



# groundtruth

## NZTA LAND PAEKAKARIKI

### Scoping Report

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# Mihi

E Kii ana te korero  
Toi tu te whenua  
Whatu ngarongaro te tangata

Ko Tainui te waka  
Ko Wainui raua ko Pouawha nga maunga  
Ko Wainui te awa  
Ko Raukawa te Moana  
Ko Kapiti te motu  
Ko Miriona te Kuia  
Ko Haumia whakatere taniwha te tangata

E tangi ana te ngakau i te aroha  
Ka tu tonu ra te mana te ihi  
O nga tupuna o Tatau  
Kua wehe atu ra  
Mauria mai te mauri tangata  
Hei oranga mo te morehu tangi mokai nei  
E rapa ana i te ara tika mo tatau Katoa

E nga mana e nga reo e nga karangaranga maha  
O ia whanau o ia hapu o ia iwi hurinoa te motu  
Nau mai haere mai piki mai kake mai  
Piki mai kake mai ki a koutou ki waenganui i te iwi whenua o Ngati Haumia ki  
Paekakariki e noho ai  
No Reira  
Tena koutou tena koutou tena tatau katoa

## 1. BACKGROUND

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This scoping report is prepared for the Mana Whenua and community of Paekakariki to support long term sustainable management of lands currently owned by the New Zealand Transport Agency (NZTA) adjacent to the township. It sets out the land types and productive resources of these lands as well as key ecological and environmental resources. It then identifies management zones that group similar resources and management. It sets out opportunities and actions that work toward a developing Iwi and community vision for the area.

This report aims to provide an objective basis for discussion by Iwi and the community of the potential for local control and management of these lands.

This report is a starting point and is based on a desktop review of existing information. It will contain some inaccuracies where it has not been possible to field check or improve easily available information. It is expected that this work will be added to and refined as consideration of these lands proceeds. This report does not examine legal planning constraints at this stage. Future planning and design will need to address this.

## 2 VISION AND OBJECTIVES

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There has not been a full Iwi and community process to discuss and confirm an overarching vision for the management of these lands. However, early input by Ngati Haumia, identification of areas of interest of different groups at a meeting at KCDC in December 2018, meetings of a working group in January and February 2019, and some previous reports by local groups such as Nga Uruora and Grow Paekakariki provide some direction around a likely vision.

The notes set out below are an initial outline. They require further discussion, refinement and validation. Refer to separate work by the Iwi / Community working group for more information on this vision.

### **Ngati Haumia**

Initial input by Ngati Haumia identifies the following whaktauaki (proverb) as particularly important to this project:

*Whatungarongaro te tangata toitū te whenua*  
As man disappears from sight, the land remains

Haumia identify the following aspirations for this land in order of priority:

1. Obtaining and retaining local control of these lands.
2. Looking after the environment – protecting and restoring environmental values of the area
3. Providing opportunity for housing for Haumia and the community, where this can be supported by the wider environment.

This is an early summary, it will require ongoing input, discussion and development in conjunction with Ngati Haumia.

### **Likely components of a vision**

Based on the views of Haumia and early community discussions, the key points within a vision and objectives are summarised below. Once again, this is an early working summary only.

## Vision

*The land, forest, and ecosystems of the area are healthy. They demonstrate our kaitiakitanga and support the wellbeing of our community.*

## Interim working objectives

Objective	We want to work on	We want to see
<b>Healthy ecosystems</b>	Protect and enhance freshwater ecosystems	<ul style="list-style-type: none"><li>Restored waterways, wetlands</li></ul>
	Habitat restoration	<ul style="list-style-type: none"><li>Hill country – cloaked in native forest</li></ul>
	Species restoration	<ul style="list-style-type: none"><li>Birds (kakariki etc), Lizards, Plants</li></ul>
	Linked and connected ecosystems	<ul style="list-style-type: none"><li>Connections from Wainui to the sea of protected native forest, waterways and other habitat</li></ul>
<b><u>Kaitiakitanga</u></b>	Haumia partnership - central to this project	<ul style="list-style-type: none"><li>Haumia are a guiding partner in naming, interpreting and managing resources</li><li>Kaitiakitanga is demonstrated throughout management.</li></ul>
	Iwi knowledge – Mātauranga Haumia is integrated through the project	<ul style="list-style-type: none"><li>Opportunity and involvement as Tangata whenua is provided throughout the project</li><li>The place and resources of Haumia are strong as a result of this project</li></ul>
<b>Supporting our community</b>	Soil and water protection: flood and erosion risks impacting on the village are minimised	<ul style="list-style-type: none"><li>Stable vegetation cover established on vulnerable areas</li><li>Reduced impact of storm events</li><li>Management to avoid risks</li></ul>
	Carbon and climate change resilience	<ul style="list-style-type: none"><li>Providing leadership in reversing the carbon footprint.</li><li>Planting and wetlands for carbon sequestration</li><li>Landscapes that reduce impacts and mitigate extreme weather events</li></ul>
	Cultural strength – Iwi / Community	<ul style="list-style-type: none"><li>Iwi and wider community stories and values demonstrated and interpreted in the way the land is used.</li></ul>
	Community housing	<ul style="list-style-type: none"><li>Affordable housing providing opportunity for Iwi and community to maintain the vitality of Paekakariki in a way that is supported by the environment.</li></ul>
	Recreation and amenity	<ul style="list-style-type: none"><li>Diverse walking and cycling opportunities linked to Paekakariki as a potential long term regional recreation hub accessed by public transport.</li></ul>
	Food production from versatile soils	<ul style="list-style-type: none"><li>Opportunities for moderate scale horticulture and cropping are retained on the best soils.</li></ul>
	Energy	<ul style="list-style-type: none"><li>Opportunities for long term sustainable energy production are available where supported by the wider environment.</li></ul>
	Strong local economy	<ul style="list-style-type: none"><li>Activities and developments (housing, recreation etc) support and strengthen the local economy</li></ul>

## Interpretation:

This land and the ecosystems it contains provide environmental and cultural resources that support the health and wellbeing of our village. Both Ngāti Haumia early statements and community discussion support the concept that the protection and restoration of environmental values on this land comes first and that

human development is fitted into this.

There is a strong indication from early discussions that this project can show leadership and a model of integrated sustainable environmental and community development

The management of this land provides a long term regional opportunity that is driven by and supports locals

### 3 APPROACH

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This scoping report consists of the following sections:

#### **Property Resource Assessment**

This is split into two parts. First a summary of the land types and productive resources that are present on the property. This is the combination of fundamental, underlying geology and soils and the current land uses and infrastructure. Secondly an overview of the wide range of ecological and environmental resources present on the property. Note that this is a desktop assessment using existing data layers and without field checking and more accurate mapping. The information here provides a first cut, it needs more work and field survey to refine this overview.

#### **Matauranga Haumia**

This work is at an interim stage, the current content is a “placeholder” for ongoing work with Haumia and Ngati Toa as partners in this land. It aims to provide a broad layer of sites and resources of importance to mana whenua such as Waahi tapu, mahinga kai, rongoa etc across this property. It also aims to identify particular tikanga that may form part of the way this project is taken forward, as well as long term aspirations and plans of mana whenua.

#### **Land Management Zones**

This section identifies zones within the property that best suit certain types of land use because of the combination of land use capability, environmental and other values.

#### **Linkages and integration across the property**

Aspects such as networks of habitat, property access, waterway management, recreation connections are often logically linked across a property. An outline of these key linkages and how they can be managed is provided. There are also often major opportunities for linkages to the wider environment outside the land under the immediate scope of this study. This is broadly discussed.

#### **Opportunities**

The key opportunities for enhancing return and cost effectiveness of management, and delivery of environmental services such as water quality, biodiversity etc are identified.

#### **Action plan**

This section sets out some early projects to capture some of these opportunities and work towards management objectives. This is an early indication only and will need further discussion and refinement.



## 4. LAND TYPES AND PRODUCTIVE RESOURCES

### 4.1 Property

The property areas understood to be involved in the combined land ownership of NZTA at present are shown in the map below. They total approximately 550 hectares. Further confirmation of these ownership areas is required.



Paekakariki NZTA Land



## 4.2 Geology & Soils

Hills of the area have underlying greywacke rock. Slopes have deposits from this geology, that often form rocky debris in steep gully areas. Steepland soils on these hill slope areas are relatively thin, 30-60cm in depth.

On the broad upper ridges of this area, the greywacke geology is overlain with loess deposits (wind blown fine debris) that has then weathered to give deeper and more fertile soils than the steep slopes. There is often characteristic soil slip erosion from these areas, at the edge of their drop off to steeper slopes.

In the valley bottoms of the Wainui, Te Puka, and Waikakariki Streams, and in the outwash fans where these streams flow out onto the flats, alluvial material with gravel and sand is deposited and becomes the parent material for soils in these areas. In the largest area of these fans, around and north of the current State Highway One, near the Perkins Farm woolshed, this gives rise to Waikanae gravelly sand. This soil tends to be excessively drained and can have streambank erosion.

The basin in the north of the area, east of Tilley Road and around the previous Sang Sue market garden, have accumulated fine silts and other alluvium washed out from the hills. Soil in this area is Waiwhetu silt loam. The watertable is quite high, and flooding can occur from runoff from the hills, so soils are often wet. Soil boundaries are shown in Map 6.

Around the north of the NZTA lands areas of Foxton sands occur. These are relatively unstable sand dunes they have potential for wind erosion “blow outs”.

## 4.3 LUC mapping and analysis

Land use capability (LUC) mapping is a standard New Zealand land classification process used since the 1970's. It assesses the the land's capacity for sustained productive use, based on its underlying geology, soils, slope, and erosion potential. The Land Use Capability assessment has three basic components—class, subclass and unit. Class is the most general, classifying land from 1 (the most versatile and productive class) to 8 (the class with most limitations to use). Subclass groups units with the same kinds of limitations (only the dominant limitation is recorded). The four kinds of limitations recognised are:

- Erodibility (e)
- Climate (c)
- Wetness (w)
- Soil limitation within the rooting zone (s)

The Unit, represented by a number, indicates the particular Land Use Capability and denotes areas sharing similar management and conservation requirements. At this stage land use capability (LUC) mapping has only been undertaken using publicly available NZ Land Resource Inventory data, this was mapped in the past at low resolution, 1:50,000 scale. It provides an indication only at a property level and will need to be more accurately mapped on the ground in the future. Map 3 in the Appendices shows LUC units on the property. The table below provides photos and broad descriptions of some useful amalgamation of groups of LUC units. See also Page (1995).

## Summary of land use capability amalgamations (see also Map 3)

LUC Amalgamation	Notes
<b>Versatile soils in wet basins 3w1</b> 	<ul style="list-style-type: none"> <li>Imperfectly drained soils with high watertable and occasional flooding</li> <li>Waiwhetu silt loam soils</li> <li>Potential use for horticulture and cropping</li> <li>Potential stock carrying capacity 26 stock units/ha</li> </ul>
<b>Gravel fans and valley bottoms 4s1</b> 	<ul style="list-style-type: none"> <li>Low fans and terraces associated with streams leaving steep hill country</li> <li>Potential moderate to severe stream bank erosion</li> <li>Soils vary from stony to silty and drainage can also vary</li> <li>Regular flooding can occur from meandering stream</li> <li>Potential to carry 15 stock units / ha</li> <li>Management can include streambank protection and drainage</li> </ul>
<b>Coastal sands 6e5</b> 	<ul style="list-style-type: none"> <li>Young relatively unstable sand dunes</li> <li>Potential for moderate wind erosion (blow outs)</li> <li>Excessively drained and prone to drying</li> <li>Carrying approximately 5 stock units/ha</li> </ul>
<b>Moderate production broad ridges 6c2, 5s7</b> 	<ul style="list-style-type: none"> <li>Broad ridge top areas, or more rolling lower areas</li> <li>Loess soils over greywacke in easier areas</li> <li>Very high coastal wind exposure and summer drying</li> <li>Can carry approximately 10 stock units / ha</li> </ul>
<b>Low production hill country 7e4</b> 	<ul style="list-style-type: none"> <li>Exposed and prone to early summer dry off</li> <li>Some erosion of gully debris slides and also loess slips from edge of broad ridges.</li> <li>Extensive grazing has occurred in past</li> <li>Can carry approximately 4 stock units/ha</li> </ul>
<b>Escarpment faces 8e2</b> 	<ul style="list-style-type: none"> <li>Coastal escarpment</li> <li>Exposed to strong salt winds</li> <li>Very steep with large bare areas of rock and scree</li> <li>Not suitable for agriculture</li> </ul>

## 4.4 Farm infrastructure

### Fencing

Farm infrastructure is generally in poor condition. Fences are often not fully stock proof. Stock have not been grazed across most hill country areas of the farm for a number of years. Fencing across the flats is in better condition and horse grazing is occurring

### Access roads and tracks

A main ridge top gasline and telecommunications access track is present. Other minor farm tracks are present but generally only suitable for ATV use.

## 4.5 External infrastructure

In addition to the current construction of the transmission gully highway, a variety of important existing external infrastructure is present (see Map 2). This includes

- Gas pipeline: the main maui gas pipeline runs down a ridge and across flats near to the current highway. A control valve station on this gasline is also present adjacent to the existing state highway one.
- Powerlines: High voltage lines supplying the Paekakariki Substation run across the flat west of the railway line. These lines are owned by local lines company, Electra. A high voltage Transpower transmission line also runs through the area.
- Water supply: Paekakariki water supply is provided from the main catchment to Mt Wainui. The area includes a water treatment and pumping station adjacent to the current highway development. A large concrete reservoir is also present at the base of the main ridge in the north end of the hill country area. A supply pipeline runs in to Paekakariki.
- Telecommunications towers: A variety of telecommunications towers are present on top of the escarpment.
- Railway: The maintrunk railway passes through the flat area. This is double tracked and with overhead power for electric trains.
- Highway: The existing State Highway One passes through the area in addition to current development of the Transmission Gully Highway.

## 4.6 Current management

Hill country pastoral areas are currently ungrazed. There may be some occasional grazing of hill country areas in the south of the property. Horse grazing occurs on flats adjacent to Paekakariki.

Some weed and pest control is undertaken in areas close to the escarpment by Nga Uruora.

Previous management included sheep farming on hill country areas and a market garden on the better soils of the central flats east of the railway.

## 4.7 Natural Hazards

Natural hazards within the area have not been examined in detail, and will need to be part of future more detailed investigations. Examination of publicly available mapped data shows that flood inundation areas occur in the basin to the north east of Tilley Road. Tsunami modelling suggests that some tsunami events

could result in inundation into this same basin area from the coast as far as the railway line. Flood ponding area and tsunami extent is shown in Map 7.

The previous 2003 flood and subsequent studies by GNS and Opus Consultants (Opus 2015) show a risk to Paekakariki from debris flow and flooding from steep slopes, particularly in Waikakariki Stream and Hairpin Gully. This risk could increase with more extreme weather events predicted by climate change models.

#### **4.8 Match of land use and land capability**

Land management is currently strongly driven by the construction of the highway, rather than wider considerations of long term sustainable land use across the whole area. Most areas of the land, away from the highway, are currently relatively unmanaged. The analysis in this plan begins to identify future activities that could better match land use to land capability.

Grazing has been removed and slow regeneration of native scrub species is occurring in some areas that may eventually regenerate to native forest. In other areas, particularly in the west, around the head of Waikakariki Stream, gorse is spreading. This exotic species provides much slower and less diverse regeneration to native forest and has a much higher fire risk.

Regeneration of native scrub and forest on low production hill country is well matched to land use capability. However, some ecological areas (including the escarpment) lack of management is resulting in the spread of invasive weeds, such as brushwattle. Areas of versatile soils on the flats are not being managed and some weed species such as pampas are beginning to spread onto these areas.

### **5. ECOLOGICAL AND ENVIRONMENTAL RESOURCES**

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#### **5.1 Ecological sites and areas**

The lands contain an important mix of different ecological sites. In this scoping study only a quick review of easily accessible information and local knowledge has been used to provide the outline below. Further studies and information are likely to be available.

##### **Forest remnants**

Remnants of coastal forest are present, particularly in the small Hairpin Gully traversing the Paekakariki Hill Road, in the lower Te Puka Stream, and on the escarpment. These are often dominated by kohekohe (*Dysoxylum spectabile*), but can also have occasional mature titoki and very occasional matai (*Prumnopitys taxifolia*) in some areas. Around and mixed with these areas are often a range of seral species such as kanuka (*Kunzea robusta*), mahoe (*Melicactus ramiflorus*), akiraho (*Olearia paniculata*), koromiko (*Hebe stricta*) and five-finger (*Pseudopanax arboreus*).

Flax (*Phormium cookianum*) and propinqua (*Coprosma propinqua*) are also often present on the more open and exposed areas (Nga uruora 2013), particularly on the escarpment.

These remnants are important ecologically as examples of a coastal forest type that is now rare, but once was present across these lower altitude coastal faces and valleys. It is a forest type with diverse canopy and understorey plant species and a wide variety of flower and fruit resources that would have been utilised by birds, lizards and other fauna. Protection and enhancement of these remnants is important

## Waterways

The flats at the north of these lands were, in pre European times, the southern end of an interconnected network of backdune wetlands running through Kapiti. While some wet areas are still present, there is only one small remnant of this remaining adjacent to the Mackays Crossing end of these land holdings. This area has been reduced by the highway project. Wetland areas are highly significant as they are now rare across the region as a result of draining for agricultural production and other uses.

The Wainui Stream network has potentially high value as a lowland stream connecting directly to the sea. As identified in Hughes (2014), there are a variety of fish passage barriers in this stream network. However, there are still good fish values in the lower stream with longfinned eel and giant kokopu present. Koaro, longfinned eel, koura, torrentfish, koaro, redfin bully, and common bully are present in the headwaters of streams in the area (Hughes 2014). Longfinned eel, giant kokopu, torrentfish, koaro and redfin bully are all classified as "At risk" by the Department of conservation.

## 5.2 Native plant and animal species

In examining species information, this scoping study has only looked at easily accessible information and local knowledge. Further studies and information are required.

A range of native forest bird species are present around the area including tui, bellbird, kereru, grey warbler, morepork, piwakawaka, shining cuckoo, karearea and kahu.

Forest bird habitat is currently limited to the various forest remnants within hill country areas of the property. A combination of this lack of habitat and the presence of predators will be limiting bird populations.

Recent work by Nga Uruora and the Kapiti Biodiversity Project on lizard fauna has found raukawa gecko, northern grass skink and copper skink in the hairpin gully area (Nga Uruora 2018).

As identified in relation to waterways, above, a significant diversity of freshwater fish species are also present.

## 5.3 Pest animals and weeds

### Pest animals

Pest animals present that have an impact on biodiversity values include goats, cats, stoats, rats and hedgehogs.

The Nga Uruora Project is undertaking work in the west of the property, particularly around areas of the escarpment, on predator control. This includes trapping and filling of bait stations.

Greater Wellington have undertaken occasional goat control. However, it appears that goats are continuing to move into the area from Akatarawa Forest and elsewhere.

Ongoing pest animal control is required

### Weeds

A wide variety of weeds are present around the edges of the landholdings – particularly closer to the township of Paekakariki. Weeds present on the escarpment (particularly lower edges) include brushwattle,

pampas, climbing asparagus, tradescantia and blue morning glory. The succulent species, pigs ear, is also becoming widely established.

Pampas appears to be spreading more widely into disturbed areas around the highway construction. Because this species can be spread by wind over long distances it can establish quickly into these areas, so needs rapid control of seed sources.

Gorse is also establishing across some areas of farmland on the hill country. This can have a negative impact for biodiversity as well as for recreation and any possible pastoral uses. Gorse will crowd out and suppress low growing native shrub species in exposed areas. It also creates an environment for much slower and less diverse regeneration than native colonising species such as manuka and kanuka. It has a much higher flammability than native species – so is more prone to future fires.

There is an urgent need for an active weed management programme across the property.

## **5.4 Water resources**

A variety of information about the Wainui Stream is summarised in Hughes (2014). Hughes (2014) identifies that a total take of 2160 m<sup>3</sup> / day is consented for the Paekakariki water supply. Water is extracted from a bore near the pump station. According to Hughes (2014) this is at a depth of 10-12 metres from an “unconfined aquifer”. Map 1 provides an overview of catchments and waterways and Map 2 shows main water supply infrastructure.

Clearly the water supply is critical for Paekakariki. This may become even more significant if development of any additional housing occurs. This scoping study has not investigated any of the past work or required future work to examine the long term security of this water supply, risk from highway construction and operation, and future climate change impacts. Future investigations will need to understand how management might secure and enhance the quality and quantity of water from this supply.

The water of Wainui Stream is important for recreational use, with play by children and families in the lower reaches of the stream close to the beach being common. E.coli levels in the stream have been elevated at times in the past, occasionally resulting in the stream being closed for recreational use. However, there are some indications (Hughes 2014) that E.coli levels may now be lower since the area has been retired from farming. Clearly this needs ongoing monitoring and investigation.

## **5.5 Historic and cultural values**

The land has a wide variety of important historic and cultural values that need to be managed. These values include:

- Maori history: Long history of maori habitation.
- Importance of current sites and land to Ngati Haumia (see Matauranga Haumia, below).
- Early relicts of railway water supply in Waikakariki Stream. These apparently date back originally to the pre 1900 Wellington to Manawatu railway.
- Early pastoral farming operations on the coast: The woolshed, homestead and other important parts of this early farming operation are still present on the Perkins farm property.
- Us Marines training camps: relicts of this era within the lands include the brick fuel tank in the lower Te Puka stream.

Further work is required on the identification and description of historic and cultural values. This work needs to be undertaken in partnership with Ngati Haumia.

## **5.6 Recreation and tourism**

Hill country areas of the land have a long history of informal recreational use. Proximity to Paekakariki and the past community support and engagement of the Perkins family have meant that many Paekakariki people have used the hills for informal recreation, walking over the area and enjoying the spectacular views.

Development of the escarpment track between Paekakariki and Pukerua Bay has been extremely popular with tens of thousands walking this track every year. High quality cycling and walking tracks to Raumati through Queen Elizabeth Park also bring large numbers of walkers and cyclists in and out of the area. The national Te Araroa Trail also passes through Queen Elizabeth Park and along the escarpment track.

The proximity of all of these areas to high quality public transport, in the form of the regular train service, is also important. Providing easy access from Wellington and other areas, and also supporting return transport for those walking the escarpment track. This level of direct access from the train system to a variety of high-quality outdoor recreation appears to be unique in the Wellington Region.

The area has a major potential for further development of a wide range of walking, cycling and mountain biking activities. There is potential to provide a wide range of levels of activity and also varied settings and spectacular views.

## **6. MATAURANGA HAUMIA**

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The areas covered by this scoping study are of long term significance to Ngati Haumia. Their cultural responsibility to look after these lands and ecosystems, and their aspiration to build and strengthen Haumia presence and capability are a critical part of any future management of these lands.

The information set out below is an early summary that will be added to and improved over time. Working on and supporting the gathering and appropriate sharing of this information by Haumia is part of this project.

### **Mahinga Kai, Mara Kai**

There were wetlands throughout this country and Whareroa. Systems of weirs were used to maintain water and manage eels. This was a key food basket for Haumia.

Kumara, Potato, corn were grown on good country around the area. Wheat was also grown and taken to a mill in Porirua for milling to flour.

There is a report from 1849 of 12 hectares of wheat, maize, potatoes, Kumara and general gardens being grown for 195 people (Greater Wellington 2008). This was in the area of Wainui, near the current campground. Flax was also prepared and sold.

Kumara pits are present on the Paekakariki escarpment ridgeline that were used to store kumara in the past.





*The flats around Wainui were are major site of mara kai (gardens) and mahinga kai (gathering sites). Iwi used these versatile lowland soils and rich wetlands.*

## Land

More recently, areas of Haumia land included the land of Miriona Utu Budge (ne Mira). This was a block of around 60 acres in a strip from the coast at approximately the mouth of Wainui Stream to the foothills below Wainui maunga. This land was taken under the public works act as part of the Marines Camp in WW2. In return, Haumia were given 3 sections on Te miti St, 3 in Miriona Grove and one on Wellington Road.

Haumia have a strong desire to again achieve control of key areas of land that support their status as mana whenua.

## Waahi tapu

The Haumia urupa sits above and north of Wainui Stream.

A variety of sites have particular cultural significance to Haumia in and around Paekakariki. More work is required to identify and appropriately acknowledge these sites. This includes sites of battles and conflict at the south end of Paekakariki.

## Aspirations

Some early aspirations identified by Ngati Haumia in relation to the long term management of the NZTA lands are set out below.

### Doing right by the Whenua – so it supports us

There is a desire for the land to be restored and the water protected first – this is what we must do as an Iwi and community. Then we will look at options for houses if they can be sustained – including in relation to issues of water and wastewater.

Haumia want themselves and the community to be in charge and making sure the land and environment is looked after – not a developer who is doing the minimum they have to for the environment.

### Kai and resources

There is interest in being able to provide kai from enhancing the eel fishery in streams and wetlands. Growing other valued foods such as water cress is also appealing.

### Strength and capability

Haumia people are scattered far and wide around NZ and overseas. There are few ahikaa. There is a need to strengthen their voice. “We need to wait for and develop the young people who are here – get them to the point they can move to the front”. Building capability and capacity locally is important.

### Understanding and stories

There is a need to increase the knowledge and understanding of Haumia history by the whole community. Understanding Haumia stories, important sites and resources

## 7. MANAGEMENT ZONES

Management zones are areas that can be grouped based on their particular combination of land use capability (LUC), environmental and cultural values identified in sections 4 -6. Managing each zone in relation to its particular LUC and values means the greatest overall value from economic return and provision of environmental services is obtained from the property in the long term. It also helps ensure that management sustains the production, environmental and cultural resources across the property for the long term. Maps 8 and 9 show the suggested management zones. The zones are described below.

Zone	Location	Features	Best use / development
<b>1. Integrated flood management (17.9 ha)</b>	<ul style="list-style-type: none"> <li>East of the north end of Tilley Road, to the Railway and around the area of the Sang Sue property</li> </ul>	<ul style="list-style-type: none"> <li>Low lying</li> <li>Occasional flooding / ponding</li> <li>Good quality soils – sandy loam</li> <li>Close proximity to Paekakariki and QEP</li> </ul>	<ul style="list-style-type: none"> <li>Avoid permanent structures or uses</li> <li>Suitable soils for market gardening and possibly horticulture</li> <li>Wetlands</li> </ul>
<b>2. Flow path management (4.9 ha)</b>	<ul style="list-style-type: none"> <li>Sloping areas around the current SH1 location and northwest from Perkins woolshed to the railway.</li> </ul>	<ul style="list-style-type: none"> <li>Gravel outwash fan from hills</li> <li>Spreading flood channel in flood events</li> <li>Gravelly sand soils</li> <li>Sloped and naturally drained</li> </ul>	<ul style="list-style-type: none"> <li>Management of flood channel to protect adjacent areas</li> <li>Maintenance of gravel stream biodiversity values</li> <li>Gravel management</li> </ul>
<b>3. Flexible development (17.7 ha)</b>	<ul style="list-style-type: none"> <li>3-4 areas, around and north of Betty Perkins Way, small area east of houses on east side of railway, Sand dune area south of Mackays Crossing and east of railway line.</li> </ul>	<ul style="list-style-type: none"> <li>Away from major flood and other hazards</li> <li>Adjacent to infrastructure</li> <li>Often significantly modified</li> </ul>	<ul style="list-style-type: none"> <li>Human development – housing etc</li> <li>Integrated cluster housing</li> <li>Developed sports park or open space</li> </ul>
<b>4. Hill country protection and amenity (351.1 ha)</b>	<ul style="list-style-type: none"> <li>Major portion on hill country east of Paekakariki, making up previous Perkins Farm.</li> </ul>	<ul style="list-style-type: none"> <li>Steep and exposed to wind</li> <li>Important downstream values including housing and aquatic ecosystems</li> <li>High local recreational opportunity</li> <li>Outstanding views</li> <li>Existing biodiversity remnants</li> </ul>	<ul style="list-style-type: none"> <li>Establishment of woody vegetation for catchment protection</li> <li>Carbon, honey, non timber forest products</li> <li>Recreation</li> <li>Activities undertaken with attention to amenity and soil and water protection</li> </ul>
<b>5. Biodiversity networks (62.5 ha)</b>	<ul style="list-style-type: none"> <li>Areas of established native forest, mainly on western escarpment and gullies.</li> </ul>	<ul style="list-style-type: none"> <li>Remnant native vegetation in gullies and on the escarpment</li> <li>Includes coastal kohekohe forest</li> <li>Waterways through the area</li> </ul>	<ul style="list-style-type: none"> <li>Protect and restore native vegetation, aquatic ecosystems and other biodiversity</li> <li>Expand and link habitat across the area</li> </ul>
<b>6. Water supply</b>	<ul style="list-style-type: none"> <li>Wainui stream south east of the new motorway development</li> <li>Treatment plant, reservoir tank and</li> </ul>	<ul style="list-style-type: none"> <li>Key village infrastructure</li> </ul>	Protect and restore native forest cover (pest control etc) Restoration of permanent native vegetation in sensitive areas

Zone	Location	Features	Best use / development
	<ul style="list-style-type: none"> <li>• piping within area.</li> </ul>		Possible development of other supply catchment areas over time (expand zone)
<b>7. Culture and heritage</b>	<ul style="list-style-type: none"> <li>• In vicinity of Perkins woolshed, farm houses, and WW2 fuel tank.</li> </ul>	<ul style="list-style-type: none"> <li>• Important early buildings and structures</li> </ul>	<ul style="list-style-type: none"> <li>• Protection of key sites and buildings / structures</li> <li>• Public interpretation as appropriate</li> <li>• Coordinated access and interpretation of historic sites</li> </ul>
<b>8. Highway infrastructure (71.5 ha)</b>	<ul style="list-style-type: none"> <li>• Highway designation area</li> </ul>	<ul style="list-style-type: none"> <li>• Highway and associated infrastructure for stormwater and sediment management.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain highway infrastructure</li> <li>• Maintenance of stormwater protection assets</li> </ul>

## 8. LAND AND RESOURCE MANAGEMENT OPPORTUNITIES

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### **Agriculture**

The majority of the area is low productivity hill country pasture. There is little opportunity to create a significant farming enterprise on this land. Depending on final planning and investment, leasing of ridge top grazing on some class 6 areas, predominantly in the south of the property could be considered. This could be undertaken if maintaining open ridgelines was desired for access and recreation. Coordination would be required with neighbours seeking grazing.

Beef and lamb farm survey data for 2017-18 hard hill country farms in Taranaki / Manawatu (Beef & Lamb 2018) shows a net return per stock unit before tax of \$35.94. Stock carrying capacity on the predominantly 7e4 land of the hill country pasture areas of Perkins Farm is 4 stock units per hectare. This suggests these areas could potentially provide a net income of around \$144/ha/year from pastoral farming.

### **Horticulture**

A market gardening enterprise “Sang Sue” previously operated on the flats east of the railway where Waiwhetu silt loam soils are present. Operations ceased when the highway construction began. These areas have a good potential for ongoing market garden use. Because of their potential for flooding, they are less suited to orchards or other permanent horticulture operations, however some areas may be suitable for this use – particularly where localised drainage is possible.

Some areas of Waikanae gravelly sand soils that are present on the south eastern edge of the flats (around Management Zone 2) may have limited opportunity for some small scale orchard production with careful irrigation, drainage and management.

### **Exotic Forestry**

The very exposed, coastal nature of much of the hill country means that forestry is not particularly attractive. Over the more wind exposed areas forest growth rates will be relatively slow and form poor. There are few a more sheltered gullies or faces where forestry could be more attractive. Careful identification of some areas with sufficient size and practical access for harvesting may be possible. However, this is expected to be a relatively small proportion of the land area. Given the relatively low productive potential, combined with potential amenity and soil and water protection value of forests on this site, it is unlikely that traditional exotic forest operations will be the best match for this land.

### **Native forest establishment**

Regeneration of early successional native species is occurring on some areas of the property. This is particularly so in the lower Waikakariki Valley, and lower valleys to the north of the hill country. Some additional planting is being undertaken adjacent to the highway project area.

There is potential for large scale establishment of native forest across the hill country areas of the property using a combination of planting and managing of natural regeneration. This could provide direct benefits for biodiversity, soil and water protection, recreation, and general amenity.

## Carbon

Carbon could be sequestered from either establishment in exotic forest or native forest. The greater growth rates of radiata pine compared to native, mean that it would sequester carbon more quickly. However, depending on management, in the very long term, stable levels of carbon stored under native forest will be greater. Direct income can be obtained from carbon through involvement in the NZ Emissions Trading Scheme (ETS). This allows sequestered (stored) carbon to be recorded and then sold. Currently NZ Units (one tonne of CO<sub>2</sub> equivalent) sell for around \$25. Native forest carbon tables show an average of around 8 tonnes / ha / yr from native forests once they are well established – equivalent to \$200/ha/yr. This is likely to be at least equivalent to sheep farming returns from this type of country at present.

Only forest established on land that was clear of forest in 1990 can be claimed within the ETS. Much of the hill country land on this property will be eligible.

## Honey

Where native species producing high value honey (particularly manuka) are present, income can be obtained from renting to access to beekeepers. Many areas of the property are likely to be too windy and exposed for this, but there will be significant basins and valleys where this could occur – provided access was present.

An ANZ Research Bulletin published in October 2015: “Manuka Honey – A Growth Story” indicates the following possible numbers for Manuka honey returns.

Honey yield	30 kg/ha
Honey price	\$60/kg
Share of apiary revenue	20%
Less operating costs	\$35/ha
Annual net income	\$325/ha

Even if a conservative net annual income of \$200/ha is used, there is still potential to generate significant income from some areas of the property if they were established in Manuka.

## Energy

The windy ridges around the upper areas of the hill country provide an opportunity for wind power generation. The Paekakariki Community Trust have done a range of wind testing and early exploration of wind power options. There may be opportunities for other energy sources in the long term such as solar and micro hydro.

## Recreation and tourism

As identified in 5.6, the area including these properties has a combination of varied terrain and environments, spectacular scenery and good access, including by public railway transport. This naturally combines with the existing key linkages to the Queen Elizabeth Park, the escarpment track and Whareroa Farm. Paekakariki has already begun to be a logical destination and hub for walking and cycling. With the integration of further local opportunities it could become a regional hotspot for these activities that would drive significant economic opportunity for local businesses.

The Waikakariki Valley and surrounding ridges and escarpment can be accessed directly across the road from the centre of Paekakariki. These areas have potential for a wide range of different levels of walking trails.

The Paekakariki Hill Road provides access along the western side of the property to the lookout that is toward the highest points in the property. This provides huge potential for downhill mountain bike and walking trails from the summit via ridges and sidling the Hairpin and Waikakariki Valleys and returning to the township and railway station.

Development of the existing work on ecological restoration undertaken by Nga Uruora will increase the quality of recreation in addition to its biodiversity objectives.

Development of mountains to see ecological linkages could also create recreational linkage opportunities. For example walking from the mouth of the Wainu Stream to the summit of Mt Wainui. Alternatively, providing short walks around wetlands and waterways of the flats.

### **Water supply**

A catchment draining Mt Wainui, immediately adjacent to the NZTA land, provides Paekakariki's water supply. The treatment plant, pump station and concrete reservoir for the supply are within land owned by NZTA. This is critical infrastructure to Paekakariki. It is at times close to capacity, and may be a constraint on any further development of housing around the village.

Though the current water supply catchment is not within NZTA ownership, smaller catchment areas within the NZTA ownership may provide opportunity to increase capacity of the water supply in the future. Though these may not meet short term needs, the importance of water supply to a township means that these options should be safeguarded. Careful strengthening of catchment areas through planting and avoiding inappropriate development will benefit any possible future water supply. These activities are highly compatible with biodiversity, recreation and amenity.

### **Soil and water protection**

The property, particularly the hill country area previously forming the majority of Perkins Farm, contains the catchments that directly flow in and around Paekakariki. What happens in these catchments is critically important to the future of the village of Paekakariki as well as nationally important railway and roading infrastructure. A clear demonstration of this the 2003 Paekakariki flood. This closed the railway and road and did millions of dollars worth of damage to the village. Much of this damage was caused by gully erosion and debris from Waikakariki Stream.

A 2015 report by Opus Consultants on risk mitigation options identified the importance of revegetation, to help control erosion of fossil periglacial scree from the upper gully slopes.

There are major opportunities to rapidly establish native forest across the catchment areas to reduce erosion, benefit soil and water protection, and reduce downstream impacts on Paekakariki.

### **Community housing and infrastructure**

Though much of the property areas are either too steep or have flooding issues, there are potential areas identified in the "flexible development" management zone 3, that are outside main flooding and other hazard areas. These areas could possibly be used for community housing. These areas are in the flatter country between the existing state highway one, Paekakariki and Queen Elizabeth Park.



These areas total around 22 hectares. For comparison, the existing Paekakariki village with its approximately 800 houses is around 90 hectares in area.

While a small portion of this flexible development area is between Tilley Road and the railway line, most is in a number of closely linked areas between Paekakariki and Mackays Crossing. These areas would potentially be interspersed with natural areas of wetland, market gardens, and waterway management areas. There could be a focus on walkways and cycleways connecting areas. This could be a very attractive and sustainable development – but would require skilled planning to ensure it builds as part of Paekakariki and does not somehow become a separate entity. There would be a range of infrastructure issues to be resolved, including the management of sewage.

Though there are issues to be resolved, there is a real opportunity to create a unique and sustainable development as part of Paekakariki that could help achieve the objectives of the Paekakariki Housing Trust. This includes maintaining the diversity of the community and providing opportunity for tangata whenua and families to live in Paekakariki.

### **Biodiversity**

There is opportunity to weave biodiversity restoration through all of the future management of this area. This land encompasses a wide range of ecosystem types from lowland streams and wetlands, to coastal escarpment and steep hills. It rises in altitude from sea level to the summit of Mt Wainui at 722 metres. Major restoration of native forest has multiple benefits for soil and water protection, carbon and recreation. It provides a habitat connection from the coast and coastal escarpment to Akatarawa Forest.

Lowland waterways and wetlands and associated small forest restoration areas can integrate biodiversity right through into the village of Paekakariki. These ecological connections also have potential to run in parallel with walking and cycling pathways and recreation.

If there is development of widespread habitat restoration and predator control across the area opportunities for species restoration and reintroduction may become possible. Local groups such as Nga Uruora, Project Kakariki and the Kapiti Biodiversity Project have aspirations for species based projects such as restoring native lizard fauna and re-establishing kakariki, the green parakeet of the village's name.

### **Restoration of waterways and wetlands**

Restoration of waterways through the area has significant potential and has been raised by a number of groups in the past. This would include riparian planting to provide shade and protection for the existing streams. Retirement of grazing of the area and gradual establishment of woody vegetation on steep catchment areas will be providing a benefit to water quality. Restoration activities could improve water quality and also aquatic habitat, providing increased opportunity for tuna (eel) and a range of native fish species.

Wetter basin areas, north east of Tilley Road could be the site of wetlands created through planting and some physical works to enhance and link low areas. Wetland areas linked to the waterways would increase habitat for eel and other species, as well as providing habitat for wetland bird species. Wetland areas could also be designed to assist in removal of sediment and nutrients from incoming runoff.

Waterway restoration and wetlands would need to be carefully designed and undertaken to assist the management of flooding in this area including risks to existing housing.

## **Linkages and connections**

There is major opportunity provided by the mix of land types and ecosystems in these properties, and their proximity to people and surrounding public lands.

The NZTA land discussed in this report is adjacent to Queen Elizabeth Park (administered as a Regional Park by Greater Wellington), Whareroa Farm (a DoC Reserve) and the forests of Mt Wainui that form part of Akatarawa Forest (administered by Greater Wellington). These connected lands are adjacent to population within Kapiti and also directly linked to the wider region through the public train transport network and highway.

Major native forest areas are present within the Akatarawa Forest which connect through to the much larger Tararua Forest Park. Remnants of native habitat and restoration areas are present across Queen Elizabeth Park and Whareroa Farm and also the Mataihuka escarpment adjacent to Raumati in the north. This provides opportunity for a wide range of linked sequences of restoration across habitats from coastal dunes to wetlands and forests. It potentially provides the opportunity for connected corridors of habitat running right across the landscape.

## **9. ACTION PLAN – PRACTICAL IMPLEMENTATION**

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Long term ownership and control of this land is still to be resolved. The process of working toward long term ownership is not within the scope of this report. Iwi and Community working groups are undertaking separate work on this.

The purpose of this report is to provide an objective basis for discussing long term management. While ownership is not resolved, there are still important actions that could occur to taking advantage of the different opportunities identified in Section 8, above. A range of actions are set out below. These have been grouped into possible early actions that could occur now while ownership is still being resolved, and medium term actions – that are likely to require more certainty around ownership / management. How these actions are undertaken is likely to depend on how discussions on land ownership progress.

### **9.1 Possible early actions**

#### **Hill country forest restoration**

There is immediate potential to move into large scale native reforestation on the large hill country amenity management zone. This action appears well aligned with the vision and objectives and this management zones has little flexibility in its long term land use. Examination of this work could potentially begin immediately and is likely to include:

- Examine with NZTA opportunities for beginning this work immediately in a way that does not conflict with the future disposal process.
- Develop planting and restoration plan
- Seek one billion trees funding and additional funding opportunities.
- Investigate entry into the Emissions Trading Scheme in conjunction with NZTA, or delay until later
- Site preparation, planting and management.
- First major planting in 2020

## **Pest and weed control**

This needs to begin immediately, building on existing work. The sooner integrated weed control begins the lower the cost – as key weed issues will continue to increase. Expansion of pest control will support forest establishment, removing browsers, and will be a key part of delivering on wider biodiversity restoration objectives. Work steps include:

- Weed mapping and develop control strategy across lands
- Implement strategic weed control, targeting high priority weeds and areas.
- Ongoing weed management.

Pest animal control also needs to be well planned to get the most cost effective landscape level results. This will involve integrating with a range of existing control operations and potentially expanding pest animal control across the entire property area, depending on funding.

## **Assess management structures, potential cash flow, and business model**

As identified in this document there are a wide range of services and products that could earn revenue from these lands. There are also major ongoing costs in areas such as weed and pest control and development and maintenance of recreational facilities. Local control and management of these lands is much more likely to be successful if a structure and business model can be found that will largely cover the costs of managing this land.

### **Income could be produced from:**

- Grants – billion trees etc
- Carbon
- Telecommunications leases
- Concessions - recreation
- Energy
- Horticulture
- Honey
- Housing development: sales, rentals etc
- etc

### **Budgets needed for:**

- Weed and pest control
- Development of recreational facilities, historic interpretation etc.
- Maintenance of recreational and other facilities
- General management and administration
- Planting and restoration
- Etc

A business model and management structure for the property need to be investigated.

## **Detailed planning of flats**

The flat land that form part of this scoping study (predominantly identified as management zones 1-3) has a wide range of opportunities but is a complex mix of different soil types, infrastructure, waterways etc. More accurate assessment of natural resources such as soil boundaries and modelling of hazards such as flooding is required to more effectively plan this area.

## **Haumia Places and Pou**

Haumia will work as partners in the project to identify the best way to integrate their story and development within this project. Work with Haumia on gathering and presenting information needs to a high priority early action. Over time work with Haumia may range from direct involvement in management to development of public interpretation of their occupation to enhancing kai and rongoa resources.

## **9.1 Possible medium term actions**

### **Restoration of waterways and wetlands**

Though a high priority – at this stage it is considered this may be delayed slightly as it would follow completion of highway works and would require more detailed planning of the flat land areas to get the best possible result.

There is an opportunity to significantly expand the tuna (eel) fishery in the area and work with Haumia around management of this resource. Other sought after kai such as watercress could also be managed in this area.

Tasks are likely to include:

- Assessment of hydrology and interaction with flood protection for Paekakariki.
- Restoration planning for habitat and species and for flood and flow path management. This will include providing clear fish passage.
- Physical works and planting
- Management.

### **Plan and develop recreational opportunities**

Major opportunities for recreation development are present. There needs to be a well planned approach to identifying the type of recreational development that will bring outside recreational users into the village in a way that supports and benefits Paekakariki. Tasks likely to be necessary to increase recreational value include:

- Study recreational user demand, different types of needs, how they will change over time with demographics etc
- Plan staged approach to recreational development that will provide long term benefit for Paekakariki.
- Budget and develop in a staged way.
- Provide information and interpretation.

### **Build high quality biodiversity**

This will involve supporting and expanding the existing programmes and visions of groups Nga Uruora, Project Kakariki, Kapiti Biodiversity Project etc. It will integrate with increased weed and pest control, the establishment of hill country forest and restoration of waterways and wetlands

### **Develop high quality long term water supply integrated with other uses**

This should connect with KCDC asset management plans for the Paekakariki water supply. Investigations of the current and future demand and potential for additional catchments to provide high quality water to the supply system will need to be investigated. Plans for long term management of the catchments will need to support maintaining high quality, safe, water supply.

This catchment management will be supported by related activities of hill country restoration and pest control.

### **Integrated housing development planning on appropriate areas – urban design etc**

Potential establishment of additional Paekakariki housing through flat areas of the property will require significant additional investigation and planning. More detailed assessment of the flat land area, identified as an immediate task, will be key. There is also a need for careful urban planning and architectural design to see how any development could connect to the existing village and not become separate from it. This planning needs to examine how it could provide the types of housing that are required including housing opportunities for Haumia, for the elderly, lower income earners and a diverse range of community members.

The detail of regulatory planning opportunities and constraints needs to be examined – so see how an integrated housing development could be practically achieved.

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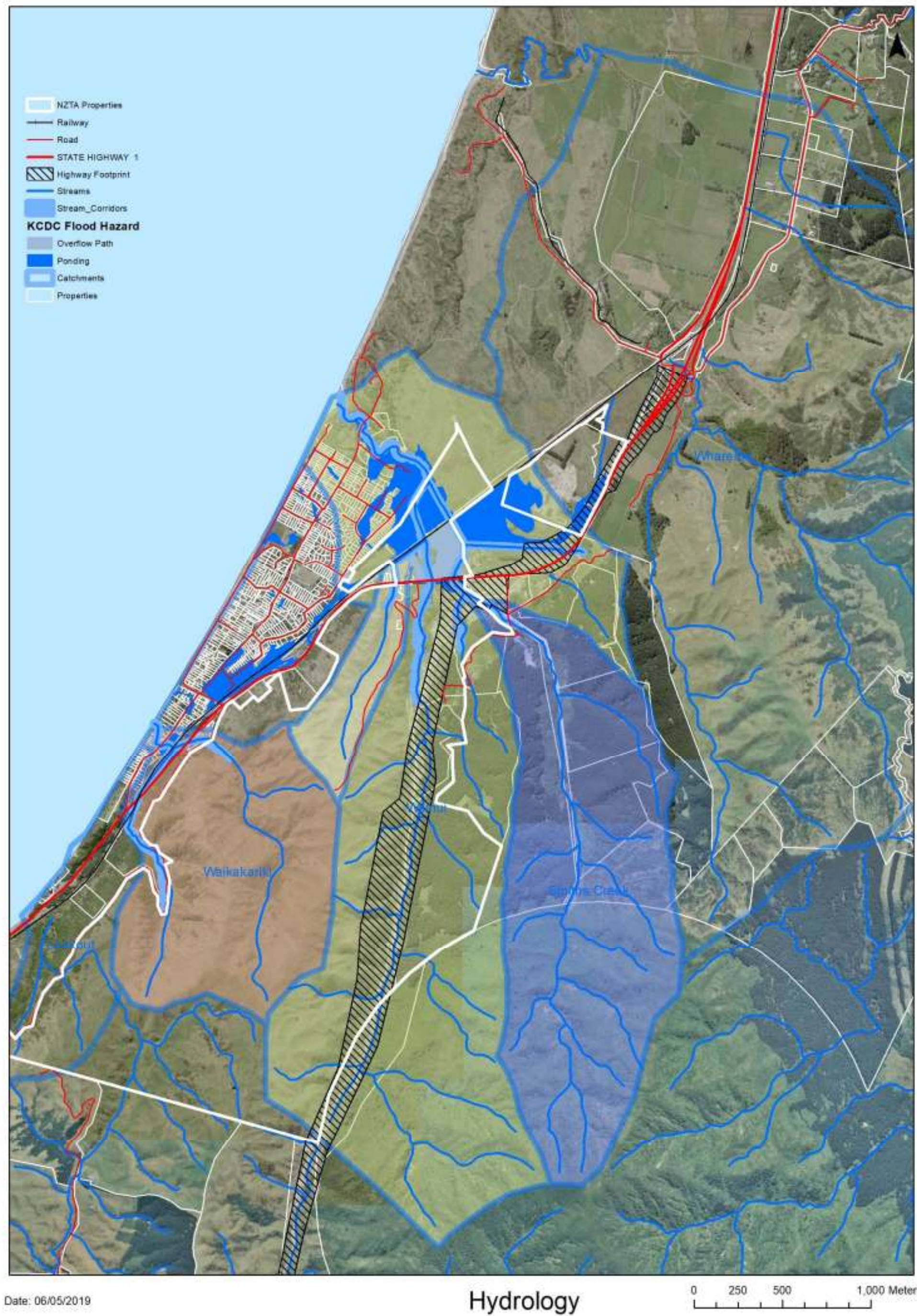
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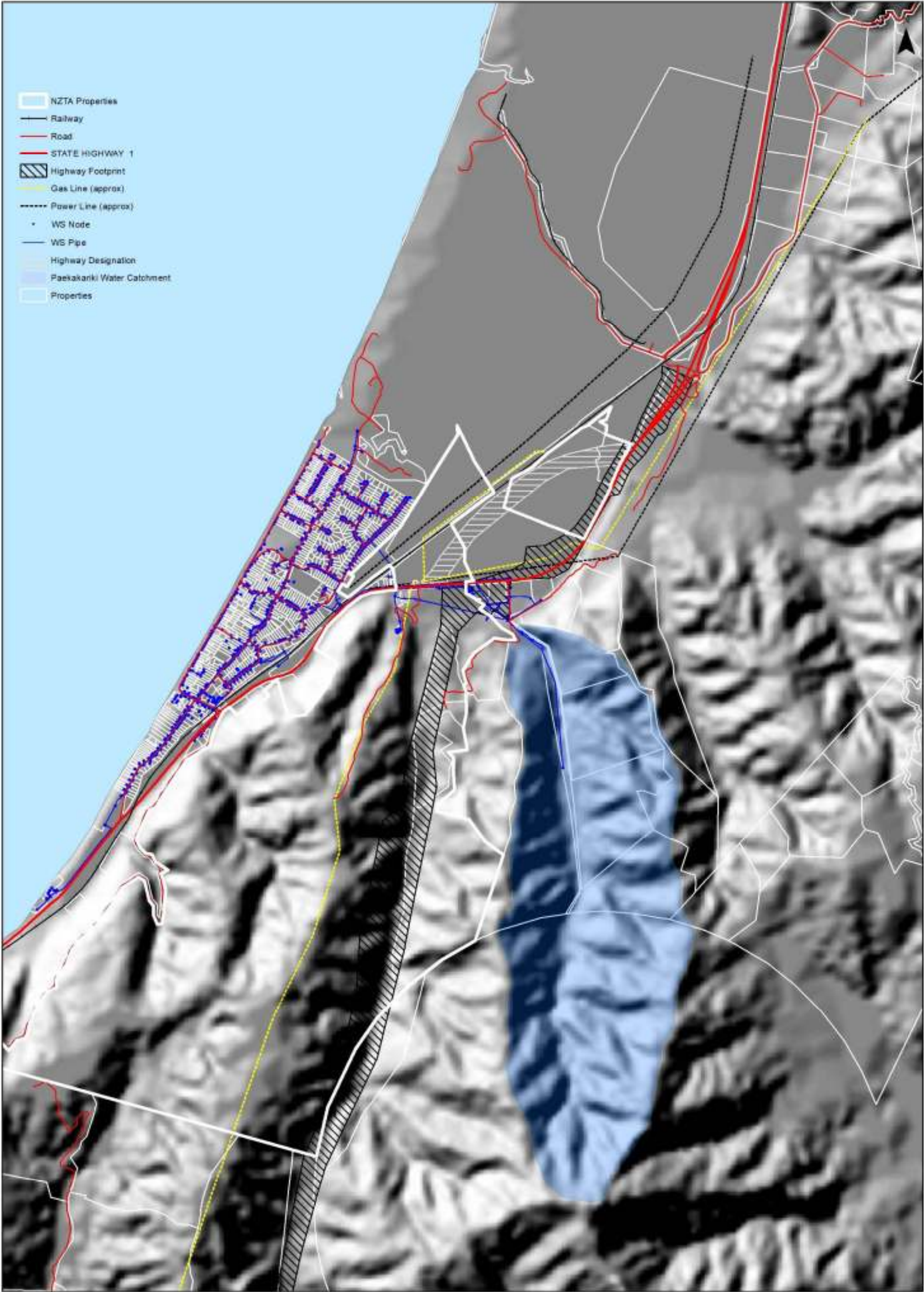
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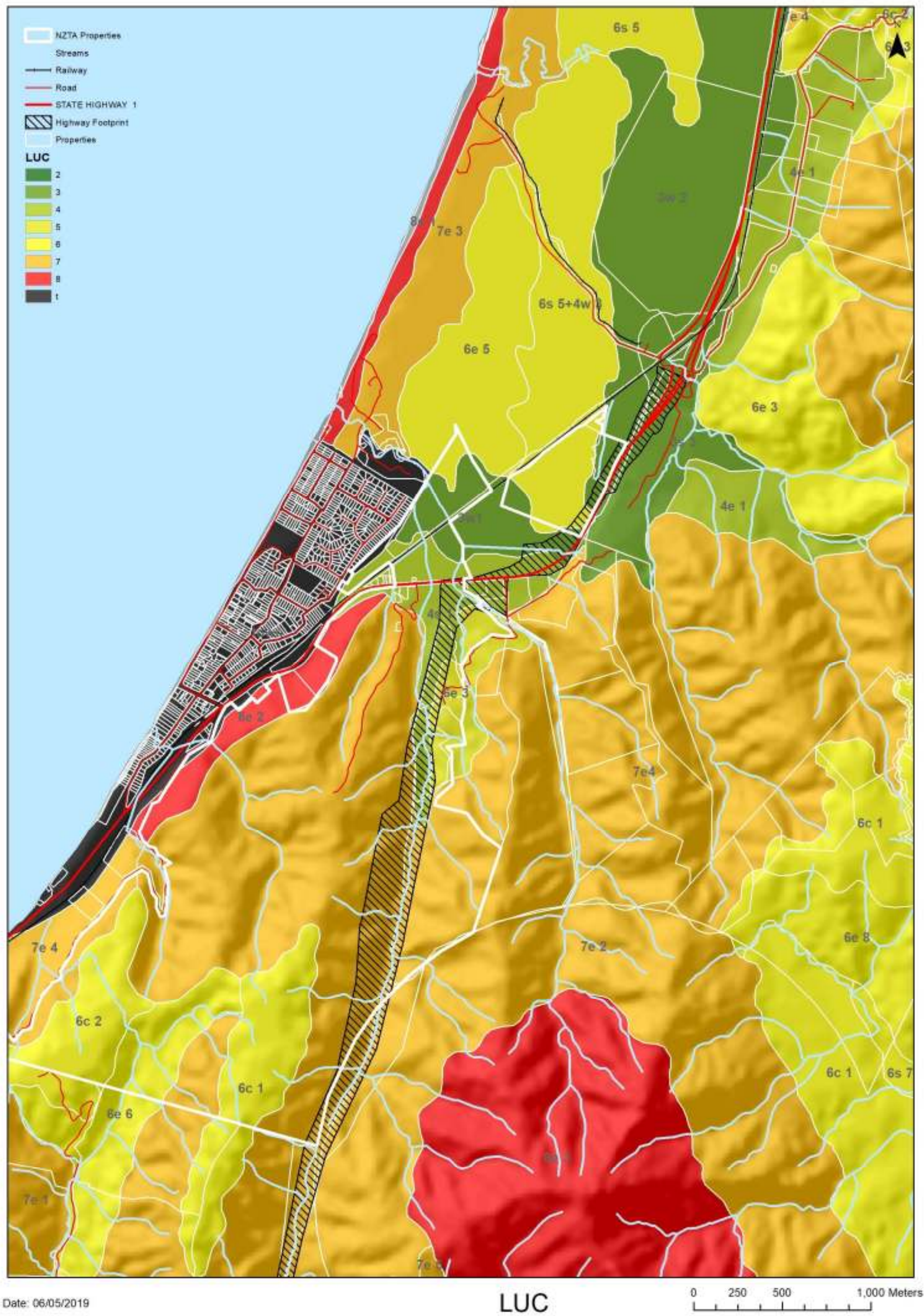


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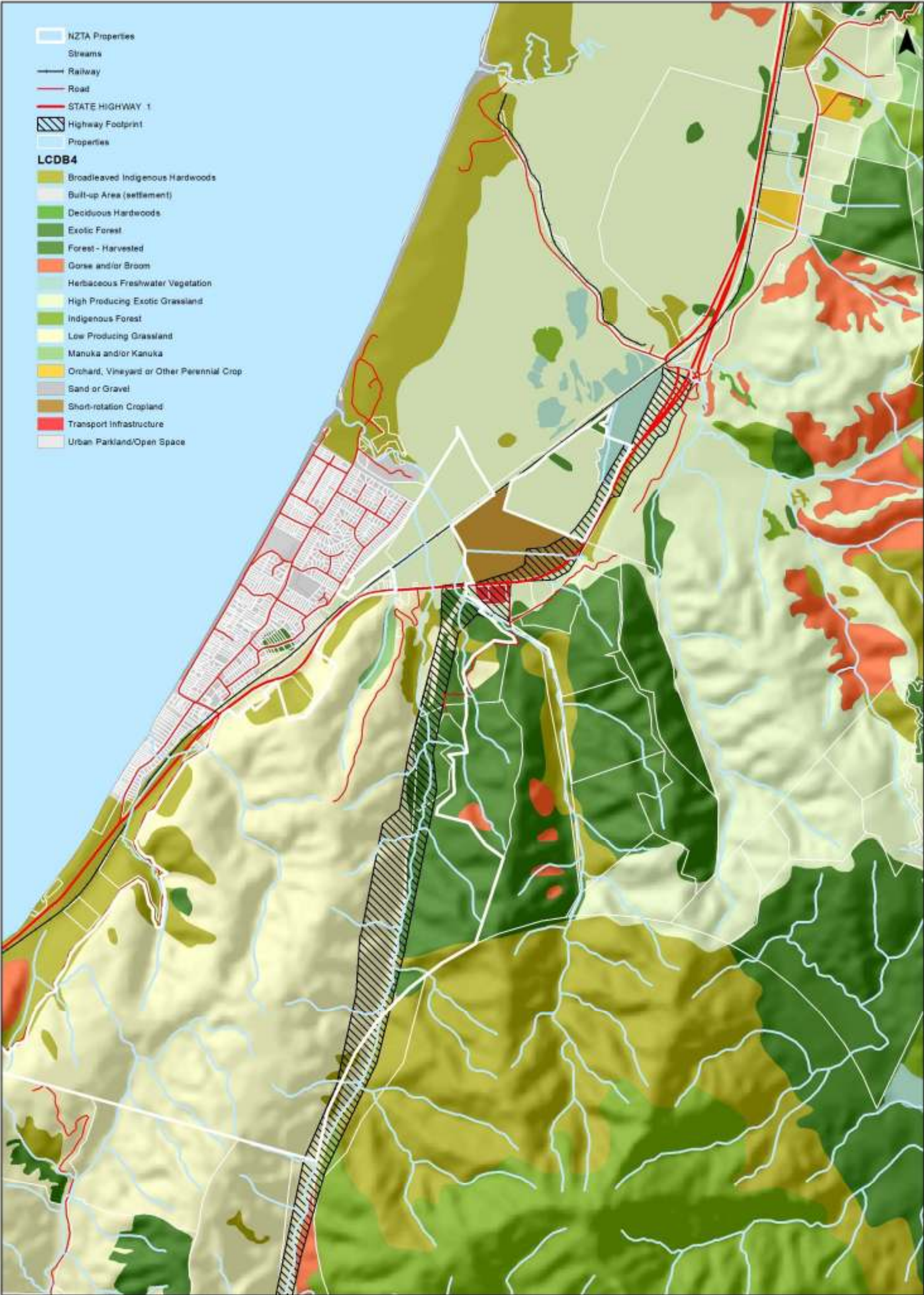
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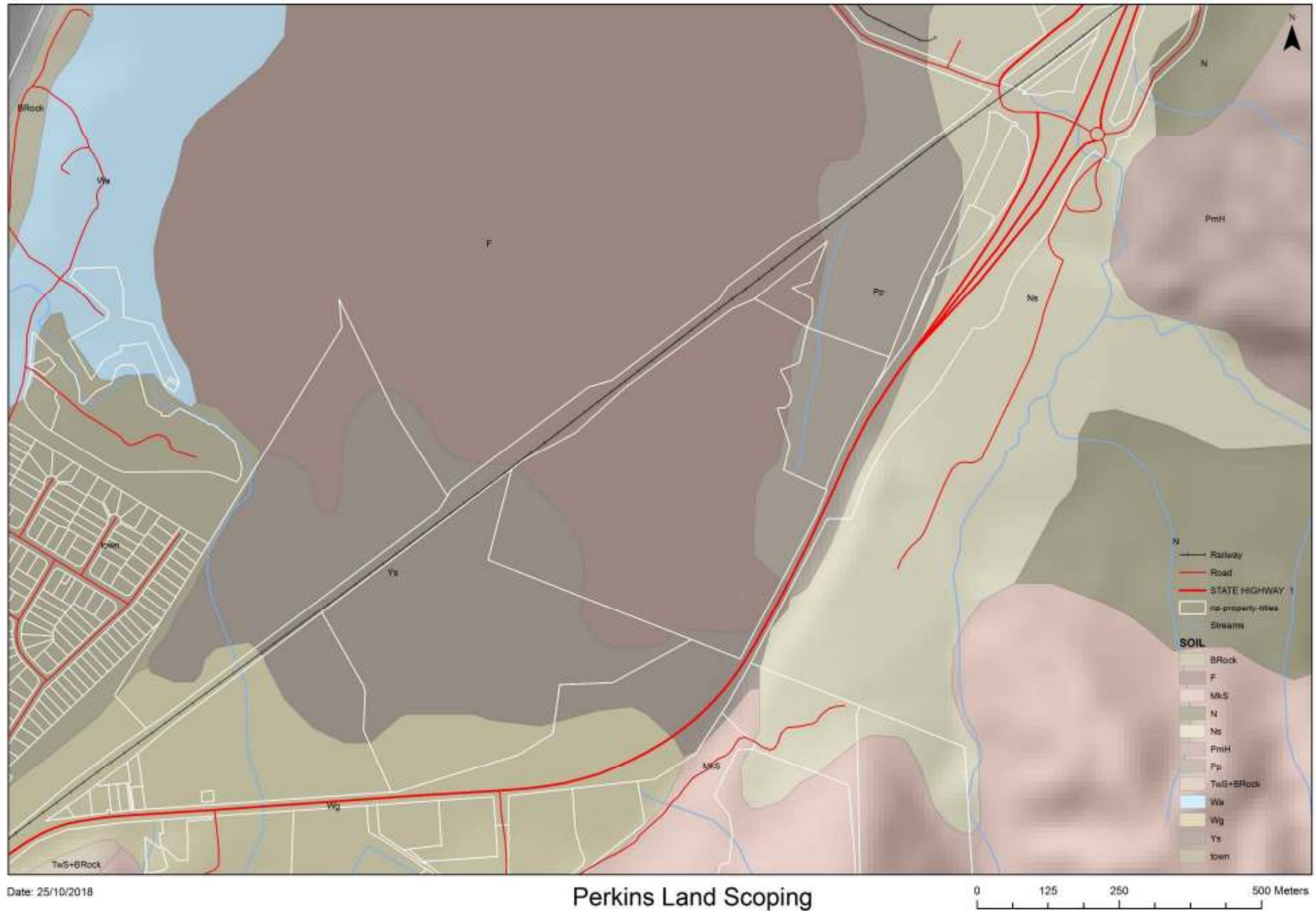
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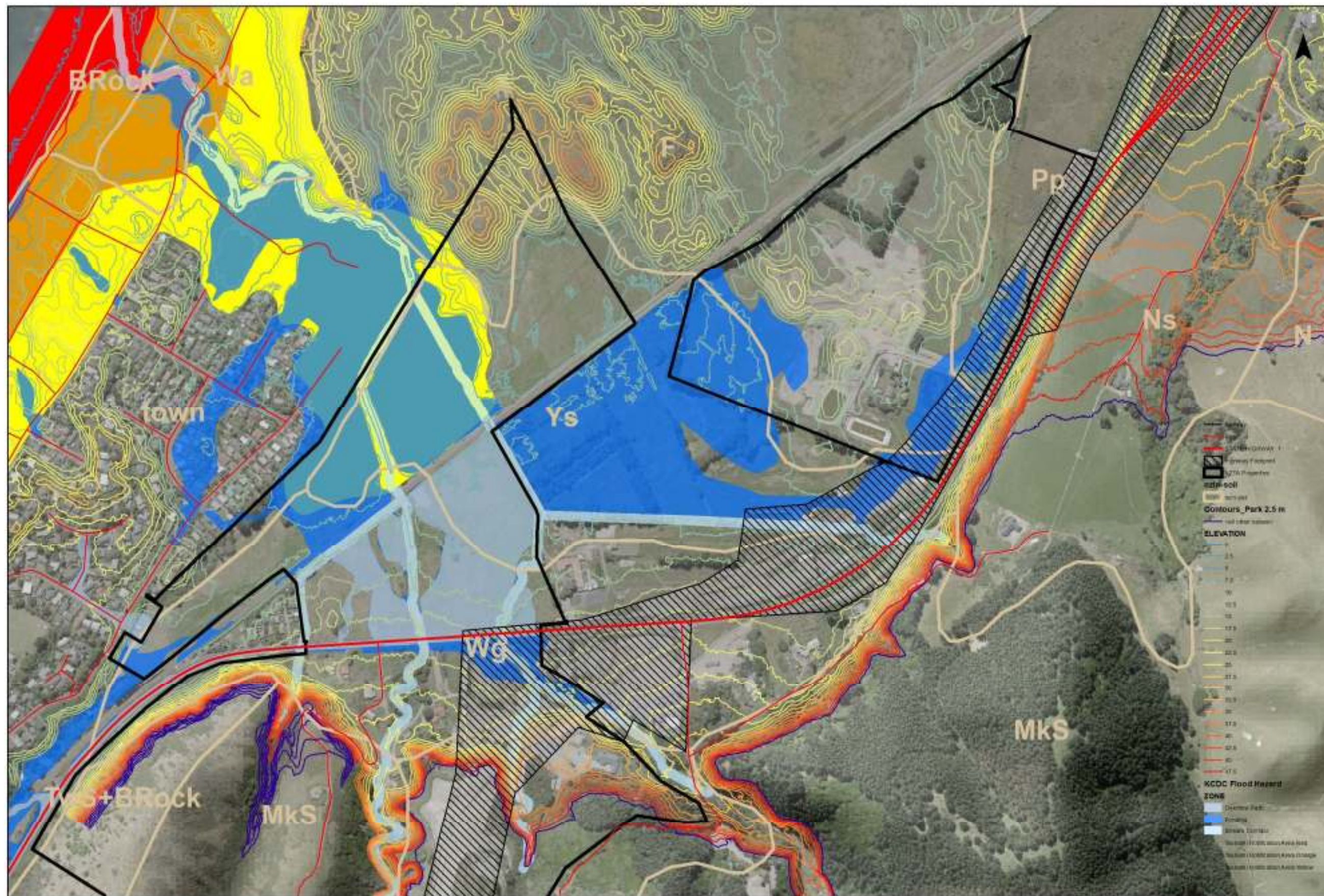










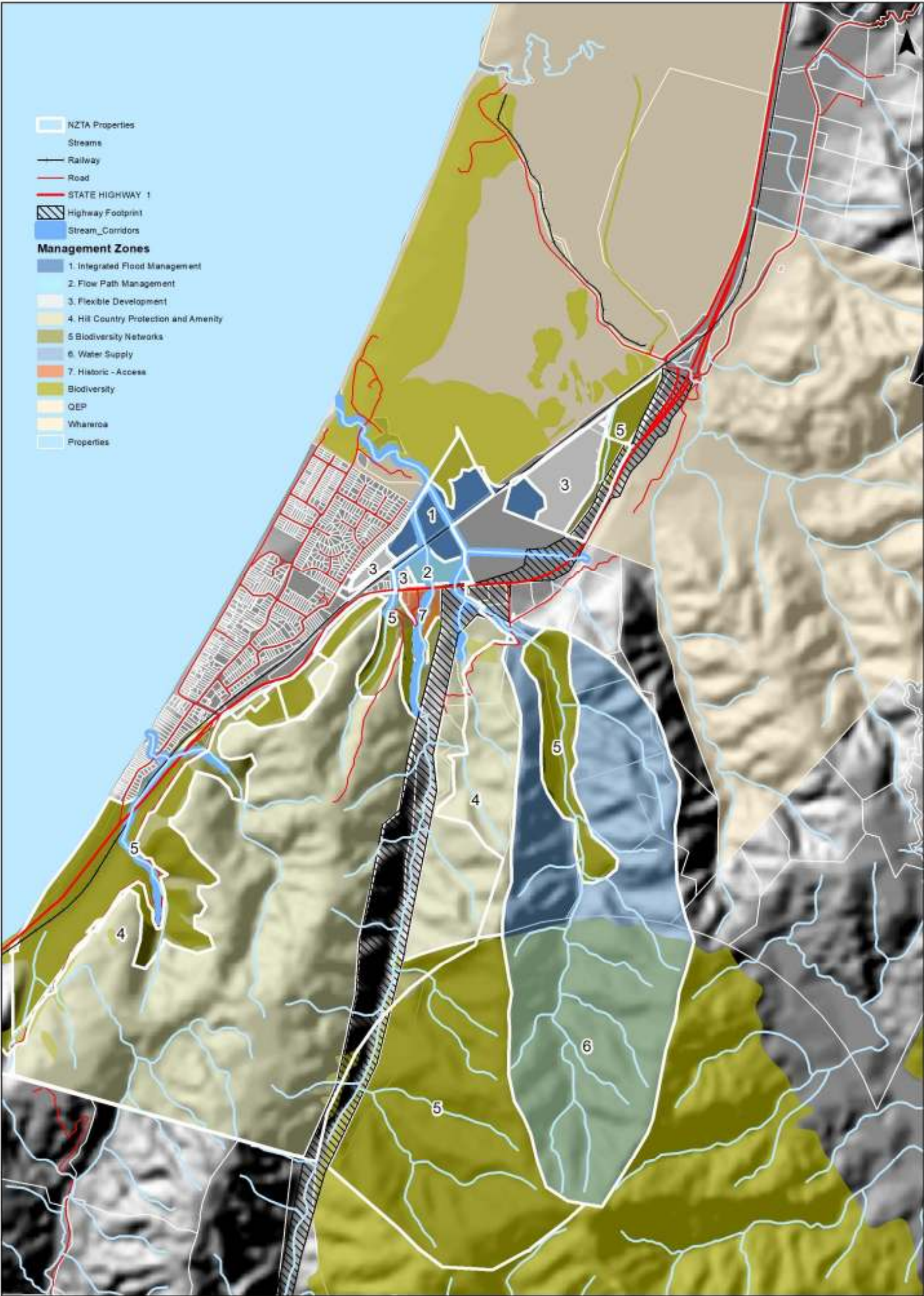


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Flat Land Focus Area

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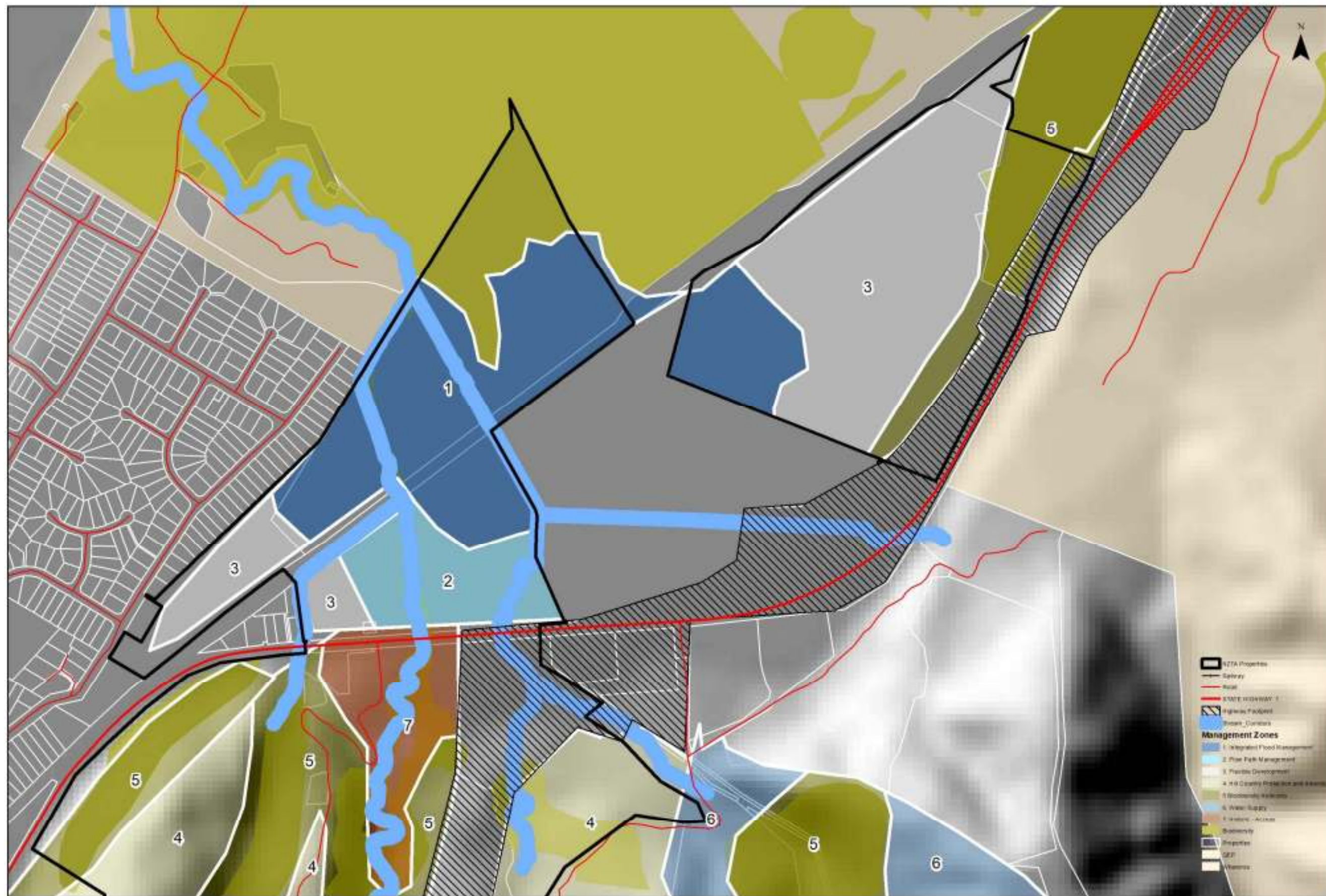


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Management Zones







Date: 09/05/2019

Flat Land Management Areas

0 125 250 500 Meters