review of relevant data contained in Appendix C of the Project Geotechnical Assessment (pers. comm. Marcus Lovell, Principal Engineering Geologist, 22 July 2025).

<sup>5</sup> Private Plan Change Request Historical & Archaeological Assessment for CCKV Maitai Dev Co LP and Bayview Nelson Limited 17 December 2020, refer p. 3, para. 2; p. 13, para. 1; **Attachment B**.

### 3 Conclusion

8. REL's EclA assessment, Tonkin & Taylor's PPC28 Ecological Assessment, and Nelson City Council's statutory mapping all concluded that the southern floodplain does not meet the RMA definition of a wetland.
9. Even if the area were to be considered a wetland, exclusions (c) and (e) under the NPS-FM would apply, supporting the conclusion that the area is not a natural inland wetland for the purposes of the NPS-FM.
10. Accordingly, we do not consider any further delineation or resource consent is necessary for this part of the site.

### 4 Applicability

Robertson Environmental's professional opinions are based on its professional judgement, experience, and training. These opinions are also based upon data derived from the existing information and analysis described in this document. Robertson Environmental Limited has relied upon information provided by the Client to inform parts of this document, some of which has not been fully verified by Robertson Environmental Limited.

This letter has been prepared for the exclusive use of the CCKV Maitai Dev Co Limited Partnership, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

If you have any further queries or wish to discuss any aspect of the above, please do not hesitate to contact Ben Robertson via phone (027 823 8665) or email (ben.robertson@robertsonenviro.co.nz).

Robertson Environmental Limited

Report Prepared by:



Dr Ben Robertson

Principal Consultant Ecologist, Director





## **Annexure A:**

### **Supporting Figures**



**Figure A1.** Indicative location of the historic, current and proposed alignments for the Lower Kākā Hill Tributary, within the southern floodplain area. Historic and proposed alignment as per PPC28 Historical & Archaeological Assessment (Attachment B) and the RMM Project Masterplan, respectively.

**Attachment A:**  
**PPC28 Ecological Opportunities & Constraints**  
**Assessment (Tonkin & Taylor 2021)**





# Private Plan Change Request

## Ecological Opportunities and Constraints Assessment

**Prepared for**  
CCKV Maitai Dev Co LP and Bayview Nelson Limited

**Prepared by**  
Tonkin & Taylor Ltd

**Date**  
March 2021

**Job Number**  
1012397.0000.v4



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## Document Control

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## Executive Summary

An ecological opportunities and constraints assessment was undertaken to assist in the planning of a proposed Private Plan Change Request (PPCR) at Maitahi and Bayview, Nelson. The PPCR is seeking to rezone land within the Kaka Valley and on Bayview to enable the development of a residential subdivision following a special Schedule of provisions including a Structure Plan.

Ecological constraints associated with terrestrial and aquatic biodiversity values are primarily associated with the clearance of the scrubland habitats and constraints associated with freshwater biodiversity of Kaka Hill Tributary that flows through the site, these include:

- The loss of indigenous vegetation;
- Loss of wetland habitat;
- Loss of habitat for indigenous fauna;
- Injury, mortality and/or changes to the indigenous fauna;
- Change in the flow regime;
- Loss and/or a change in aquatic habitat availability and condition; and
- Loss and/or a change in aquatic habitat connection.

Most terrestrial habitats within the site are highly degraded with an abundance of exotic plants and animal pests present. The exception is an area of mature kānuka forest on the elevated eastern side of the site, being the western face of Kaka Hill. Initiatives to reduce the abundance and influence of pests and increase the prevalence of indigenous flora and fauna have already, and will continue to, provide ecological and biodiversity gains across the site. These include:

- Pest plant and animal control.
- Indigenous planting and natural conversion back to forest.
- Stock exclusion from potential enhancement areas.

The protection of freshwater and ecological enhancement areas through vesting and/or consent notices and covenants could also be used to ensure on-going management of the natural habitats within the development. This includes protecting all identified wetlands, and if practical, connecting to any adjacent terrestrial and stream biodiversity enhancement areas.

The lower reaches of the Kaka Hill Tributary are intermittent and generally degraded aquatic ecology values. The lower reaches have been impacted by historical and current agricultural land use practices. The upper Kaka Hill Tributary has permanent flow with greater diversity and availability in aquatic habitat for freshwater fauna. Specific initiatives to increase aquatic habitat values for native species identified within Kaka Hill Tributary are included in the PPCR and will be implemented and secured at the time of subdivision and development. These include:

- A continuous riparian corridor that provides a natural buffer zone to the Kaka Hill Tributary will be retained, protected and managed. The corridor will generally be 40 m wide and follow the natural topography of the site (where road crossings are present it is acknowledged that width are likely to be lower). Management will comprise natural regeneration of indigenous species, restoration planting, weed control, monitoring of any threatened aquatic species and monitoring of biodiversity condition.
- Facilitating passage at all road crossings for native fish species known to inhabit the catchment.



- Excluding non-native fish from the catchment by designing and constructing intentional built barriers with the specific objective of limiting or preventing the movement of certain fish species (e.g. trout) into the Kaka Hill Valley catchment.
- Rehabilitating natural swale and marshy floodplain areas with native wetland flora species.
- Designing, constructing and maintaining a naturalised lower section of the Kaka Stream that is appropriately integrated into the developed environment so that catchment flora and fauna values are enhanced.

A draft structure plan for the PPCR for Maitahi and Bayview was assessed as part of this report. The draft structure plan proposes 'Residential' zoning in areas of lower ecological value (i.e. pasture and gorse scrub) and areas with higher ecological value (based on our preliminary assessments) will be zoned as either 'Open space', 'Rural' or 'Higher Density Small Holdings Area'. Some areas of value are currently included in the proposed 'Residential' areas and will require appropriate protection or mitigation to ensure any proposed development does not result in a net loss of ecological value. Any future development in 'Higher Density Small Holdings Area' should also be designed in a way that maintains any ecological value in these areas, i.e. avoids the removal of indigenous vegetation and habitat for indigenous fauna.

# 1 Introduction

This ecological opportunities and constraints report has been prepared as supporting material for an application for Private Plan Change (PPCR) to the Nelson Resource Management Plan under Schedule 1 of the Resource Management Act at Maitahi and Bayview, Nelson (hereafter called 'the site'). The PPCR is seeking to rezone land within the Kaka Valley and on Bayview to enable the development of a subdivision and development that provides for a wide range of development densities in response to site characteristics and values.

The purpose of this report is to inform a planning analysis of the ecological constraints and opportunities of the PPCR. This report is to inform the PPCR regarding:

- Current features within the site of ecological value.
- Areas of ecological value that may provide constraints on the design of future developments subsequent to the PPCR.
- Opportunities to enhance biodiversity and ecological value within the site.

## 1.1 Scope

The scope of this report is to assist the preparation of the PPCR, assess the ecological values of the site and discuss any associated ecological constraints and opportunities at the site. The outcomes of our assessment will provide information so that the PPCR can consider and adequately provide for ecological values within the site.

To assist in the planning and design stages of the PPCR across Maitahi and Bayview, a structure plan<sup>1</sup> has been prepared to show the zoning design (Appendix A; Figure A1.1). The structure plan contains new residential, small holdings, and open space zonings, along with an indicative road linkage. The structure plan identifies areas within the site that would be retained or become open space so that ecological values identified within the site can be retained and adequately managed.

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<sup>1</sup> Rough & Milne Ltd. 2021. Proposed Structure Plan – Part of Schedule X.

## 2 Assessment methods

### 2.1 Desktop review

A desktop review was undertaken to assess ecological values of the area within the PPCR. Reviewed documents and databases included:

- Nelson Resource Management Plan (NRMP).
- Draft Whakamahere Whataku Nelson Plan (Oct 2020).
- Top of The South Maps.
- Department of Conservation Bioweb databases.
- Department of Conservation national bat database.
- New Zealand Plant Conservation Network Database (NZPCND).
- Ebird database.
- iNaturalist.
- New Zealand Freshwater Fish Database (NZFFD).
- Manaaki Whenua Landcare Research – Our Environment map series.
- Other primary literature sources.

### 2.2 Site visit

A site visit was undertaken by two Tonkin & Taylor Ltd (T+T) ecologists (terrestrial and freshwater) on 12 and 13 December 2019 and covered the valley floor and lower hillslopes of the Kaka Valley within Maitahi (Appendix A; Figure 1). This site visit was to verify the information obtained from the desktop review and assess the terrestrial and freshwater ecological values in this area. Assessments of areas outside those observed during the site visit are purely desktop based. The site visit included:

- High-level vegetation surveys to identify vegetation types within the area.
- General assessments of habitat for indigenous fauna (including indigenous birds, herpetofauna, bats and *Powelliphanta* snails and associated habitat) with a focus on species listed as nationally protected under the Wildlife Act 1953 and those classified as nationally 'Threatened' or 'At Risk'.
- An assessment of specific aquatic habitat types and the associated values was completed at multiple locations on the Kaka Hill Tributary.
- Assessments of the fish community within the Kaka Hill Tributary was in general accordance with New Zealand freshwater fish sampling protocols<sup>2</sup>, however, some flexibility around sample reach/effort was incorporated to allow the sampling of specific habitats. This was undertaken to detect fish species and/or life stages with specific habitat requirements and/or patchy distributions within a stream or river.
- A qualitative assessment of aquatic macroinvertebrates was completed to provide a broad understanding of the macroinvertebrate community within Kaka Hill Tributary. The assessment included:
  - Sweep netting overhanging riparian vegetation and washing downs any large cobbles to dislodge macroinvertebrates into a 0.5 mm mesh net.
  - Any dislodged or sweep netted macroinvertebrates were identified in the field to family level where possible.

<sup>2</sup> Joy, M., David, B., Lake, M. 2013. New Zealand Freshwater Fish Sampling Protocols. Part 1: Wadeable Rivers and Streams. Massey University.

- Additionally, any opportunistic bankside observations of macroinvertebrates within aquatic habitats were noted.
- Mapping flow characteristics for the Kaka Hill Tributary.

## 2.3 Structure plan

A review of the structure plan<sup>1</sup> was completed to determine whether the structure plan adequately recognises the ecological values identified within this report and whether sufficient area is provided so that any ecological values present on site can be protected and managed, and the applicants aspirations for positive enhancement can be practically be achieved.

## 2.4 Document review and specialist's workshop

In undertaking the assessment of the PPCR the following documents have been provided by the client for review:

- Preliminary Structure Plan Environmental Review. Maitahi and Bayview Development Privat Plan change Request. Prepared by Morphum Environmental Ltd. Dated March 2021. Herein referred to as the Preliminary Structure Plan Environmental Review
- Structure Plan Drawing Set (B1.1-B1.4 prepared by Rough and Milne, received 25 March 2021.
- Memorandum: Water quality survey of Kaka Stream. Prepared by Cawthron. Dated 20 November and 20 December 2020.

Additionally, a workshop was completed on 23 November 2020. The workshop was undertaken to ensure that a collaborative approach was used by integrating expert advice from flooding, infrastructure, and planning to achieve the best ecological and biodiversity outcomes possible from the development of the Structure Plan that informs the PPCR.

### 3 Ecological values within the PPCR Footprint

#### 3.1 Ecological context/site overview

The Maitahi and Bayview areas comprise approximately 287 ha of Kaka Valley and adjacent hills, which extends from flat to gently inclined Kaka Valley floor north of the Maitai River, to steeply inclined hills to the east and west flanking the valley (Appendix A; Figure 1). The site is located within the Bryant Ecological District and can be broadly divided into three sections:

- Ridgelines of the hills surrounding Kaka Valley, vegetated with open grassland on the western side of the valley and open matagouri scrubland on the eastern side of the valley.
- Moderate to steep hill country (generally between 22° and 40°) forming the upper slopes of Kaka Valley, vegetated in a mix of scrub, grass and scattered mature native and exotic trees.
- Rolling to strong rolling downlands, fan and hill country (generally between 5° and 22°) west and east facing slopes forming the sides of Kaka Valley and vegetated in a mixture of grass, and native and exotic scrub.
- Gently undulating to flat inclined slopes (generally less than 5°) forming the current floodplain of the Maitai River and Kaka Hill Tributary. These areas are vegetated predominantly by grazed pasture grass with isolated exotic mature trees.

The gently undulating and flat slopes are typical of rural environments within the Nelson district where the loss of habitats for indigenous species has been greatest in the past. Agricultural land use within the valley has included grazing by sheep and beef, with sheep still being actively grazed in the lower historic floodplain. The historic and current land use has resulted in < 10 % of indigenous vegetation cover remaining and as a result the Kaka Hill Valley is characterised by little remaining indigenous biodiversity within these environments. In the steeper hill country slopes further up the Kaka Valley, approximately 20-30 % of indigenous cover remains. In these areas, habitats are very fragmented and indigenous biodiversity is likely reduced<sup>3</sup>.

The Kaka Hill Tributary is a small stream with headwaters commencing in the upper slopes of Kaka Hill Valley. It flows through a relatively steep upper hill catchment that enters a flat historic meander floodplain at its downstream extent before its confluence with the Maitai River. The lower reach has been modified and is currently comprised of a shallow channel that flows intermittently over the floodplain to the eventual confluence with the Maitai River. Multiple other ephemeral overland flow paths occur through the floodplain, some of these are likely to still be active and may flow after sustained periods of rain.

A section of the Kaka Hill Tributary immediately upstream of the confluence with the Maitai River (and outside of the property boundary) is frequently inundated during high flow events. This small area appeared to have land water margins that support an ecosystem that has formed through the natural processes of recruitment by introduced naturalised plants.

##### 3.1.1 Terrestrial habitat types and vegetation

The land within the Bayview and Maitahi areas contain a mix of grassland, scrubland, fernland, forest and wetland habitats<sup>4</sup>. A list of common plant species observed at the site during the site visit on 12-13 December 2019 is provided in Appendix C. Post the site visit it is understood that various sections of primarily gorse and exotic scrubland have been removed. The area totals defined in the

<sup>3</sup> Manaaki Whenua Landcare Research, Our Environment threatened environment classifications.

<sup>4</sup> As defined in Atkinson, I. A. E. (1985). Derivation of vegetation mapping units for an ecological survey of Tongariro National Park North Island, New Zealand. New Zealand Journal of Botany. 23:30, 361-379.

following sections are approximate totals for the vegetation that remains within the property and have been calculated using GIS software<sup>5</sup>.

### 3.1.1.1 Scrubland

Scrubland composed of varying plant species covers the majority of the site (c. 139.5 ha). Gorse is a dominant component of the vegetation across a large portion of this vegetation type (c. 33.3 ha), particularly on the western and northern sections of the site (Appendix A). The remaining areas of scrub (c. 106.2 ha) are typically a mix of kānuka (*Kunzea ericoides*), barberry, hawthorn (*Crataegus monogyna*), gorse and māhoe (*Melicactus ramiflorus*) (Appendix A; Photograph Appendix B.2). Sycamore (*Acer pseudoplatanus*) trees, blackberry (*Rubus fruticosus* agg.) and bracken (*Pteridium esculentum*) are also abundant in some areas and old man's beard (*Clematis vitalba*) is commonly smothering trees and shrubs.

Matagouri (*Discaria toumatou*) scrubland has formerly been identified on the eastern edge of the site<sup>6</sup> and forms part of Significant Natural Area 166 (Appendix D). Matagouri is classified as At Risk – Declining<sup>7</sup>.

Due to the threat posed by myrtle rust on plants of the myrtle family, all indigenous species from this family are now classified as 'Threatened'<sup>7</sup>. As such, kānuka is now classified as a 'Threatened' plant. However, due to kānuka being common across the landscape, the site should not be considered a Significant Natural Area solely due to the presence of kānuka<sup>8</sup>.

Radiata pines (*Pinus radiata*) are scattered throughout the scrublands but are abundant in two areas on the eastern side of the site covering approximately 5.4 ha (Appendix A; Photograph Appendix B.1).

### 3.1.1.2 Grassland

Pasture grassland covers approximately 11.3 ha of the mapped valley floor, lower hillside and western ridgeline (Appendix A). Various specimen trees e.g. poplars, weeping willows and exotic conifers are planted irregularly across the pasture in the valley floor (Photograph Appendix B.1). Weeds such as gorse (*Ulex europaeus*), broom (*Cytisus scoparius*), soft rush (*Juncus effusus*) and barberry (*Berberis glaucocarpa*) are also common across the pasture (Photograph Appendix B.2). It is important to note that not all grassland has been mapped, especially the grazed pasture grass located in the Kaka Hill Tributary floodplain.

### 3.1.1.3 Forest

Mature kānuka forest is likely present in the eastern side of the site. This is based off significant natural area records<sup>6</sup> and aerial imagery. The kānuka forest is included in SNA 166 and is estimated to cover approximately 11.2 ha.

### 3.1.1.4 Fernland

Fernland dominated by native tree ferns such as mamaku (*Cyathea medullaris*) and ponga (*Cyathea dealbata*) is estimated to cover approximately 2.75 ha towards the eastern edge of the site (Appendix A).

<sup>5</sup> ArcGIS 10.5.1. by Esri. [www.esri.com](http://www.esri.com)

<sup>6</sup> Nelson City Council. (2009). Ecological Significance Assessment Report. Site No. 166. Technical report prepared by Micheal North.

<sup>7</sup> de Lange, P., Rolfe, J., Barkla, J., Courtney, S., Champion, P., Perrie, L., Beadel, S., Ford, K., Breitwieser, I., Schönberger, I., Hindmarsh-Walls, R., Heenan, P. & Ladley, K. (2018). New Zealand Classification Series 22. Conservation status of New Zealand indigenous vascular plants, 2017. Department of Conservation, Wellington.

<sup>8</sup> Ministry for the Environment. (2019). Draft National Policy Statement for Indigenous Biodiversity.

### 3.1.1.5 Wetlands

Rautahi (*Carex geminata*), pureī (*Carex virgata*), buttercup (*Ranunculus repens*) and exotic rushes (*Juncus effusus* and *J. articulata*) cover an area of approximately 0.29 ha of wetland near the middle of the site on the western side of Kaka Valley (Appendix B; Photograph Appendix B.3).

A second wetland has been identified on the south eastern slopes of the lower valley during additional surveys completed by Morphum<sup>9</sup>. This wetland is dominated by pasture plant species and exotic rushes and is flanked by gorse and manuka scrub.

### 3.1.1.6 Indigenous planting

A small patch (c. 800 m<sup>2</sup>) next to the current dwelling on the site has been planted with a variety of native trees and shrubs such as large-leaved kowhai (*Sophora tetraphylla*), akeake (*Dodonaea viscosa*), lemonwood (*Pittosporum eugenioides*), māhoe, kōhuhu (*Pittosporum tenuifolium*), cabbage tree (*Cordyline australis*), ribbonwood (*Plagianthus regius*) and mountain beach (*Fuscospora cliffortioides*) (Appendix A).

### 3.1.2 Birds

Nine indigenous species were observed across the site during the visits on 12 and 13 December 2019 (Table 3.1). These were all common species, none of which are classified as 'At Risk' or 'Threatened'<sup>10</sup>. Information gathered from desktop information identified a further 13 indigenous bird species that may utilise the habitats within the site but were not observed during the site visits (Table 3.2). These included several 'At Risk' and 'Threatened' species. The scrubland, wetland and stream habitats across the site may provide suitable habitat for these species for feeding, nesting, roosting and/or daytime layovers between two sites.

**Table 3.1: List of indigenous bird species observed on site and the conservation status**

| Species name                        | Common name       | Conservation status <sup>10</sup> |
|-------------------------------------|-------------------|-----------------------------------|
| <i>Larus dominicanus</i>            | Black backed gull | Not Threatened                    |
| <i>Rhipidura fuliginosa</i>         | Fantail           | Not Threatened                    |
| <i>Gerygone igata</i>               | Grey warbler      | Not Threatened                    |
| <i>Circus approximans</i>           | Harrier           | Not Threatened                    |
| <i>Todiramphus sanctus vagans</i>   | NZ kingfisher     | Not Threatened                    |
| <i>Porphyrio melanotus</i>          | Pukeko            | Not Threatened                    |
| <i>Zosterops lateralis</i>          | Silvereye         | Not Threatened                    |
| <i>Prothemadera novaeseelandiae</i> | Tui               | Not Threatened                    |
| <i>Gallirallus australis</i>        | Western weka      | Not Threatened                    |

<sup>9</sup> Morphum Environmental Ltd. 2021. Preliminary Structure Plan Environmental Review. Prepared for Maitahi Development.

<sup>10</sup> Robertson, H., Baird, K., Dowding, J., Elliott, G., Hitchmough, R., Miskelly, C., MacArthur N., O'Donnell, C., Sagar, P., Scofield, P. & Taylor, A. (2017). New Zealand Threat Classification Series 19. Conservation status of New Zealand birds, 2016. Department of Conservation, Wellington.



**Table 3.2: Indigenous bird species not observed during the site visits of 12 and 13 December 2019 but potential users of the habitats across the site**

| Species name                                   | Common name        | Conservation status <sup>10</sup> | Likelihood of being present at site | Suitable habitat on site   |
|--|--------------------|-----------------------------------|-------------------------------------|----------------------------|
| <i>Anthornis melanura</i>                      | Bellbird           | Not Threatened                    | Possible                            | Scrubland and large trees  |
| <i>Hemiphaga novaeseelandiae</i>               | Kereru             | Not Threatened                    | Possible                            | Scrubland and large trees  |
| <i>Ninox novaeseelandiae</i>                   | Morepork           | Not Threatened                    | Possible                            | Scrubland and large trees  |
| <i>Phalacrocorax carbo novaehollandiae</i>     | Black shag         | At Risk – Naturally Uncommon      | Unlikely                            | Riparian zones and streams |
| <i>Phalacrocorax sulcirostris</i>              | Little black shag  | At Risk – Naturally Uncommon      | Unlikely                            | Riparian zones and streams |
| <i>Phalacrocorax melanoleucos brevirostris</i> | Little shag        | Not Threatened                    | Unlikely                            | Riparian zones and streams |
| <i>Falco novaeseelandiae</i>                   | NZ falcon          | At Risk - Recovering              | Possible                            | Scrubland and large trees  |
| <i>Chrysococcyx lucidus</i>                    | Shining cuckoo     | Not Threatened                    | Possible                            | Scrubland and large trees  |
| <i>Petroica australis</i>                      | South Island robin | At Risk - Declining               | Unlikely                            | Scrubland and large trees  |

### 3.1.3 Lizards and frogs

No indigenous lizard or frog species were observed at the site during the site visits of 12 and 13 December 2019. Two indigenous lizard species have, however, been identified on databases as inhabiting the habitats across the site.

The starred gecko or Nelson green gecko (*Naultinus stellatus*) commonly inhabits forest and scrub including mānuka/kānuka shrublands. This species has been recorded within 1 km of the site and may inhabit the scrublands across the site. The starred gecko is currently classified as ‘Threatened – Nationally Vulnerable’<sup>11</sup>.

The common skink (*Oligosoma polychroma*) lives within sunny rock piles, tall rank grass and scrublands. This species has been recorded within 3 km of the site and may inhabit the scrublands and any fringe rank grass habitat across the site. Rocky outcrops were observed around the fringe of some scrubland habitats that could be suitable basking locations for common skinks. The common skink is currently classified as ‘Not Threatened’ but is protected under the Wildlife Act 1953.

### 3.1.4 Long-tailed bats

Several acoustic bat surveys have been completed in the area surrounding the site. The ‘Threatened – Nationally Critical’ long-tailed bat (*Chalinolobus tuberculatus*)<sup>12</sup> has been detected c. 13.5 km east of the site on the other side of the Bryant Range. This species is highly mobile and can have home

<sup>11</sup> Hitchmough, R., Barr, B., Lettink, M., Monks, J., Reardon, J., Tocher, M., van Winkel, D. & Rolfe, J. (2016). New Zealand Threat Classification Series 17. Conservation status of New Zealand reptiles, 2015. Department of Conservation, Wellington.

<sup>12</sup> O'Donnell, C, Borkin, K, Christie, J, Lloyd, B, Parsons, S & Hitchmough, R. (2018). Conservation status of New Zealand bats, 2017. New Zealand Threat Classification Series 21. Department of Conservation, Wellington.

ranges extending over 60 km<sup>2</sup> and could therefore be present within the proposed site. Larger trees located irregularly throughout the property may provide habitat suitable for roosting, e.g. within broken branches, crevices and flaking bark.

### 3.1.5 *Powelliphanta* snails

*Powelliphanta* is a genus of endemic, carnivorous land snail with approximately 63 species. Most *Powelliphanta* species are classified as either 'At Risk' or 'Threatened' and the Nelson and Tasman areas are the diversity hotspots for the genus. Most species are found in mid- to high altitudes, i.e. above 600 m above sea level but some exist in lowlands and coastal habitats.

No *Powelliphanta* snails or shells were encountered during the site visits on 12 and 13 December 2019. It is considered unlikely that *Powelliphanta* snails will be inhabiting the habitats within the site but there is a possibility that they are in the moist habitats across the site.

### 3.1.6 Freshwater habitat types

At the time of the site walkover, Kaka Hill Tributary had a flow that was considered typical for the time of year (e.g. fluctuations in flows due to early summer rainfall events). In the five days prior to the site assessment, approximately 23.2 mm of rain fell over a 48-hour period between 7 and 8 December 2019<sup>13</sup>.

During the site walkover water levels were low in the Kaka Hill Tributary reaches that flow through the lower historic floodplain. Flow characteristics included dry reaches, pooled sections, and shallow-slow runs. Several potential overland flow paths within the floodplain were observed, however, during the time of the site visit no flow was observed. Stable flow appeared to be evident from 155 m downstream of the farmhouse culvert and consisted of slow runs and connected pool habitat (Appendix A, Figure 1).

Diversity in flow characteristics increased upstream of the farmhouse culvert, where pools, rock drops, riffle sections and shallow runs were observed. The stream reaches upstream of the culvert are expected to retain a persistent baseflow across the full year.

Overall, Kaka Hill Tributary can be split into two distinct sections. The largely intermittent lower reaches that flow through a historic floodplain downstream of the farmhouse culvert and the steeper permanently flowing upper reaches upstream of the farmhouse culvert.

#### 3.1.6.1 Upper Kaka Hill Tributary

Aquatic habitat within the upper reaches of Kaka Hill Tributary was diverse, with a substrate consisting of a mixture of boulders, cobbles, and mixed gravels. Sediment cover of the stream bed was patchy, with isolated areas of increased sediment cover (> 70 %) in pools and slower flowing areas. Overall, the upper Kaka Hill Tributary provided relatively moderate habitat diversity and abundance for freshwater fauna when compared to the lower Kaka Hill Tributary. These habitats were generally composed of undercut banks, overhanging riparian vegetation, large woody debris, and a diversity in water/flow characteristics (including pools, backwaters, riffles and shallow runs).

Riparian vegetation cover consisted of a mixture of native and exotic scrubland species (see Section 3.1.1.1), that provided high shade (> 60 % in places) and an established leaf litter to aid in groundcover and runoff filtering. Stock and pest mammal (from goats) access was evident in some areas, where pugging and animal tracks were observed.

<sup>13</sup> Observations recorded at the Nelson Airport meteorological station (AWS-93546).

Algae growth comprised of patchy areas of *Phormidium* sp in low shade areas immediately upstream of the farmhouse culvert. While in areas with full shade the algae community was generally comprised by thin black and brown films.

### 3.1.6.2 Lower Kaka Hill Tributary

The lower Kaka Hill Tributary (downstream of the farmhouse culvert) generally contained high sediment cover (> 60 %) of the stream bed, with a substrate primarily composed of clay, sands, and muds. However, closer to the farmhouse culvert (where continual flow was observed) small gravel and cobble substrates were evident. Habitat diversity and abundance for freshwater fauna was low within the lower Kaka Hill Tributary, with only isolated areas of habitat providing potential refugia for freshwater fauna (e.g. from the pooled sections and the stable slow run habitat downstream of the farmhouse culvert).

Riparian cover consisted of mature rank pasture grass with isolated non-native large shrubs and/or trees along the riparian zone. The open pasture area provided no protection from stock access to the stream. The lower banks on both sides of these reaches were incised and relatively steep with some areas of bare exposed ground. Both banks appear to have a high potential for erosion, especially during higher flow events, although no evidence of bank slumping was observed.

### 3.1.7 Freshwater fauna

#### 3.1.7.1 Fish community

Sampling of the fish community was completed at multiple survey reaches throughout the entirety of the Kaka Hill Tributary following the methodology described in Section 2.2. Survey results showed that the fish community was sparse with only shortfin eel (*Anguilla australis*), unidentified eel (including elver), and an unidentified climbing *Galaxiidae* sp (Table 3.3) observed in the upper Kaka Hill Tributary (i.e. upstream of the farmhouse culvert). Shortfin eel are currently listed as 'Not Threatened'<sup>14</sup> and are likely regionally common where appropriate habitats are present and accessible.

Of the native fish species observed two could only be partially identified. The unidentified eel (*Anguilla* sp. in Table 3.3) were either too small (e.g. elvers) or avoided capture by burrowing into the muds and undercut banks located within the surveyed reaches. While the unidentified climbing *Galaxiidae* sp. was too small to correctly identify, however, it is likely either kōaro (*Galaxias brevipinnis*), an 'At risk – declining'<sup>14</sup> species) or banded kokopu (*G. fasciatus*, 'Not Threatened'<sup>14</sup> species).

An assessment of the NZFFD<sup>15</sup> showed that no historic records are available for fish communities within the Kaka Hill Tributary.

Of the native freshwater fish species observed within the Kaka Hill Tributary all are diadromous and must move between the freshwater and marine environments to complete their life cycle. Therefore, catchment access to downstream and upstream habitats is important for these species so that regional populations can be maintained. Likewise, as fish are mobile it is important that fish passage and connectivity to aquatic habitats within the Kaka Hill Tributary is maintained as the observed fish species may move between these habitats throughout the year.

<sup>14</sup> Dunn, N.R.; Allibone, R.M.; Closs, G.P.; Crow, S.K.; David, B.O.; Goodman, J.M.; Griffiths, M.; Jack, D.C.; Ling, N.; Waters, J.M.; Rolfe, J.R. (2018) Conservation status of New Zealand freshwater fishes, 2017. New Zealand Threat Classification Series 24. Department of Conservation, Wellington. 11 p.

<sup>15</sup> The NZFFD was accessed on 10 December 2020.

**Table 3.3: List of indigenous freshwater fauna identified on site and associated conservation status**

| Species name                   | Common name                        | Conservation Status <sup>14 16</sup> |
|--------------------------------|------------------------------------|--------------------------------------|
| <i>Anquilla sp.</i>            | Unidentified eel/ elver            | -                                    |
| <i>Anguilla australis</i>      | Shortfin eel                       | Not threatened                       |
| <i>Galaxiidae sp</i>           | Unidentified climbing galaxiidae   | -                                    |
| <i>Paranephrops planifrons</i> | Northern freshwater crayfish/kōura | Not threatened                       |

**3.1.7.2 Macroinvertebrates**

The qualitative sampling of the aquatic macroinvertebrate community showed that the lower Kaka Hill Tributary was characteristic of the pooled and slow run habitat available and predominantly composed of water boatmen (*Sigara sp*), back swimmers (*Anisops sp*), diving beetles (*Dytiscidae sp*) and non-biting midge (*Chironomidae sp*). Within the upper reaches of the Kaka Hill Tributary observed macroinvertebrate species include a number of cased caddisfly (e.g. *Pycnocentroides sp*, *Hudsonema sp*), mayfly (e.g. *Deleatidium sp*) and black fly larvae (*Austrosimulium sp*).

In general, the species observed in the upper reaches are common in faster flowing, cobbled streams with a closed canopy, and are usually more sensitive to pollution and changes in land use than the species observed within the lower reaches<sup>17</sup>.

During the fish community survey, the freshwater crayfish/kōura (*Paranephrops planifrons*) was also identified at one site. Kōura are a 'Not Threatened'<sup>18</sup> species and the presence of these within the Kaka Hill Tributary is consistent with the known habitat and distribution.

<sup>16</sup> Grainger, N., Harding, J., Drinan, T., Collier, K., Smith, B., Death, R., Makan, T., and Rolfe, J. 2018. Conservation status of New Zealand freshwater invertebrates. New Zealand Threat Classification Series 28. 25 p.

<sup>17</sup> Stark JD, Maxted JR, 2007. A user guide for the Macroinvertebrate Community Index. Prepared for the Ministry for the Environment. Cawthron Report No.1166. 58 p.

## 4 Ecological constraints, opportunities and recommendations

The following sections provides a brief overview of the ecological constraints and opportunities for the site in respect of the PPCR.

High-level recommendations for future site development are also provided, which have been incorporated into the Schedule of rules and associated structure plan<sup>1</sup>.

We have not undertaken a full assessment of Ecological Effects (AEcE), although we have identified broad options to manage identified constraints. Further detailed ecological assessments (of aquatic macroinvertebrates, fish, lizards, *Powelliphanta sp* and bats) are likely to be required to inform an AEcE relating to any specific subdivision development proposals and associated resource consent applications.

### 4.1 Potential constraints

This section summarises potential ecological constraints at the site and how they have been considered in the structure plan or whether they will need to be addressed in future development design.

#### 4.1.1 Terrestrial ecology

Four ecological constraints have been identified within the structure plan area in terms of terrestrial biodiversity values. These are primarily associated with the clearance of the scrubland habitats identified in Appendix A. These include:

- 1 The loss of significant indigenous vegetation.
- 2 Loss of wetland habitat.
- 3 Loss of habitat for indigenous fauna.
- 4 Injury or mortality of indigenous fauna.

If the PPCR is accepted and development occurs, then these constraints will need to be managed appropriately in order to comply with the relevant legislation (e.g. Resource Management Act 1991 and Wildlife Act 1953).

Wherever possible, any actions resulting in these four outcomes should be avoided. This approach has been incorporated into the structure plan with respect to the loss of high-quality indigenous vegetation (e.g. kānuka forest and matagouri scrubland) and the loss of wetland habitats. The kānuka forest and matagouri scrubland will remain in 'Rural' zones and wetland habitats will be incorporated into an 'Open space' corridor running along the Kaka Valley tributary.

If avoidance is not possible then actions should be undertaken to minimise the extent of these four impacts. For example, the removal of ecologically valuable vegetation should be minimised. Any removal of vegetation that does occur should be undertaken following relevant fauna management plans to minimise the risk of the vegetation removal on indigenous fauna, e.g. vegetation removal should be undertaken outside of the peak breeding months of indigenous birds (November to January inclusive). Sufficient space is available for mitigation, offset or compensation within the site.

Based on the current structure plan and our preliminary desktop assessment, approximately 36.2 ha of vegetation with common or abundant indigenous plants will be converted from 'Rural' zoning to either 'Residential' (c. 18.7 ha) or 'Small Holdings Area' (C. 17.5 ha) zones. Some of this vegetation will inevitably be removed to make space for building platforms and gardens, etc., particularly in the 'Residential' zones. Additionally, low quality exotic vegetation (e.g. gorse scrub) can provide habitat for indigenous fauna and will also be removed (potentially up to 12 ha). There is, therefore, potential

for a large amount of indigenous vegetation and/or habitat for indigenous fauna to be removed as part of future developments.

Any future developments in these zones should consider the ecological impacts of removing vegetation and necessary mitigation, offset or compensation actions will need to be taken to ensure developments do not result in a net loss of ecological value. Examples of possible mitigation, offset or compensation actions include pest plant control, pest animal control, indigenous planting, and protection of identified valuable habitats across the site.

For any work that threatens to displace or injure indigenous fauna, the Department of Conservation (DoC) will need to be consulted with and a Wildlife Act Authority will likely need to be granted to allow the work to proceed. Currently, this process can take up to six months and it is therefore important to initiate this process well before the desired start date of any earthworks that may be proposed as part of development.

Additional targeted surveys of starred gecko, *Powelliphanta* snails and long-tailed bats are recommended to get a better understanding of the likelihood of these animals being present across the site. This will inform the level and likelihood of management required to avoid adverse impacts on these 'Threatened' and 'At Risk' species if future development occurs within the site.

Ecological and/or fauna management plans are likely to be a requirement of any resource consents granted and will provide details on how adverse ecological impacts will be avoided, minimised and/or mitigated through offset or compensation.

Based on preliminary assessments and the final structure plan, it is expected that there will be sufficient space available for mitigation, offset or compensation within the site, although comprehensive ecological surveys will need to be completed across the site and more detailed information on any proposed subdivision development would be needed for more detailed assessment

#### **4.1.2 Freshwater ecology**

Several freshwater ecological constraints have been associated with the PPCR in terms of the freshwater biodiversity of Kaka Hill Tributary that flows through the site and these include:

- 1 Adverse change in the flow regime.
- 2 Loss and/or an adverse change in aquatic habitat availability and condition.
- 3 Loss and/or an adverse change in aquatic habitat connection.
- 4 Injury, mortality and/or changes to the indigenous fish community.

These constraints will need to be managed appropriately to comply with relevant legislation (e.g. the Nelson Resource Management Plan (NRMP), the National Policy Statement on Freshwater Management (NPS-FM), and the National Environment Standards for Freshwater (NES-FW)). Actions resulting in these four outcomes have been avoided and/or minimised within the structure plan with respect to the alignment of an 'Open space' corridor that encompasses the Kaka Hill Tributary.

Any future development must align with the objectives and intent of the NPS-FM and NES-FW. Where any stream effects that may result in a change of flow regime, loss of aquatic habitat and connection, then the planning assessment within any proposed subdivision assessment of environmental effects (AEE) will need to demonstrate that there is a functional need for these effects. Once this has been confirmed then the application of the effects management hierarchy to avoid and minimise, and if necessary, mitigation or offset actions will need to be taken.

Any loss of freshwater biodiversity values would need to be managed through ecological enhancement initiatives such as the re-establishment or enhancement of stream reaches following current best practice guidelines. Based on the structure plan the 'Open space' corridor following

Kaka Hill Tributary and connecting the available space within the south – south western historic floodplain will offer various opportunities for ecological enhancement to address any potential adverse ecological effects on aquatic values from any future developments.

For any work that threatens to displace, injure, or kill indigenous fish fauna, the DoC and the Ministry for Primary Industries (MPI) will need to be consulted with and authority will likely need to be granted to allow the work to proceed. Permit processes with DoC and MPI can take up to six months and is therefore important to initiate well before the desired start date for and development related earthworks.

Stream restoration, stream channel design and fauna management plans are likely to be a requirement of any future specific subdivision development proposals and associated resource consent applications.

#### **4.1.2.1 Realignment of lower Kaka Hill Tributary**

The lower reach of Kaka Hill Tributary currently flows through a straightened and channelised section of the historic floodplain. Historically, the lower Kaka Hill Tributary is likely to have flowed through multiple channels spread throughout the lower floodplain especially during periods of higher flow.

The structure plan shows the planned realignment of the lower intermittent reaches of Kaka Hill Tributary. Any stream realignment should demonstrate that there is a functional need for the realignment and should be avoided if it results in the four outcomes outlined in Section 4.1.2. If avoidance is not possible, the effects management hierarchy should be followed to minimise and if necessary, mitigation or offset actions will need to be taken. For ecological reasons<sup>18</sup> the realignment should consider:

- The use of best practice guidelines for designing a natural stream channel (e.g. Tasman District Council Natural Channel Design Guidelines<sup>19</sup>).
- The new alignment should utilise (if available) appropriate historic or relict channels with areas of indigenous biodiversity values present (e.g. a vegetated riparian zone), that should not result in a loss of river extent or value.
- The timing of works to occur when the affected reaches are dry and in line with any approved fauna and channel restoration and design management plans.

Based on the preliminary site assessment and review of the structure plan<sup>1</sup> there will be enough area within the 'Open space' zone located within the south-west of the site to accommodate the realignment of the Kaka Hill Tributary. This 'Open space' zone will also provide additional area for any subsequent biodiversity enhancement associated with the realignment of the stream.

#### **4.1.3 Nelson Resource Management Plan**

The following sections provide an overview of any NRMP objectives that relate to the indigenous terrestrial and freshwater ecological values observed within the Kaka Hill Valley. Further detailed assessments of the objectives, policies and rules in the NRMP are likely to be required to inform an AEE relating to any specific subdivision development proposals and associated resource consent applications. The purpose of this section is to provide an overview of key ecological considerations that may need to be taken into account in future detailed assessments.

<sup>18</sup> Note: specific planning policies, objectives, and rules within the NRMP may need to be met or exceeded in addition to these ecological reasons.

<sup>19</sup> Tonkin + Taylor Ltd. 2019. Natural Channel Design Guidelines. Prepared for Tasman District Council.



#### 4.1.3.1 Natural value

The natural value objective in the NRMP (objective DO5) outlines that where natural values are preserved and enhanced within the environment, they comprise an integral part of the natural setting. Areas with high natural value (Policy 5.1.1) have been identified in accordance with the criteria in Table DO5.1 (of the NRMP). If necessary, any identified areas of high natural value must be managed in such a way that protects and enhances those values. In the Kaka Hill Valley indigenous flora and faunal communities that may have priority for protection include freshwater wetlands and riparian forest.

Consideration within the structure plan has been given to policy DO5.1.2 which promotes the linkage of corridors between areas of natural vegetation. Generally, areas of indigenous vegetation are often too small to support viable populations of animal and plant species. Linking these small sections together can provide improvements to the biodiversity in any individual area. For example, the Kaka Hill Tributary, the Rautahi wetland and the riparian forest have been linked together to provide an opportunity for a continuous biodiversity corridor to the upper Kaka Valley.

Furthermore, any clearance of indigenous forest (not covered in the Conservation Overlay in the NRMP planning maps) must follow the specific rules outlined in the NRMP.

#### 4.1.3.2 Riparian margins

The NRMP objective DO6 outlines that riparian margins are protected and enhanced where natural character, public access, natural functions, landscapes, heritage values, water quality and ecological values are present.

Objective DO6 applies to the Rural Zone of Kaka Hill Tributary which has been identified as having Esplanade Values (Table 6.2, Appendix 6 NRMP) and within the Riparian Overlay layer (NRMP planning maps). Esplanade Values for the Kaka Hill Tributary within the Rural Zone include conservation (i.e. aquatic habitat and water quality), public access along the river, recreation and hazard mitigation. Furthermore, the NRMP indicates that a 20 m strip on both river banks be included as an esplanade requirement.

The Rural Zone of the Kaka Hill Tributary is located approximately 766 m north of the confluence with the Maitai River. Therefore, within the current planning objective DO6 there is a gap that does not require any esplanade requirements between the Kaka Hill Tributary/ Maitai Confluence and the Kaka Hill Tributary Rural Zone. The structure plan<sup>1</sup> details that the 'Open Space' biodiversity corridor will encompass the entirety of the Kaka Hill Tributary located within the property boundary (from the Kaka Hill Tributary/ Maitai Confluence to the top of the Kaka Hill Valley). By connecting the esplanade requirements of the Kaka Hill Tributary to that of the Maitai River will provide a positive biodiversity outcome of the PPCR.

Further detailed design will locate the esplanade reserve and refine the riparian corridor; however, the structure plan shows that generally a 40 m corridor has been zoned as 'Open space' that follows the topographical contours of the Kaka Hill Tributary.

Activities on land that are to occur within an area identified within the riparian overlay layer and where esplanade values have been identified must follow the specific planning rules outlined in the NRMP. Therefore, a detailed assessment of these relevant policies, objectives and rules should be undertaken in any assessment of effects reporting.

#### 4.1.3.3 Activities in the beds of rivers and lakes, and in wetlands

Objective DO17 of the NRMP outlines that activities, works or structures within the beds of lakes and rivers and their margins, and in wetlands, are undertaken or constructed in a way which avoids, remedies or mitigates adverse effects on freshwater bodies and their associated uses and values.

Specific policies within DO17 that may constrain development include policies DO17.1.1 through to DO17.1.11 and range from:

- Protecting the natural character of rivers, lakes and wetlands.
- Flood damage.
- Removal of and building of structures (including dams and reservoirs).
- Planting in, on or adjacent to rivers, lakes and streams.
- The deposition or removal of material; to
- Realignment and piping.

A detailed assessment of the policies and rules associated with objective DO17 should be undertaken during any future AEE/RCA reporting as a part of subdivision and development.

#### **4.1.3.4 Freshwater abstraction and instream flows**

Objective DO18 of the NRMP describes how flow regimes and water levels within the Nelson Region's water bodies are to be maintained and enhanced where necessary. This includes any diversion of water that results in the natural functioning of the ecosystem to be disrupted.

Therefore, any adverse changes to the flow regime of the Kaka Hill Tributary will have to meet or exceed the objectives outlined in DO18.

#### **4.1.4 National Policy Statement on Freshwater Management**

The following sections provide an overview of policies within the NPS-FM. These came into effect on 3 September 2020 and replace the NPS-FM 2017. Further detailed assessments of the objectives, policies and rules in the NPS-FM 2020 are likely to be required to inform an AEE relating to any specific development. The purpose of this section is to provide an overview of key ecological considerations that may need to be taken into account in future detailed assessments.

##### **4.1.4.1 Natural Inland Wetlands**

Policy 3.22 of the NPS-FM (2020) outlines that the loss of extent of natural inland wetlands is to be avoided, their values protected, and their restoration is promoted. Therefore, the structure plan has outlined that the two identified wetlands have been protected and are bordered by 'Open space'.

##### **4.1.4.2 Rivers**

The NPS-FM (2020) policy 3.24 outlines that the loss of river extent and values is avoided. Regarding the PPCR, the loss of extent of the Kaka Hill Tributary should therefore be avoided. In terms of the reinstatement of the natural alignment of the lower Kaka Hill Tributary the planning AEE should demonstrate that there is a functional need for the realignment and any effects on river extent and values should be managed by applying the effects management hierarchy (i.e. avoid, minimise, remedied, mitigate, and offset). The reinstatement of the lower Kaka Hill Tributary to a natural channel will provide an opportunity for biodiversity and ecological enhancement, the development of land, and to safely convey catchment flood flows through the lower part of the Valley.

##### **4.1.4.3 Fish Passage**

Policy 3.26 of the NPS-FM includes an objective outlining that fish passage is maintained, or improved, except where it is desirable to prevent passage of some fish species in order to protect desired fish species, their life stages, or their habitats. Therefore, any new road structures should meet the required criteria for allowing fish to pass. Likewise, the realignment and connection of the

lower Kaka Hill Tributary to the Maitai River will need to be managed so that undesirable fish species passage can be prevented.

#### **4.1.5 National Environment Standards for Freshwater 2020**

The following sections provide an overview of the regulations in Part 3 of the NES-FW (2020). These came into effect on 3 September 2020. Further detailed assessments of the regulations and standards in the NES-FW are likely to be required to inform an AEE relating to any specific subdivision development proposals and associated resource consent applications. The purpose of this section is to provide an overview of key ecological constraints that may need to be considered in future detailed assessments and planning.

##### **4.1.5.1 Natural Wetlands**

Subpart 3 (1) of the NES-FW outlines standards for activities that relate to natural wetlands. Specific standards within subpart 1 that may constrain development planning include:

- Construction of specified infrastructure.
- Drainage of natural wetlands.
- Other non-complying activities (e.g. activities that do not have a status under subpart 3 (1)).

As such the structure plan outlines that the two identified wetlands will be protected and bordered by 'Open space'.

##### **4.1.5.2 Reclamation of Rivers**

The NES-FW outlines in subpart 3 (2) that the reclamation of the bed of any river is a discretionary activity. Therefore, any reclamation of the Kaka Hill Tributary that is to occur will be at the discretion of the Council and in accordance with the relevant policies of the NRMP, the NES-FW and the NPS-FM.

##### **4.1.5.3 Fish Passage**

Subpart 3 (3) of the NES-FW outlines that the purpose of this subpart is to deal with the effects on fish passage from the placement, use alteration, extension, or reconstruction of any structures in, on, over, or under the bed of any river or connected area. Therefore, any new structure that is to be constructed that intersects the Kaka Hill Tributary must meet the standards outlined in subpart 3 of the NES-FW.

## **4.2 Potential opportunities**

The opportunities outlined below aim to increase the native biodiversity and ecological functioning of the site, through planting or retaining specific vegetation. Seeking such opportunities would be expected to provide a range of ecological and biodiversity benefits for the Valley.

### **4.2.1 Terrestrial ecology**

There are several opportunities available to allow for ecological and biodiversity gains across the site which form a part of the PPCR and would be achieved as a part of future subdivision and development.

Most habitats within the site are highly degraded with an abundance of exotic plants, and animal pests are present. Initiatives to reduce the abundance and influence of pests and increase the prevalence of indigenous flora and fauna would provide ecological and biodiversity gains across the site. These could include:

- Pest plant and animal control.
- Indigenous planting.
- Stock exclusion from enhancement areas.
- Protection of enhancement area.

Pest plants are prevalent in the scrubland vegetation across the site. Controlled removal of these plants while managing for the impacts on indigenous fauna and avoiding the removing of indigenous plants could provide a large ecological benefit to the site.

The control of pest animal species can help by reducing predation pressure on indigenous fauna and reducing browsing pressure on indigenous flora. Some pest control has begun over the site in the form of fencing and removing goats. Additional pest control of other species in areas of ecological value would help to further improve such areas.

There is a large opportunity for indigenous planting within the site. A minimum 40 m wide biodiversity corridor is planned in the structure plan, spanning from the Maitai River up to the head waters of the Kaka Valley Tributary, and following the north-east property boundary to connect to the kākū forest located on the eastern edge of the property. Any additional planting of indigenous vegetation will provide ecological value to the site. To ensure the area maintains an acceptable level of terrestrial biodiversity, future developments should plan for a minimum of 10% indigenous vegetation cover across the total site being developed as this has been identified as the critical threshold of indigenous cover before a rapid decline in biodiversity is likely to occur<sup>20</sup>.

Additionally, the protection of enhancement areas through vesting and/or consent notices and covenants could be used to ensure on-going management of the natural habitats within the development.

#### 4.2.2 Freshwater ecology

There are several opportunities that will provide ecological and biodiversity gains for the Kaka Hill Tributary and potentially the Maitai River as a result of this proposed PPCR. Specific initiatives to increase aquatic habitat for native species identified within Kaka Hill Tributary should be considered. These may include:

- A continuous riparian corridor that provides a natural buffer zone to the Kaka Hill Tributary should be retained, protected and managed. The corridor will be a minimum of 40 m wide, follow the natural topography of the site and support:
  - Channel meanders and flood benches.
  - continuous riparian vegetation.
  - eco-system function and habitat.
  - Integrated stormwater wetlands.
  - Public access via well designed walking/cycling paths (no roads except at crossing points).

Management of the riparian corridor should include the exclusion of all stock, the trapping and removal of pest animals, natural regeneration of indigenous species, restoration planting, weed control, monitoring of threatened aquatic species and monitoring of biodiversity condition.

- Allow greater passage at all road crossings for native fish species known to inhabit the catchment.

<sup>20</sup> Hanski, I. (2015). Habitat fragmentation and species richness. *Journal of Biogeography*, 42, 989-993.

- Excluding non-native fish from the catchment by designing and constructing intentional built barriers with the specific objective of limiting or preventing the movement of certain fish species (e.g. trout) into the Kaka Hill Valley catchment.
- Rehabilitating natural swale and marshy floodplain areas with native wetland flora species.
- Pre-treatment of stormwater inflows to the Kaka Hill Tributary will be consistent with good management practices (see Morphum Environmental Ltd, 2021<sup>9</sup> for more detail).
- Design, construct and maintain the Lower Kaka Hill Tributary so that is correctly integrated into the environment so that catchment flora and fauna values are enhanced. Ecological outcomes should include:
  - A low flow channel for fish passage and temporal habitat availability.
  - Diversity in hydrological conditions (runs, pools, riffles) where appropriate.
  - Diversity and availability of habitat (shaded margins, woody debris, etc).

A summary of the potential ecological opportunities is provided in Appendix E.

## 5 Structure Plan

The following sections outline whether the structure plan<sup>1</sup> adequately provides for the ecological values and opportunities identified within this report and whether sufficient area is provided so that ecological values present on site can be adequately managed at the time of subdivision and development.

This assessment of the structure plan is based on desktop assessments and preliminary field observations. If the plan change is approved, ground-truthing with comprehensive vegetation and fauna surveys and specific assessment of the ecological value is recommended to inform future subdivision development proposals, any associated resource consent applications, and alongside detailed design processes.

### 5.1 Terrestrial values

The structure plan has focused potential developments in areas of lower ecological value and has minimal development planned in areas of higher ecological value.

Areas planned for 'Residential' zoning are currently mostly pasture and gorse scrub. There are, however, some residual areas of mixed exotic and indigenous scrub that may fall within the planned 'Residential' areas. The removal of this vegetation and habitat for indigenous fauna will require some further assessment and potentially, mitigation and appropriate management to ensure the development does not result in a net loss of ecological value within the area.

Areas of highest ecological value (e.g. kānuka forest, matagouri scrubland and wetlands) are proposed to be left as 'Rural' or rezoned into 'Open space' zones. This will avoid any loss of these habitats and provide good opportunities for ecological and biodiversity improvements in these areas.

This will allow for this higher quality vegetation and habitat to remain and provides opportunities for mitigation and enhancement through activities such as weed control, pest control, stock exclusion and native planting.

### 5.2 Freshwater values

The structure plan identifies a continuous corridor of land zoned as 'Open space' that connects the western and south western edge of the lower historic floodplain to the Kaka Hill Tributary and the upper Kaka Valley. This 'Open space' will provide a continuous corridor from the Maitai River to the source of the Kaka Hill Tributary at the top of the valley.

The Kaka Hill Tributary 'Open space' corridor will likely provide for the protection and enhancement opportunities for ecological values (i.e. aquatic habitat and water quality), within the riparian margins that were identified during the site visit and within the NRMP Esplanade Values (Table 6.2, Appendix 6 of the NRMP). Additionally, the 'Open space' corridor will connect the esplanade from the Kaka Hill Tributary Rural zone to the Maitai River/ Kaka Hill Tributary confluence. This will provide further opportunity to protect and enhance the freshwater values within the area.

The lower intermittent reaches of the Kaka Hill Tributary are planned to be reinstated to flow through a historic/relic channel that flows around the western edge of the historic floodplain. The intermittent flowing reaches of the lower Kaka Hill Tributary were of lower ecological value than upper permanently flowing reaches, but still maintain some (all be it low) ecological value and habitat for aquatic species. According to the structure plan<sup>1</sup> an area has been set aside in the western and south western historic floodplain to allow a natural channel to be designed and connected to the Maitai River. The realignment of this channel will require appropriate management and potentially mitigation measures through ecological enhancement (i.e. through offsetting and/or

compensation). However, the creation of this open space in the south – south western historic floodplain should provide sufficient area for the ecological enhancement of aquatic values.

Both the lower reinstated Kaka Hill Tributary and the upper reaches of the Kaka Hill Tributary should be linked through a continuous 'Open space' corridor (as shown in the structure plan). Further to this, the identified SNA on the upper eastern boundary of the valley should be connected into the Kaka Hill Tributary corridor. This will ensure that the corridor links smaller areas of indigenous biodiversity. Linking these small sections together can provide improvements to the biodiversity in the Kaka Hill area.



## 6 Applicability

This report has been prepared for the exclusive use of our client CCKV Maitai Dev Co LP and Bayview Nelson Limited, with respect to the particular brief given to us (including supporting material for an application for PPCR to the Nelson Resource Management Plan under Schedule 1 of the Resource Management Act) and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

Report prepared by:

Authorised for Tonkin & Taylor Ltd by:




Patrick Lees and Adam Purcell

Mark Foley

Freshwater and Terrestrial Ecologists

Project Director

Report reviewed by Josh Markham (Senior Terrestrial Ecologist) and Dean Miller (Principal Freshwater Scientist)

PALE

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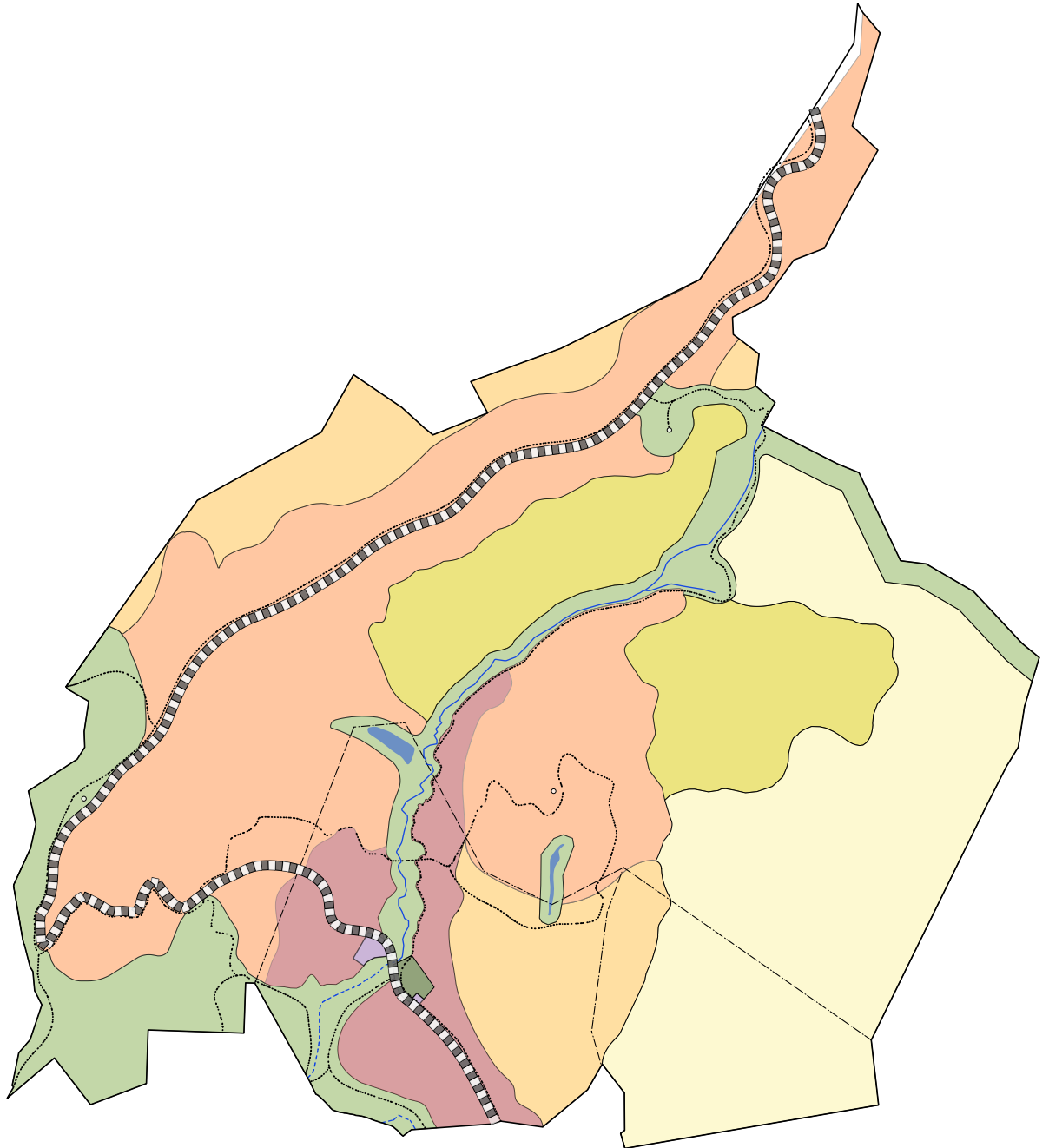
## **Appendix A: Structure Plan and Ecological Features Across the Proposed Private Plan Change Area**

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- **Figure A1.1 – Rough & Milne Ltd – Proposed Structure Plan – March 2021**
- **Figure 1 – Site plan of ecological features**

# LEGEND

- Residential Zone
- Residential Zone  
Higher Density Area
- Residential Zone  
Lower Density Area
- Open Space  
Recreation Zone
- Suburban Commercial  
Zone
- Rural Zone
- Higher Density  
Small Holdings Area
- Neighbourhood  
Reserve
- Indicative Road
- Indicative Walkway /  
Cycleway Link
- Indicative Lookout  
Locations
- Wetland
- Existing River
- Proposed River
- Site Boundary
- Internal Cadastral  
Boundaries



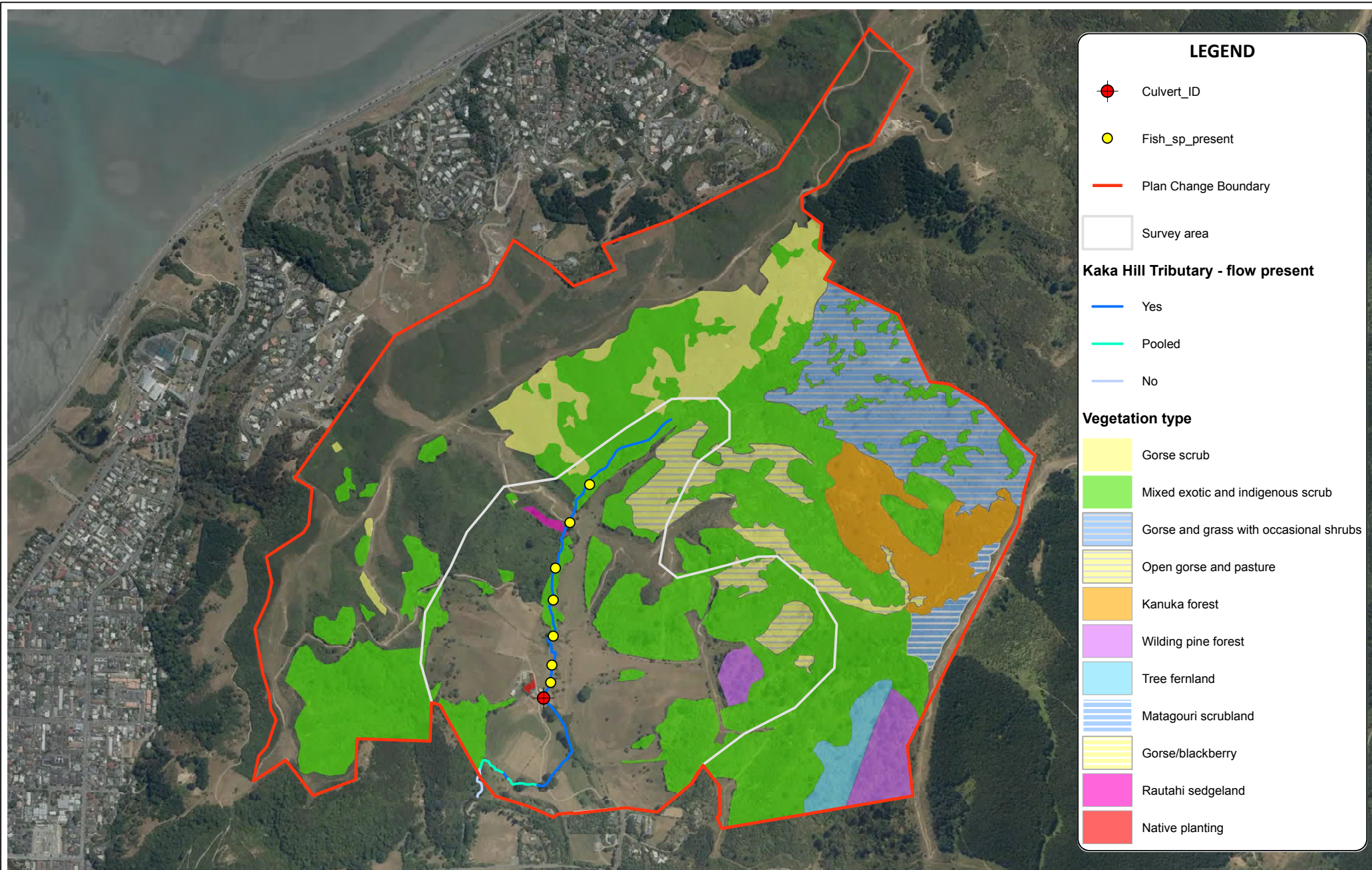
rough & milne landscape architects

Level 2, 69 Cambridge Terrace  
PO Box 3764, Christchurch 8140  
New Zealand

Tel +64 3 366 3268  
Fax +64 3 377 8287  
info@roughandmilne.co.nz

Attachment B1.1:  
Maitahi Bayview Structure Plan - Part of Schedule X  
Scale 1:10,000 @ A3

Path: T:\Nelson\Projects\1012397\Working\Material\Ecology\GIS\20210127\_KakaHill\_ecology\_PALEZ.mxd Date: 10/2/2021 Time: 2:46:45 PM



Notes: Aerial photograph sourced from LINZ under CC4.0.  
Property boundary indicative only and should not be used for legal purposes.  
Vegetation extent is approximate only

A3 SCALE 1:10,000  
0 0.1 0.2 0.3 0.4 0.5 (km)



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|                           |      |        |
|---------------------------|------|--------|
| DRAWN                     | PALE | Feb.21 |
| CHECKED                   |      |        |
| APPROVED                  |      |        |
| ARCFILE                   |      |        |
| 20210127_KakaHill_ecology |      |        |
| SCALE (AT A3 SIZE)        |      |        |
| 1:10,000                  |      |        |
| PROJECT No.               |      |        |
| 1012397.1000              |      |        |

CCKV Maitai Dev Co LP  
Maitai/ Bayview Subdivision, Maitai Valley, Nelson  
Site plan of ecological features

FIGURE No. Figure 1.

Rev. 0



## Appendix B: Site Photos

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### B1 Terrestrial



*Photograph Appendix B.1: Photograph facing east with pasture grassland in the foreground surrounded by gorse dominated scrub. Kānuka-gorse-barberry-hawthorn-māhoe scrubland can be seen going up the hillside in the background with a stand of radiata pines amongst the scrub.*



*Photograph Appendix B.2: Wet pasture in the foreground with a scattering of rushes. In the background, scrubland dominated on the western boundary of the property. Kānuka, māhoe and old man's beard are also common in the scrubland.*





*Photograph Appendix B.3: Wetland habitat dominated by rautahi, pureī, buttercup and exotic rushes in the north of the site.*



## B2 Freshwater



*Photograph Appendix B2.1: Dry sections of Kaka Hill Tributary located upstream of the Maitai Confluence.*





*Photograph Appendix B2.2: Pooled sections of the lower Kaka Hill tributary.*





*Photograph Appendix B2.3: Nuisance algal blooms (Phormidium) identified within open canopy mid – upper reaches of Kaka Hill tributary. Areas on large cobbles where bubbles are evident on show algae community presence.*



*Photograph Appendix B2.4: Upper reaches of Kaka Hill tributary.*





*Photograph Appendix B2.5: Short fin eel (Anguilla australis) captured within the upper reaches of Kaka Hill tributary.*



*Photograph Appendix B2.6: Unidentified galaxiid captured within the upper reaches of Kaka Hill tributary.*

## Appendix C: Native and Exotic Vegetation Identified Within the Site

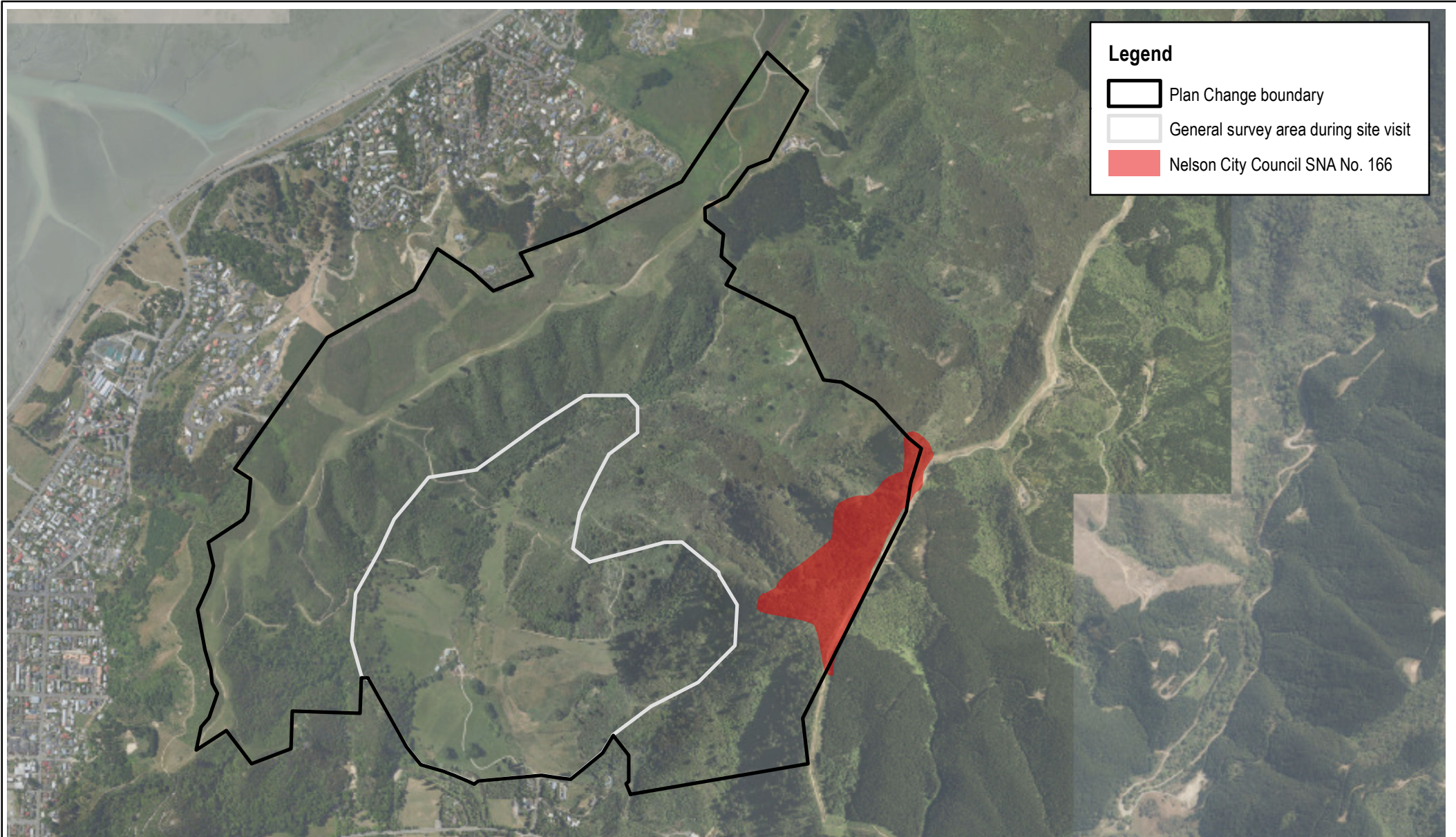
| Native vegetation  |                        | Exotic vegetation                         |                     |
|--|------------------------|---|---------------------|
| Species name   | Common name            | Species name                              | Common name         |
| <i>Dodonaea viscosa</i>                                    | Akeake                 | <i>Berberis glaucocarpa</i>               | Barberry            |
| <i>Calystegia</i> sp.                                      | Bindweed               | <i>Rubus fruticosus</i> agg.              | Blackberry          |
| <i>Pteris esculentum</i>                                   | Bracken                | <i>Cytisus scoparius</i>                  | Broom               |
| <i>Kunzea ericoides</i>                                    | Kānuka                 | <i>Ranunculus repens</i>                  | Buttercup           |
| <i>Corynocarpus laevigatus</i>                             | Karaka                 | <i>Cirsium arvense</i>                    | Californian thistle |
| <i>Pittosporum crassifolium</i>                            | Karo                   | <i>Prunus</i> sp.                         | Cherry tree         |
| <i>Pittosporum tenuifolium</i>                             | Kōhuhu                 | <i>Ligustrum sinense</i>                  | Chinese privet      |
| <i>Sophora fulvida</i>                                     | Kōwhai                 | <i>Galium aparine</i>                     | Cleavers            |
| <i>Sophora microphylla</i>                                 | Kōwhai                 | <i>Asparagus scandens</i>                 | Climbing asparagus  |
| <i>Sophora tetraphylla</i>                                 | Large-leaved kōwhai    | <i>Salix fragilis</i>                     | Crack willow        |
| <i>Pittosporum eugenioides</i>                             | Lemonwood              | <i>Digitalis purpurea</i>                 | Foxglove            |
| <i>Melicytus ramiflorus</i>                                | Māhoe                  | <i>Ulex europaeus</i>                     | Gorse               |
| <i>Cyathea medullaris</i>                                  | Mamaku                 | <i>Crataegus monogyna</i>                 | Hawthorn            |
| <i>Coprosma linariifolia</i>                               | Mikimiki               | <i>Ilex aquifolium</i>                    | Holly               |
| <i>Fuscospora cliffortioides</i>                           | Mountain beech         | <i>Populus nigra</i>                      | Lombardy poplar     |
| <i>Schefflera digitata</i>                                 | Patē                   | <i>Lotus pedunculatus</i>                 | Lotus               |
| <i>Muehlenbeckia australis</i>                             | Pohuehue               | <i>Populus nigra</i>                      | Necklace poplar     |
| <i>Cyathea dealbata</i>                                    | Ponga                  | <i>Clematis vitalba</i>                   | Old man's beard     |
| <i>Carex virgata</i>                                       | Purei                  | <i>Pinus radiata</i>                      | Radiata pine        |
| <i>Carex geminata</i>                                      | Rautahi                | <i>Juncus effusus</i> var. <i>effusus</i> | Soft rush           |
| <i>Plagianthus regius</i>                                  | Ribbonwood             | <i>Acer pseudoplatanus</i>                | Sycamore            |
| <i>Pellaea rotundifolia</i>                                | Round-leaved fern      | <i>Juglans regia</i>                      | Walnut              |
| <i>Polystichum neozelandicum</i> subsp. <i>zerophyllum</i> | Shield fern            | <i>Salix babylonica</i>                   | Weeping willow      |
| <i>Codyline australis</i>                                  | Ti kōuka, cabbage tree | <i>Daucos carota</i>                      | Wild carrot         |

## **Appendix D: Nelson City Council SNA 166**

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- **Figure D1.1**

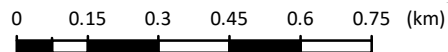




**Notes:**

Aerial photography sourced from LINZ under CC4.0  
Property boundary indicative only and should not be  
used for legal purposes.

A4 SCALE 1:16,000



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|                                       |      |        |
|---------------------------------------|------|--------|
| DRAWN                                 | ADPU | Aug.20 |
| CHECKED                               |      |        |
| APPROVED                              |      |        |
| ARCFIELD<br>KakaHill_ecology_ADPU.mxd |      |        |
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| PROJECT No.<br>1012397.1000           |      |        |

**CCKV Maitai Dev Co LP**  
Kaka Subdivision, Maitai Valley, Nelson  
Nelson City Council SNA No. 166

FIGURE No.  
**Appendix D - Figure D1.1**

Rev.

## Appendix E: Overview of Ecological Constraints and Opportunities

### E1 Terrestrial

| Item | Description   | Constraints/<br>Opportunity                | Consequence  |
|------|---|--|--|
| 1    | Clearance of mixed indigenous/exotic scrub  | C<br><br>O                                 | <p>Loss of indigenous plants such as kānuka, mahoe, lancewood, shield fern, rautahi and purei. Will require some level of mitigation planting to balance out the loss.</p> <p>Mitigation planting can provide potential ecological enhancement and connectivity</p>  |
| 2    | Loss of wetland habitat   | C<br><br>O                                 | <p>Loss of ecosystem services provided by wetlands such as water filtration, water storage, flood protection and habitat provision. the enhancement of existing wetland habitat or creation of new wetland habitat will be required.</p> <p>Wetland habitat identified within the property have been zoned as 'Open Space'</p>   |
| 3    | Loss of habitat for indigenous fauna:<br>1. Birds<br>2. Lizards<br>3. Bats<br>4. Snails | C<br><br><br><br><br><br><br><br><br><br>O | <p>1 10 indigenous bird species were observed onsite and a further 12 species which may use the habitats onsite have been recorded nearby. Works across the subdivision will impact how these species use the area.</p> <p>2 Kānuka is a key habitat of indigenous geckos, and skinks may live amongst the leaf litter and debris of the scrub proposed for clearance.</p> <p>3 Indigenous bats may use the larger trees on the property for daytime roosting and/or feed over the wetlands and streams on the property.</p> <p>4 <i>Powelliphanta</i> snails may inhabit the scrub proposed for clearance.</p> <p>If any of these are present, especially if any 'Threatened' or 'At Risk' species are found, some of these risks will require considerable effort to mitigate and offset the loss of indigenous habitat. For example, if a threatened gecko is found on site this will change the outcomes of how the loss in vegetation is approached.</p> <p>It may not be just a case of recommending the enhancement of remaining habitat and replacement of lost habitat will be required to mitigate and offset the loss of habitat for indigenous fauna.</p> <p>Integrating the four outcomes above into specific management plans so that any effects on species are avoided and or minimised.</p> |

| Item | Description  | Constraints/<br>Opportunity | Consequence   |
|------|--|-----------------------------|---|
| 4    | Injury or mortality of indigenous fauna  | C                           | <p>Potential mortality of indigenous birds, lizards, bats and <i>Powelliphanta</i> snails.</p> <p>Earthworks and construction works will need to be planned and undertaken to avoid and minimise the impact on indigenous fauna and activities to offset any unavoidable impacts will need to be carried out. These will need to be outlined in relevant management plan(s).</p> <p>Consultation with DOC may be required before any work can be carried out. A note of caution would be appropriate now to highlight that in some cases significant effort will be needed to achieve agreement with DOC; this might be survey effort, or mitigation effort, or both.</p> |
| 5    | Habitat enhancement<br>1. Pest plant control<br>2. Indigenous planting<br>3. Pest animal control<br>4. Stock exclusion | O                           | <p>1. Reduction of pest plants such as gorse, hawthorn, barberry, blackberry, crack willow, broom, thistle, bindweed, sycamore.</p> <p>2. Increase in the ecological quality of vegetation across the property.</p> <p>3 &amp; 4. Increase in the quality of the habitat on the property for indigenous fauna.</p> <p>This will assist with offsetting the loss of indigenous plants, the loss of habitat for indigenous fauna and any injury or mortality of indigenous fauna.</p>   |
| 6    | Protecting enhancement area through a covenant   | O                           | <p>Ensures the on-going management (pest plant and animal control, indigenous regeneration, stock exclusion) of natural habitats within the subdivision.</p> <p>As above, this will assist with offsetting the loss of indigenous vegetation, the loss or habitat for indigenous fauna and any injury or death of indigenous fauna.</p>   |

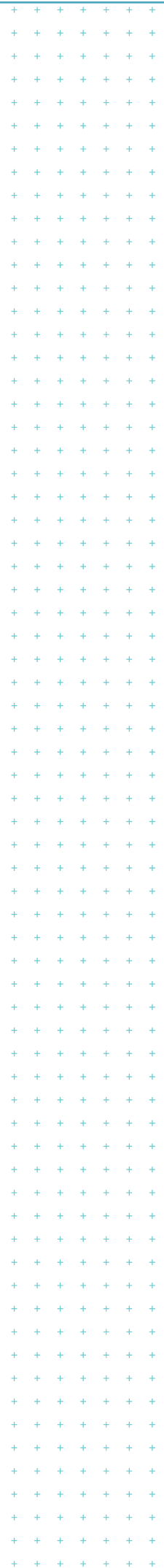
## E2 Freshwater

| Item | Description   | Constraint/<br>Opportunity | Consequence   |
|------|---|----------------------------|---|
| 1    | Change in flow regime, channel realignment of lower reaches of Kaka Hill tributary, loss of aquatic habitat | <p>C</p> <p>O</p>          | <p>Increase in habitat to non-native predatory fish species (trout), loss of refugia for fish species when Maitai River is in high flow. Loss of wetted habitable area, stream characteristics &amp; change in natural character.</p> <p>Specific design considerations to provide adequate habitat to native species identified within Kaka Hill tributary. Continue to exclude non-native predatory fish from the catchment (built barrier).</p> <p>Maintain high flow connection to Maitai to provide refugia during flooding flows.</p> <p>Increase in aquatic habitat value, ecosystem function and natural character.</p> |

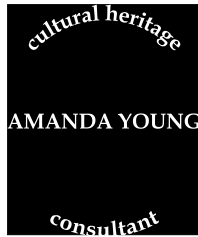


| Item | Description  | Constraint/<br>Opportunity                 | Consequence   |
|------|--|--|---|
| 2    | Change in flow regime to upper catchment   | C  | Loss in wetted habitat, change in species distribution and assemblage.<br>Development of stormwater retention dam may restrict fish passage, change water habitat types, loss of water connection to downstream habitats. Removal of vegetation during construction, and other impacts associated with works.   |
| 3    | Fish passage barriers/culverts   | C<br><br><br><br><br><br><br><br><br><br>O | Removal of fish barriers may allow non-native predatory fish to move into the upper catchment. Could lead to predation impacts on current low numbers of native fish populations.<br>Incorrectly designed, installed and maintained culverts may restrict movement of all aquatic species currently known to inhabit the Kaka Hill tributary.<br>May divert water away from downstream environments.<br><br>Potential to look into novel fish passage techniques which will allow native species (i.e. climbers) to continue to move into catchment, whilst restricting non-native predatory fish (e.g. trout).<br>Allow greater access at all road crossings for indigenous fish species known to inhabit the catchment.<br>Correctly designed, installed, and maintain culverts within the property |
| 4    | Fish species at risk of habitat destruction, altered predation, deaths or increased probability of harm during construction. | C<br><br><br><br><br><br><br>O             | Direct mortality during construction. Habitat destruction – reduce population size and connectivity of habitat.<br><br><br>Develop an indigenous fish management plan to avoid and/or minimise any construction effects on freshwater fauna   |
| 5    | Increase in the proliferation of periphyton species  | C  | Designing and creating stream channels that have permanent water flow/level, minimal shading is likely to see an increase in nuisance periphyton species that are present within the catchment particularly in the downstream reaches.  |
| 6    | Habitat enhancement - aquatic  | O  | Riparian fencing, restoration planting, monitoring of aquatic habitat and fauna condition.<br>Rehabilitating natural swale and marshy floodplain areas with native wetland flora species.<br>Habitat enhancement for aquatic species in downstream 'flood plain' area and newly developed lower Kaka Hill Tributary channel.  |
| 7    | Indigenous fish management plan  | O  | Monitoring programmes, relocations and pest control.  |
| 8    | Establishing a covenant or protecting the upper Kaka Hill Tributary in perpetuity  | O  | A management area that ensures the exclusion of all stock; trapping and removal of pest animals; natural regeneration of indigenous species; restoration planting; weed control; monitoring of threatened aquatic species; and monitoring of biodiversity condition.  |





**Attachment B:**  
**PPC28 Historical & Archaeological Assessment**  
**(Amanda Young 2020)**



**Private Plan Change Request**  
**Historical & Archaeological Assessment**  
**for**  
**CCKV Maitai Dev Co LP and Bayview Nelson Limited**  
17 December 2020



Amanda Young MA(Hons)  
308 Wakapuaka Rd, RD1, Nelson 7071  
03 545 2338 / 021 758 964  
[amandayoungarchie@gmail.com](mailto:amandayoungarchie@gmail.com)

## 1.0 Introduction

An assessment of historical and archaeological values has been commissioned of two adjacent blocks of land in Nelson as part of a Private Plan Change Request (PPCR). The information requirements of PPCRs are contained in Clause 22 of the First Schedule to the RMA. Clause 22 refers to clauses 6 and 7 to the Fourth Schedule to the RMA. Clause 7(d) of the Fourth Schedule (RM Act 1991) requires that applicants assess any effect on historical values.

The Bayview Block of 250 ha includes the ridgeline between Atawhai and the Maitai Valley, part of the slopes either side and the western slopes of Kaka Hill (Sections 26, 27 & Pt Sec 29 SO1179; Sections 59 & 60, Pt Sections 58, 62, 63, 64 Suburban North SO944; Lot 2 DP340064). The smaller Maitahi Block (66 ha) consists of gentler southern slopes down to the Mahitahi / Maitai River flats, and part of the Kaka Hill slopes (Pt Sec 8 SO146; Pt Sec 11 Brook Street and Maitai District).

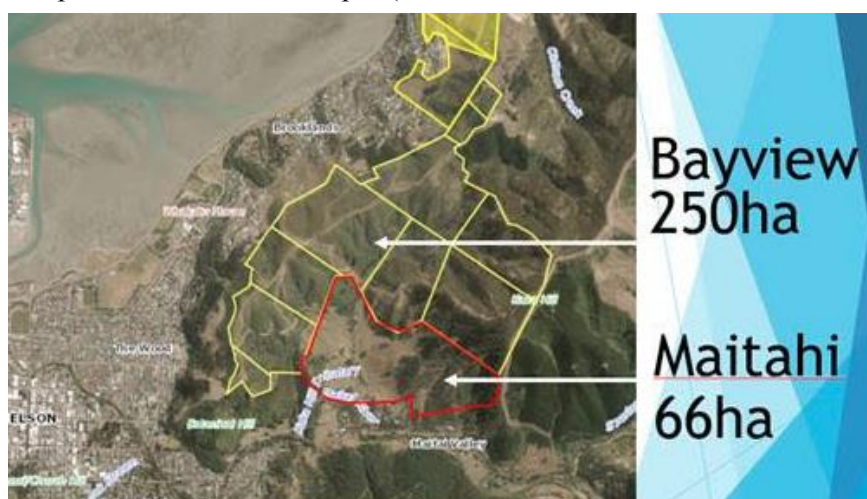


Figure 1: Location of the subject properties.

The report deals only with historical and archaeological values. It does not consider places or issues of significance to Māori besides these. Cultural issues are the province of Māori. A Cultural Impact Assessment of the properties is also being prepared.

## 2.0 Statutory Requirements

Seven iwi have statutory acknowledgement areas over Mahitahi / Maitai and its tributaries - Ngāti Kōata, Ngāti Kuia, Ngāti Rārua, Ngāti Tama ki Te Tau Ihu, Ngāti Toa Rangātira, Rangitane o Wairau and Te Ātiawa o Te Waka-a-Māui<sup>1</sup>.

There are no recorded archaeological sites on the properties, nor any buildings listed on the New Zealand Heritage List created under the *Heritage New Zealand Pouhere Taonga Act 2014*. A site of cultural significance, Kaka Hill lookout and waahi tapu (MS57), is recorded in Appendix 3 of the Nelson Resource Management Plan (NRMP) as being on the Bayview Block. MS58 Pa (Maitai

<sup>1</sup> <http://nelson.govt.nz/assets/Environment/Downloads/TeTauIhu-StatutoryAcknowledgements.pdf>

Recreation Reserve) is outside the subject area, on the other side of the Mahitahi / Maitai River.

There are three main pieces of legislation in New Zealand that control work affecting archaeological sites. These are the *Heritage New Zealand Pouhere Taonga Act 2014* (HNZPTA), the *Resource Management Act 1991* (RMA) and the *Protected Objects Act 1975* (POA).

Heritage New Zealand administers the HNZPTA. It contains a consent (authority) process for any work affecting archaeological sites, where an archaeological site is defined as:

Any place in New Zealand, including any building or structure (or part of a building or structure), that -

- a. Was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and
- b. Provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and
- c. Includes a site for which a declaration is made under section 43(1)

Any person who intends carrying out work that may modify or destroy an archaeological site, must first obtain an authority from Heritage New Zealand. The process applies to sites on land of all tenure including public, private and designated land. The HNZPTA contains penalties for unauthorised site damage or destruction.

The archaeological authority process applies to all archaeological sites, regardless of whether:

- The site is recorded in the NZ Archaeological Association Site Recording Scheme or included in the Heritage New Zealand List,
- The site only becomes known about as a result of ground disturbance, and/ or
- The activity is permitted under a district or regional plan, or a resource or building consent has been granted

Heritage New Zealand also maintains the New Zealand Heritage List/ Rarangi Korero of Historic Places, Historic Areas, Wahi Tupuna, Wahi Tapu and Wahi Tapu Areas. The List can include archaeological sites. Its purpose is to inform members of the public about such places.

The RMA requires City, District and Regional Councils to manage the use, development, and protection of natural and physical resources in a way that provides for the wellbeing of today's communities while safeguarding the options of future generations. The protection of historic heritage from inappropriate subdivision, use, and development is identified as a matter of national importance (section 6f).

Historic heritage is defined as those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, derived from archaeological, architectural, cultural, historic, scientific, or technological qualities.

Historic heritage includes:

- Historic sites, structures, places, and areas
- Archaeological sites;
- Sites of significance to Māori, including wahi tapu;
- Surroundings associated with the natural and physical resources (RMA section 2).

These categories are not mutually exclusive and some archaeological sites may include above ground structures or may also be places that are of significance to Māori.

Where resource consent is required for any activity the assessment of effects is required to address cultural and historic heritage matters (RMA 4th Schedule and the district plan assessment criteria).

The Ministry for Culture and Heritage ("the Ministry") administers the POA 1975 which regulates the sale, trade and ownership of taonga tūturu. If a taonga tūturu is found during the course of an archaeological authority, the Ministry or the nearest public museum must be notified of the find within 28 days of the completion of the field work.

Taonga tūturu is defined in the POA as an object that:

- a. relates to Māori culture, history or society; and
- b. was, or appears to have been:
  - i) manufactured or modified in New Zealand by Māori;
  - ii) brought into New Zealand by Māori; or
  - iii) used by Māori; and
- c. is more than 50 years old.

The term taonga tūturu includes all finished items made by Māori and those items used by Māori but it does not include waste and by-products of manufacturing such as flakes, shells, oven stones and other 'scientific material' unless there is evidence that the object had a secondary use.

### **3.0 Environment Background**

The two properties lie between the Atawhai area of Brooklands and the Maitai Valley. They are presently undeveloped with part in regenerating bush and scrub and the remainder in pasture grazed by cattle and goats. There is a farm house and various farm buildings and structures on the Maitahi Block. Farm tracks are throughout both properties.

The main landforms are Kaka Hill (459 m), with the high point on the eastern boundary of the Bayview Block, and the Atawhai Ridgeline. The Bayview Block has steep to moderate slopes. Maitahi Block is steep to gentle slopes plus flat land adjacent to the Mahitahi / Maitai River. Kaka Stream runs through both blocks out to Mahitahi / Maitai River. This has been re-aligned. Old plans and photographs show that it once ran against the base of the Branford Park hill and into Dennes Hole. It is likely to be the small stream said in 1914 to dry up in the summer<sup>2</sup>.

The underlying geology is complex but predominantly Brook Street Volcanics and Maitai Group sandstone, siltstone and limestone, and more recent alluvial along the river.

The original vegetation would have been mostly podocarps and broad-leaved trees of the Lowland Hill Country with more coastal adapted species on the seaward facing slopes<sup>3</sup>. The areas adjacent to the river would have been a mixture of swamp / wetland species with trees and shrubs that could survive inundation.

### **4.0 Historical and Archaeological Background.**

Emphasis is placed on the pre-1900 history of the area as that is most relevant to the definition of archaeological sites<sup>4</sup>. The Māori history of the area is more appropriately dealt with in the Cultural Impact Assessment; however, an outline is provided for context.

The Mahitahi / Maitai River was an important place for pre-European and historic period Māori (and is still highly valued). The catchment was a rich food and resource gathering area with forest, river and wetland resources such as inanga (whitebait), harakeke (flax) and tuna (eels). Small clearings would have been created in the dense forest for cultivation. Kāinga to access these resources would have been occupied on a seasonal or temporary basis.

The Maitai Valley was used as an ara (route) from Whakatu up to Maungatapu and the Bryant Range, then onto the Sounds, Marlborough and the Wairau Valley. It was a particularly important route to

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<sup>2</sup> Venner 2001:72.

<sup>3</sup> <http://www.nelson.govt.nz/assets/Environment/Downloads/living-heritage-nelson-native-plants.pdf>

<sup>4</sup> As defined by *Heritage New Zealand Pouhere Taonga Act 2014*.



access the pākohe (argillite) and serpentine resources of the Nelson Mineral Belt. The main track went from Nelson up the Maitai / Mahitahi to the confluence with Sharlands Creek. It then followed a spur onto a ridge before dropping down to the Maitai at Wilson's Flat before following the valley again till the Forks<sup>5</sup>. From the Forks the track continued up and over the Maungatapu to Te Hoiere / Pelorus, running south of the present Maungatapu Track. A side track went from the Mahitahi / Maitai River, up Mill Creek near the Maitai Dam, into the Teal Valley then across to Wakapuaka<sup>6</sup>. A sub-branch of this route headed up Waitarake Stream (Sharlands and Packers Creeks) before joining the Wakapuaka track in the Lud and Teal Valleys. None of these ara go through the subject area.

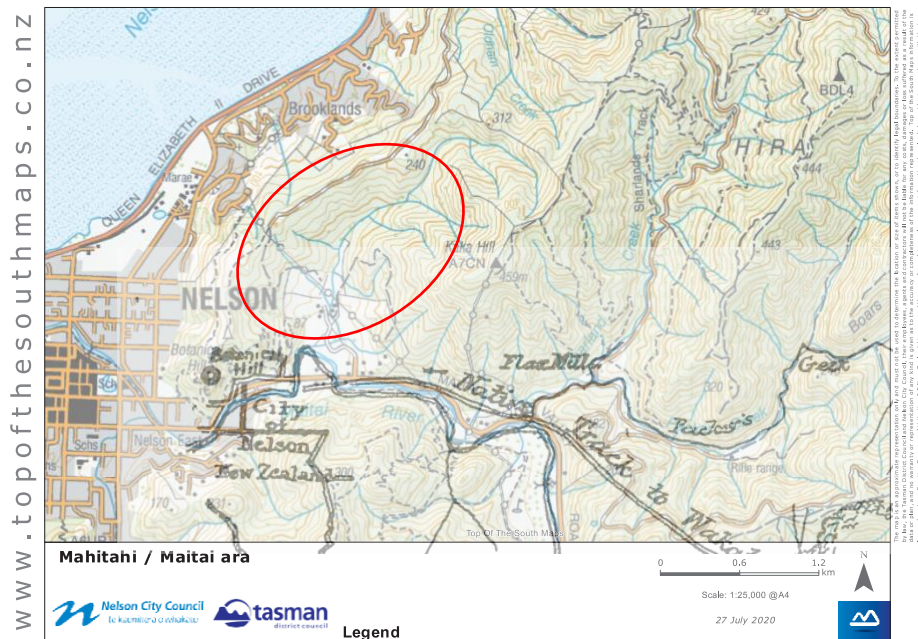


Figure 2: The Mahitahi /Maitai ara as detailed by Skinner 1910 overlaid onto a modern topographical map. The subject area is roughly indicated.

MS57 Lookout and waahi tapu (Kaka Hill) and the nearby MS58 Pa (Maitai Recreation Reserve) illustrate Māori use of the area as well as being significant places. The two sites were recorded in 1993 - 1994 by Lawrence as part of a Nelson City Council commissioned study for the NRMP. The description for MS57 Kaka Hill is “TuMatakokiri used this hill as a lookout for raiding war parties. Site of Ngati Kuia burial grounds.”<sup>7</sup> That for MS58 Pa is “Site of Ngati Kuia Pa. From here they gathered food such as Eels, birds, and Forest Fruits. Whiro O Wira of Ngati Kuia resided here. Buried on Kaka Hill.”<sup>8</sup> No further information has been found on these sites. No published information has been found regarding any other places of occupation in this part of the Mahitahi / Maitai catchment<sup>9</sup>. There are known kāinga further upstream, for example, at the Mill Stream confluence with the North Branch of the Mahitahi / Maitai.

<sup>5</sup> Skinner 1910: 329.

<sup>6</sup> Skinner 1910: 329.

<sup>7</sup> Lawrence 1994.

<sup>8</sup> Lawrence 1994.

<sup>9</sup> For example, in Mitchell and Mitchell 2004 and 2007, and Jackson 2014.

The early European settlers also used the Mahitahi / Maitai to access the Mineral Belt and as a route through to Marlborough. The settlers initially followed the Māori track along the Maitai Valley. They later developed a road along the valley floor next to the river and a track over the Maungatapu to the north of the Māori ara. The present road in the lower Maitai Valley essentially follows the route of the old road.

The subject land was part of the New Zealand Company Maitai Suburban District (Suburban East) and included part of Sections 11, 12 and 13. Crown grants for the Maitai Valley were issued from the 1860s but there were European settlers living there from 1842 when the sections were selected<sup>10</sup>. By the end of 1842 Sections 11 and 12 had been cleared and were in crop<sup>11</sup>.



Figure 3: The subject blocks include part of section 11, 12 and 13.

General plan of the districts containing accommodation sections of fifty acres, annexed to the settlement of Nelson. Publisher Smith, Elder & Co., London 1842. Accessed from <https://natlib.govt.nz/records/38195087>.

**TERMS for LEASE or PURCHASE**  
of that admirable Section of SUBURBAN LAND,  
No. 12, in the Maitai Valley, which will be divided into any  
sized patches that may suit parties:—Rent-free for the first  
year, 30s. an acre per annum for the following six years, and  
40s. an acre after that time, with the right of purchase at any  
time during seven years for £20 per acre.  
This land was selected as the second choice of the whole  
of the Suburban Sections, closely adjoins the town, possesses  
a fine deep soil, streams of spring water in every part, and  
wood for fuel and fencing at the upper and lower sides. Ar-  
rangements have also been made with a sawyer to cut timber  
on the section at the town price.  
Apply to W. Bishop, Druggist, near the bridge.

Figure 4: Early advertisement for Section 12 (Nelson Examiner and New Zealand Chronicle 8 October 1842).

The subject properties soon became part of the Richardson's Maitai Run. The Richardson family started to acquire land in the Maitai Valley from 1842 (as well as various other properties in town). The family

<sup>10</sup> Venner 2001.

<sup>11</sup> Allan 1965:205; Nelson Examiner and New Zealand Chronicle 8 October 1842.

eventually owned vast tracts of land – 1288 hectares in the Maitai Valley by 1885 and 2630 hectares in the twentieth century<sup>12</sup>. The bush began to be removed from the hills from the 1840s. The Maitai Run was cleared and grazed by sheep, dairy cows, horses and later goats to keep down the scrub as well as being used for crops including hops. Part of the subject area was known as the Dairy Block<sup>13</sup>. Dennes swimming hole was the site of a water pump to irrigate the land<sup>14</sup>. At various stages, particularly in the early decades and after Ralph Richardson died in 1889 and Effie his widow and their two daughters moved to England for 18 years, the land was leased out<sup>15</sup>. The lessees included James Winter who had a house, sawmill, orchard and garden near Dennes Hole (then known as Winters Hole) from 1856<sup>16</sup>. James Burford had hop gardens somewhere in the vicinity about 1897<sup>17</sup>. The Richardson property was the site of a number of recreational events throughout the nineteenth century such as Sunday school picnics, The Caledonian Society of the Province of Nelson games and use of the swimming holes. There was a shooting ground and rifle range (behind Black Hole).



Figure 5: Looking over Nile Street East to Kaka Hill. The slopes are cleared of large trees.

View from Patterson's, January 1892. Nelson Provincial Museum, Sclanders Collection, Photo collection reference number 8724.



Figure 6: Wakapuaka District. Publisher [Wellington, N.Z.] : Lands & Survey Dept., 1896.

<https://natlib.govt.nz/records/21704123>

<sup>12</sup> Richardson 1995.

<sup>13</sup> Venner 2001:16; 68.

<sup>14</sup> <http://www.nelson.govt.nz/assets/Leisure/Downloads/walks/edible-walks/Branford-Park-Edible-Walk-1.pdf>

<sup>15</sup> <https://teara.govt.nz/en/biographies/3r15/richardson-effie-newbigging>; The Colonist, 21 February 1885.

<sup>16</sup> Venner 2001: 38.

<sup>17</sup> Venner 2001: 38.



When the family returned to Nelson in 1908, first Mrs Richardson then her daughter Ralphine took over the running of the Maitai Run (Mrs Richardson died in 1928). Gradually as leases came up they were not renewed, the women took over the management of the farms and more land was purchased. The subject of Mrs Richardson's dispute over public access to Maitai Run and Dennes Hole, a large part of the myth around the family, and subsequent purchase of land by Nelson City Council, has been well documented and is not pertinent for this assessment.



**MAITAI VALLEY,**  
NELSON.  
**TO BE LET ON LEASE,**  
FOR A TERM OF YEARS,  
THAT VALUABLE ESTATE KNOWN  
AS  
**RICHARDSON'S MAITAI RUN.**

This fine property extends from the City Boundary about 4 miles on both sides of the River Maitai, and contains some 3600 ACRES of Land, comprising good hills, fertile flats, and lateral valleys, some under cultivation, and the remainder well grassed. Part of the land is well adapted for hop growing and fruit culture.

The Homestead, outbuildings, yards, fences, etc., are in good order, and the whole forms a complete and excellent Sheep Run.

The Maitai River is well known as one of the best Front Streams in the Colony and the neighbouring hills are a favorite resort of Red Deer; whilst its close proximity to the Port of Nelson gives the property a unique value.

Immediate possession can be given.  
For terms and further particulars apply to

**FELL & ATKINSON,**  
Solicitors, Nelson.

Figure 7: Looking up Maitai Valley to Kaka from Cleveland Hill above Hunter-Brown's. 1902-1908. Kerr Collection, Nelson Provincial Museum 317288.

Figure 8: Advertisement in the Nelson Evening Mail, 22 April 1902.



Figure 9: Looking across the river to the subject properties. A building (Edendale?) is ringed. Sunday Hole, Maitai River, Nelson (cropped). Nelson Provincial Museum, F N Jones Collection: 311114

The main Richardson house in the Maitai Valley was known as Edendale (there were a number of other houses and buildings on various parts of the run). This was on the Maitahi property. Initially the family lived at Richardson Street and Edendale was rented out. Around 1914, when the lease came up, Mrs Richardson and her daughters were able move out to the Maitai Valley to be closer to the farm (although still moving between their two houses). Lesley Richardson, the wife of Dennis, Miss Richardson's adopted son, wrote that "Their first Maitai home, a cob cottage named Edendale because

of one lessee, Samuel Eden, was believed to have been built in 1842 and was originally thatched. It was added to and became a substantial dwelling, standing on a terrace overlooking the Maitai River flats. Below Edendale was an old hop-kiln which serviced the adjacent hop-garden and, with additions, it was to form the shearing shed.”<sup>18</sup> Samuel Eden rented at least the Dairy Block in the early years of the twentieth century<sup>19</sup>. The cottage was expanded from the original cob with timber and a brick chimney to become a substantial dwelling around 1914 when the Richardsons took possession. Again from Richardson:- “In the early 1940s a portion of Edendale was moved to the Maitai roadside and added to, to become the main residence....”<sup>20</sup> This homestead is the white house on the other side of the river from the Maitahi block. When this occurred, Edendale became the farm managers residence<sup>21</sup>. When Dennis Richardson became the farm manager he lived in the main house with Edendale empty except at shearing and dipping time. Richard Richardson, Dennis’s brother, remembers that during this period the cob portion of the house consisted of two rooms, a kitchen and a smaller room they used as a store room<sup>22</sup>. There was also a very steep staircase up to a small bedroom upstairs which was likely to have been added after the first cob construction and before 1914. In 1962 Edendale was lovingly restored by Dennis and Lesley to live in after they were married<sup>23</sup>. Miss Richardson finally sold the Maitai Run in 1969 shortly before her death at her house in the Maitai.



Figure 10. The subject area in 1969. “Maitai Run Changes Hands”. Nelson Photo News, 8 March 1969.



Figure 11: The shearing shed in 1969 looking across to the hills on the other side of the Mahitahi / Maitai River. “Maitai Run Changes Hands”. Nelson Photo News, 8 March 1969.

<sup>18</sup> Richardson 1995.

<sup>19</sup> Venner 2001:72.

<sup>20</sup> Richardson 1995.

<sup>21</sup> Richard Richardson e-mail to A.Young 11 December 2020; Rebecca Richardson .

<sup>22</sup> Richard Richardson e-mail to A.Young 11 December 2020.

<sup>23</sup> Rebecca Richardson phone call with A.Young 23 May 2020.

## 5.0 Archaeological & Historical Context

No previous archaeological work has been carried out on the property, and it is only briefly mentioned in local histories such as Venner 2001. A brief archaeological assessment was made of the adjacent Bayview Ltd Special Housing Area in 2019<sup>24</sup>. The neighbouring forestry blocks were also the subject of a paper based assessment for Tasman Bay Forestry Company in 2013<sup>25</sup>.

Archaeological work in the Maitai Valley has generally concentrated on sites relating to the exploitation of the Nelson Mineral Belt. In the 1960s and 1970s members of the Nelson Archaeological group (particularly the Walls family) carried out intensive surveying and recording of pre-European pākohe exploitation sites within the Mineral Belt and in associated areas such as the Maitai Valley. Survey and investigative work by Dan and Alison Witter occurred in the 1980s as a consequence of the Maitai Dam construction. Mike Johnston, geologist and historian, has carried out research and fieldwork on sites associated with the exploitation of copper and chromite from the Mineral Belt including the Dun Mountain Railway. Some survey, assessment and monitoring has occurred in the last twenty years or so by myself for Nelson City Council, various forestry companies and the Brook Sanctuary. This has been particularly along the route of the Dun Mountain Railway but also down the Maitai Valley and surrounding area.

Known sites are generally located within the Mineral Belt at the head of the Maitai Valley; along established tracks or routes (both Māori and settler); and close to the Mahitahi / Maitai where pākohe was able to be exploited from river boulders that had rolled down from the Mineral Belt. Other known sites are within the Maitai Valley where settlers had farms and houses, for example, the Smiths Graves further up the valley from the subject properties and the flax mill at Sharlands Valley.

## 6.0 Site Visits

The Bayview Block has been informally visited by me innumerable times since 2000. This has been walking or biking along the ridge line but also using farm tracks traversing the slopes.

An initial orientation visit for the purposes of this assessment was made to the properties on 14 May 2020, and three subsequent, short visits were made the following week, two with Aneika Young who is writing the Cultural Impact Assessment. During the visits the recorded location of MS57 was visited, present and past routes of Kaka Stream examined, the bank section of Mahitahi / Maitai River in front of the Maitahi Block viewed and farm structures visited. The ridgeline and farm tracks were driven along and walked at various points. Kaka Hill itself and the western slopes were not visited.

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<sup>24</sup> Young 2019.

<sup>25</sup> Young 2013.

Murray and Shelley Carter, the current farm managers, were briefly talked to on-site and their invitation to view the inside of the Shearing Shed taken up. Due to health issues, the Carters, who have extensive knowledge of the land, were not able to be properly interviewed at that time. Dennis Richardson is unfortunately not able to be interviewed due to poor health. His daughter Rebecca has been talked to over the telephone and via e-mail. Miss Richardson's other son Richard has answered questions via e-mail and provided clear recollections of the cottage and shearing shed. The Carters recommended contacting Murray and Helen Bennett who have lived in the Richardson house on the opposite side of the river since 1969. This was done but Mr Bennett had no pertinent information about the subject land.

The ridgeline between the Bayview Road extension and the Centre of New Zealand, and adjacent slopes, have been recently cleared of scrub and mulched providing clear visibility. The existing farm tracks have been re-worked. The slopes of Kaka are still in regenerating native and scrub.



Figure 12: The north slopes of the Bayview Block above Atawhai.



Figure 13: The ridgeline looking towards Nelson.





Figure 14: The Maitai Valley side of the properties with the Maitahi Block farm buildings on the right and Kaka Hill the prominent peak above.

No archaeological evidence was found along the ridgeline, the most likely place for Māori look outs, pa, terraces or kumara pits. MS57 is recorded on the ridgeline although the description is given as Kaka Hill (about 1.1 km away). The original NZMS 260 map co-ordinate of E[25]364[00] N[59]942[00] was converted to a NZTM co-ordinate using the LINZ converter<sup>26</sup>. This gives a co-ordinate of E1626404.4 N5432495.8. That point and the surrounding area was examined. The location is in a slight saddle, to the west of a knoll. No surface archaeological evidence was found anywhere in the vicinity. On the side of the knoll was a small, sloping hollow facing roughly north west (about 5 m wide by 2.5 m deep). This looked promising (although sloping and lumpy); however, examination of aerial photographs indicated that it is most likely a recent formation and unrelated to Māori occupation. The high point of Kaka Hill, an alternative location for the site, has a shared boundary with the neighbouring Sharland Forest, part of the Hira Forest owned by Ngāti Koata. It was not visited during this assessment. Aerial photographs show that the hill top has been modified by forestry tracks.

<sup>26</sup> <https://www.geodesy.linz.govt.nz/concord>





Figure 15: Recorded location of MS57 (circled). The arrow points to approx. location of natural terrace. Drone footage supplied by Landmark Lile.



Figure 16: The terrace thought to be natural rather than Māori-made.

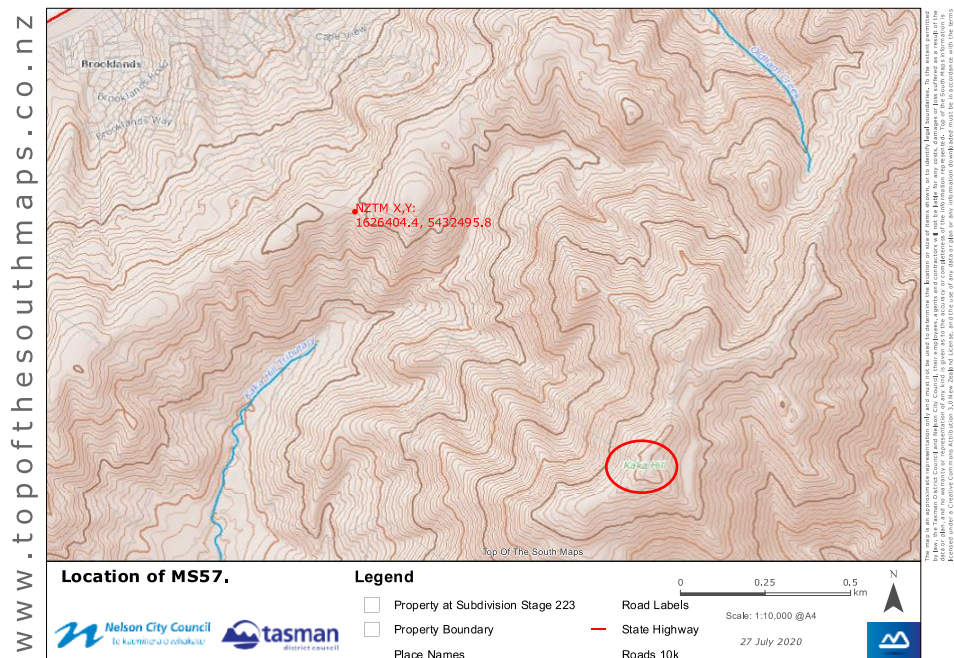


Figure 17: The recorded location for MS57 (as stated on Appendix 3 of the NRMP and in Lawrence 1994) in relation to Kaka Hill.

Kaka Stream flows down the western slopes of Kaka Hill and out to the Mahitahi / Maitai. Comparison of old maps and the evidence on the ground show that the lower reaches of the stream has been channelled away from the western side of the river flats to the eastern side. The river flats have been drained by various ditches and would have once had more extensive wetlands. The old and new stream courses were walked along and banks examined. No archaeological evidence was seen.

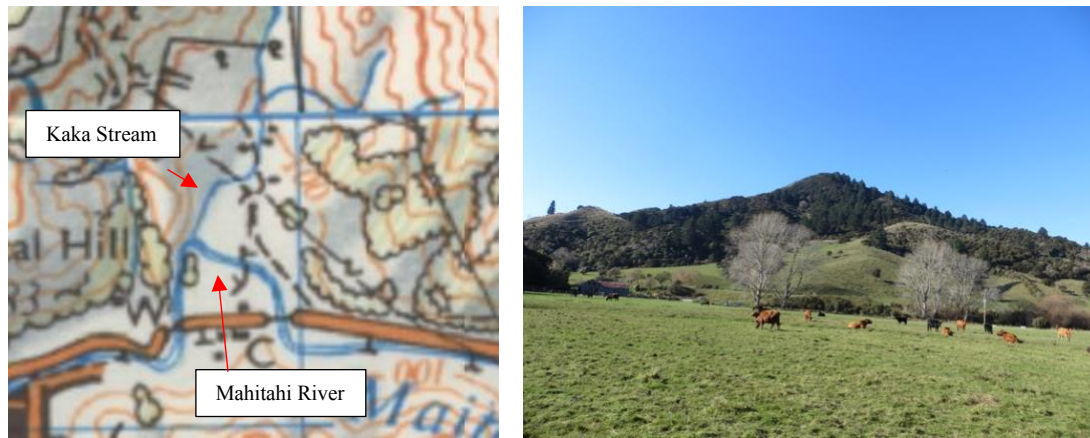


Figure 18: Past route of Kaka Stream. NZMS1 1969 (<http://www.mapspast.org.nz/>).

Figure 19: The river flats with the shearing shed on the left.

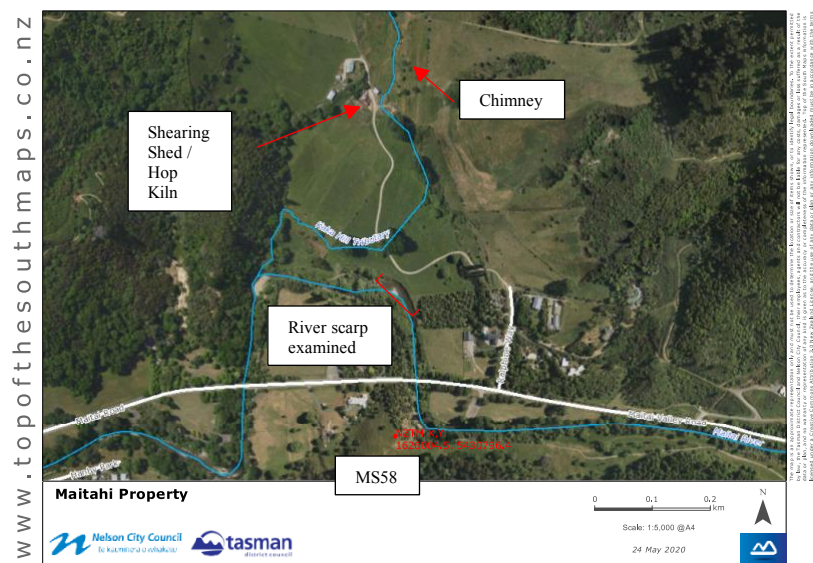


Figure 20: Part of the Maitahi Block with the present course of Kaka Stream across the river flats and places of interest.

The exposed scarp of the Mahitahi / Maitai River in front of the Maitahi Block was examined. This was only partly visible where the bank had been cut out by the water. The remainder of the bank was obscured by vegetation and piles of naturally deposited boulders. There was no archaeological material showing in the visible scarp or along the bank.



An old standing chimney is apparent on the eastern old river terrace above Kaka Stream. It appears to be stable and well-preserved. There were occasional concrete blocks in the vicinity of the concrete chimney. Below it, on the other bank of Kaka Stream, is a corrugated iron and wood shearing shed. The shearing shed was briefly visited. This is also well-preserved with many original features. As the custom of many sheds, one of the rooms is covered in the names of associated people. It is surrounded by associated structures such as the yards as well as more recent buildings (a killing shed and barn).



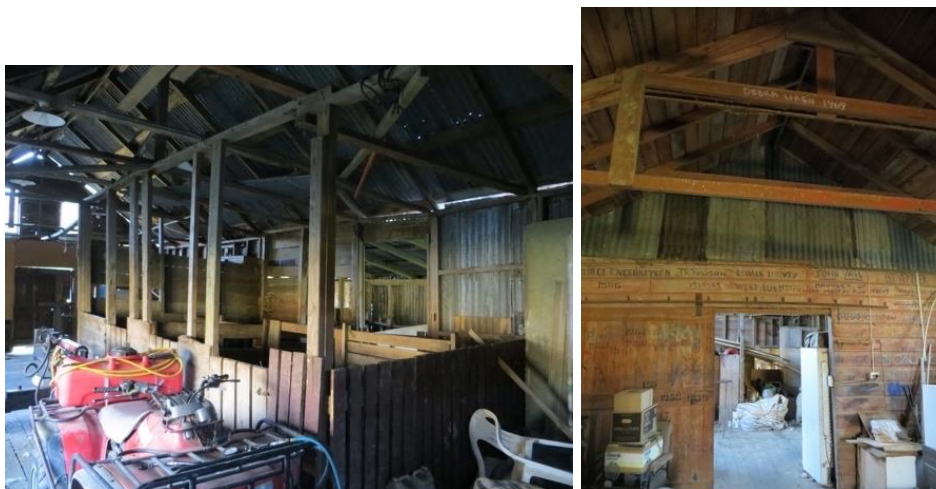
Figure 21: The farm buildings and the chimney. Drone footage supplied by Landmark Lile.



Figure 22: The chimney with the shearing shed behind.



Figures 23-24: The shearing shed and yards. The hop kiln is on the left side of the building.



Figures 25-25: The interior of the shearing shed.

## 7.0 Assessment of Archaeological and Historical Potential

The Maitai Valley was a well-used ara (pathway) for Māori as well as a rich food and resource gathering area particularly for flax, eels and whitebait. There would have been small cultivations and kainga or camps along the river banks. The Ngāti Kuia site recorded as MS58 would have been one such kainga. The subject properties were likely to have been part of this activity particularly the Maitahi Block which is closest to the Mahitahi / Maitai.

Physical evidence of Māori activity such as resource gathering and through movement is usually sparse. Find spots of taonga / artefacts are one indication. Camps and kāinga can be indicated by such evidence as midden deposits, ovens and cut platforms or artificial surfaces. Structures such as whares, places for food storage or drying racks are less obvious in the archaeological record. Old cultivations can sometimes be recognized by the addition of material such as charcoal or gravel. A waka landing site could be indicated by an artificially formed beach or pulling out point, or by associated evidence such as midden and ovens. These sites have the ability to provide temporal and geospatial data, indications of the nature of activity in the area, possible trade links and evidence of specific resource use.

It is possible that the subject properties could contain physical evidence of Māori use of the area such as through movement and resource gathering. There is no documentary evidence of pa, kāinga or camps in the area with the exception of the Ngāti Kuia pa MS58 which is outside the properties on the other side of the Mahitahi / Maitai. The river flats, once heavily forested, and with adjacent wetlands, would have been a prime resource gathering area and has the most potential for evidence of Māori occupation and use (even with the more recent modifications). There may have been cultivations on the river flats, perhaps associated with the pa (MS58). However, Māori soil is unlikely to be recognizable due to the extensive nature of the more recent farming and draining, and the nature of

the existing soil. Documentary evidence such as contemporary papers illustrate the volatile nature of the Mahitahi / Maitai River prior to the construction of the Maitai Dam in the 1980s. A spirited discussion regarding access to Dennes Hole in 1915 and 1917 illustrates the changing nature of the river in this vicinity with accounts given of greater or lesser degrees of cutting in towards the Branford Park hills<sup>27</sup>. Any archaeological evidence that was once immediately adjacent to the river may have been removed by natural processes.

The ridgelines and the stream valley may have been used as through routes and for forest resource gathering. The steeper slopes, including those of Kaka Hill, have less archaeological potential. The top of Kaka Hill could have provided a look out point as one of the main high points in the lower Maitai Valley. The main Atawhai ridge could have also been used for look-outs or occupation. However, the ridgeline has been modified with the use of heavy machinery to form tracks, scrub cut and mulch and to fight fires. Any surface features, for example, terraces or pits, are unlikely to have survived and there is no evidence of them. The southern side of the ridgeline is less modified and has more possibility for perhaps terraces although the southern aspect is less favourable for occupation.

Any archaeological evidence on the properties is most likely to be in the form of find spots of taonga / artefacts although other evidence such as midden, ovens and terraces cannot be ruled out. Any Māori archaeological evidence found within the subject area would have archaeological, historical, technological and cultural value.

Mahitahi / Maitai River played a crucial role in the exploitation of pākohe (argillite). The river valley provided a route up to the Mineral Belt to access outcrops of the stone. Boulders of unworked pākohe also rolled down the river which were identified and preliminarily worked on the adjacent banks. Staging kāinga were in the higher reaches of the river. Although small stones of unworked pākohe have been found in the Mahitahi / Maitai as far downstream as the Trafalgar Street bridge, it is unlikely that this far down there would have been significant pākohe boulders found within the river bed that could be worked on adjacent areas. The nearest such recorded boulders are approximately 8 kilometers upstream near Wilsons Flat (O27/48 and O27/23<sup>28</sup>).

The NRMP recorded location of the Tumatakokiri / Ngāti Kuia lookout and urupa (MS57) is on the ridgeline to the west of Kaka Hill although the location is given as Kaka Hill. No archaeological evidence was found in the vicinity of the recorded location; however, this visual inspection does not rule out sub-surface evidence. It is unknown whether the location is correct. Julia Eason, Taiao Planner for the Te Rūnanga o Ngāti Kuia Trust, has stated that Ngāti Kuia has not yet formally

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<sup>27</sup> [www.paperspast.natlib.govt.nz](http://www.paperspast.natlib.govt.nz)

<sup>28</sup> NZ Archaeological Association site number.

appraised the site information or location for either MS27 or MS28<sup>29</sup>. Mike Scott, Nelson City Council Policy Planner, has confirmed that the Māori heritage sites as shown in the NRMP haven't been reviewed by iwi yet although it is intended that this occurs before the transition to the Whakamahere Whakatū Nelson Plan<sup>30</sup>. Any evidence of the lookout and urupa has very high cultural and archaeological significance. Iwi are the appropriate people to determine whether the site is recorded in the correct location.

The subject properties were part of the Richardson Maitai Run for much of their post-1842 history. The Richardsons are a well-known and prominent Nelson family. Richardson Street was named after them and there are numerous references to the family and their farming interests in documents and public information sources such as the heritage notice board at Branford Park. They were instrumental in the opening up of the majority of the Maitai Valley to farming and recreation. The 1969 Nelson Photo News stated:- "A Christchurch-based firm recently completed the biggest land transaction ever made in the Nelson province with the purchase of the 120-year-old Maitai Run. Not only is the station one of the oldest in New Zealand, but it is believed to be one of the oldest farmed by one family..."<sup>31</sup> Any archaeological or historical evidence found within the subject area relating to the Richardson family and the Maitai Run would have archaeological, historical, technological, cultural value and community esteem.

The main structures identified on the property relating to the Maitai Run are the old chimney and the shearing shed and yards. The chimney is from the original ca.1842 cob cottage on the property, Edendale. When asked about the chimney, Rebecca Richardson stated that it was the remains of the "old cottage" where the family lived until 1969 when the property was sold and they moved to Delaware Bay<sup>32</sup>. Ms Richardson remembers that the cottage was surrounded by stone walls. Richard Richardson also verified that the chimney is a remnant of Edendale<sup>33</sup>. At some point, in about 1991, it was accidentally burnt down<sup>34</sup>. Any physical evidence of the Edendale has high archaeological and historical values not just because of its very early date but also through its association with the Richardson family. It is also part of an interesting and well-preserved historic landscape which includes the shearing shed and hop kiln, yards, other farm buildings, the more recent farm house and the later Richardson house on the other side of Maitai Road. Any pre-1900 evidence relating to Edendale falls under the archaeological provisions of the *Heritage New Zealand Pouhere Taonga Act* 2014. As well as the chimney, any archaeological evidence is most likely to be in the form of foundations, stone walls, other structural evidence and historic rubbish deposits.

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<sup>29</sup> Telephone conversation with A.Young 22 May 2020.

<sup>30</sup> E-mail to A.Young 20 May 2020.

<sup>31</sup> "Maitai Run Changes Hands". Nelson Photo News, 8 March 1969.

<sup>32</sup> Telephone conversation with A.Young 23 May 2020.

<sup>33</sup> Richard Richardson e-mail to A.Young 11 December 2020.

<sup>34</sup> Rebecca Richardson phone call with A.Young 23 May 2020; and e-mail to M.Lile 18 November 2020.

No date has been yet established for the shearing shed and associated structures although it does appear to be at least early 1900s and perhaps earlier. Lesley Richardson wrote in 1995 that the shearing shed on the farm incorporated an old hop kiln<sup>35</sup>. This has been verified by both Richard and Rebecca Richardson<sup>36</sup>. The structure of the hop kiln can still be seen on the western side of the building as the wooden clad, 2-storied part of the building. Hops were being grown on the Richardson farm from at least 1897 and in the Maitai from at least the 1870s but possibly much earlier. The shearing shed, hop kiln and associated structures (such as the yards) have high archaeological, architectural, historical, technological, rarity and community value. They have value through the association with the Richardson family and due to their age. The complex is also a rare remnant of the sheep farming and horticultural industry that once flourished in the Maitai Valley and Nelson, and was so important to the economic development of the city. The presence of the hop kiln and the intactness of the shearing set up is particularly notable. The complex also forms part of an heritage landscape. Any standing structure that is pre-1900 and is to be destroyed also falls under the archaeological provisions of the *Heritage New Zealand Pouhere Taonga Act 2014*.

There may be further evidence on the property of pre-1900 and early twentieth farm structures and infrastructure such as fences and buildings.

## **8.0 Conclusion**

The two subject properties, Bayview and Maitahi, generally have limited historical and archaeological potential with the exception of small areas and structures which have high heritage value or potential high value. These are the recorded location of MS57 (until an alternative location for the site has been established by iwi), any evidence of Edendale (in the vicinity of the standing chimney) and the Richardson shearing shed / hop kiln. The river flats and main ridgeline have more archaeological potential than the steep and moderate slopes although it is acknowledged that no archaeological evidence was seen in these areas and they have undergone varying degrees of modification over the last 100 years or so.

There may be physical evidence of Māori activity and occupation on the property; however this is most likely to be evidence of resource gathering and transitory movement. There may also be other remnants of the Richardson's farming operation. Any archaeological evidence that is pre-1900 falls under the archaeological provisions of the *Heritage New Zealand Pouhere Taonga Act 2014*. This includes the Edendale chimney and highly likely the shearing shed / hop kiln. The NRMP also has specific conditions relating to MS57.

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<sup>35</sup> Richardson 1995.

<sup>36</sup> Richard Richardson e-mail to A.Young 11 December 2020; Rebecca Richardson e-mail to M.Lile 18 November 2020.



The draft structure plan for the PPCR includes residential, small holdings and open space zonings along with roading linkages. It is believed that the plan provides scope for the avoidance of adverse heritage affects particularly as the areas of high value are relatively discrete in nature. The effects on the historical and archaeological values can be dealt by the existing planning framework of the NRMP combined with the relevant provisions of the *Resource Management Act 1991* and *Heritage New Zealand Pouhere Taonga Act 2014*.

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<https://www.geodesy.linz.govt.nz/concord>

[www.govt.nz/treaty-settlement-documents](http://www.govt.nz/treaty-settlement-documents)

[www.heritage.org.nz](http://www.heritage.org.nz)

[www.linz.govt.nz](http://www.linz.govt.nz)

[www.natlib.govt.nz](http://www.natlib.govt.nz)

[www.nelson.govt.nz](http://www.nelson.govt.nz)

[www.nelsonmuseum.co.nz](http://www.nelsonmuseum.co.nz)



[www.paperspast.natlib.govt.nz](http://www.paperspast.natlib.govt.nz)  
[www.photonews.org.nz](http://www.photonews.org.nz)  
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