

Appendix M

Urban and Landscape Design Framework

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Peka Peka to Ōtaki DRAFT Urban and Landscape Design Framework

**Opus International Consultants Ltd
February 2012**

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1.1 Project Overview



Kapiti Expressway: Peka Peka to Ōtaki
“Part of the Wellington Northern Corridor Road of National Significance (RoNS) – a planned four-lane expressway from Wellington Airport to Levin.”

SH1 is the major route in and out of Wellington, linking the centres of Palmerston North, Wanganui and Levin with Wellington. By improving transport networks through the Kāpiti Coast, this project will contribute to economic growth and productivity.

Currently the Peka Peka to Ōtaki section of SH1 has a relatively poor and a worsening safety record. It also experiences high levels of congestion during peak holiday times. This congestion is compounded by a high proportion of short distance trips in the area, and an increasing level of shopping generated parking and pedestrian movements in the Ōtaki urban area. A bypass of Ōtaki, and the provision of a high standard highway through the area will increase the efficiency of movements between Wellington and the North, will ease local congestion, and will facilitate economic development of the area.

The scope of this project is a high quality four-lane expressway bypassing Ōtaki township and the settlement of Te Horo. Together with the Mackay’s to Peka Peka section, it forms the Kāpiti Expressway and when both sections are completed will provide a superior transport corridor providing much improved, reliable and safer journeys through the Kāpiti Coast.

From an RMA perspective, The New Zealand Transport Agency’s (NZTA) objectives for the Wellington Northern Corridor RoNS and the Peka Peka to Ōtaki project are:

GPS	Wellington Northern RoNS	Peka Peka to Ōtaki
Support economic growth	<p>To enhance inter-regional and national economic growth and productivity.</p> <p>To improve access to Wellington’s CBD, key industrial and employment centres, port, airport and hospital.</p>	<p>By: Providing a significantly improved transport link as an integral part of the Levin to Wellington Airport RoNS.</p> <p>By: Achieving a state highway to expressway standards that connects with the Mackays to Peka Peka and Ōtaki to Levin sections of the Levin to Wellington Airport RoNS; and Efficiently serving the Ōtaki township, its future development and the wider Ōtaki area.</p>
Reduce congestion	<p>To provide relief from severe congestion on the state highway and local road networks.</p> <p>To improve the journey time reliability of travel on the section of SH1 between Levin and the Wellington airport.</p>	<p>By: Aligning traffic types and movements with the most appropriate route by separating through traffic from local traffic.</p>
Improve safety	<p>To improve the safety of travel on state highways.</p>	<p>By: Separating regional and local traffic, limiting access to the expressway and providing local grade separated access across the expressway at Te Horo.</p>

Additionally, another objective is to manage relevant social, cultural, land use and environmental effects that may arise from the project by ensuring that any adverse effects are appropriately avoided, remedied or mitigated.

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The objective of the overall project is to provide a modern 4-lane expressway that will support economic development by providing a strategic arterial route to improve trip reliability and efficiency through the Wellington region. The project will provide legible connections to Otaki township, and provide for community connections across the corridor. The expressway is to be integrated with the Otaki Vision and opportunities to enhance urban and landscape outcomes, are to be explored.

NZTA's urban and landscape design related priorities for the expressway include:

- Develop an integrated solution that achieves an appropriate balance between the functional performance requirements of local and State Highway traffic; and
- Address social, land use and environmental impacts of the project in the context of the aspirations of territorial authorities.

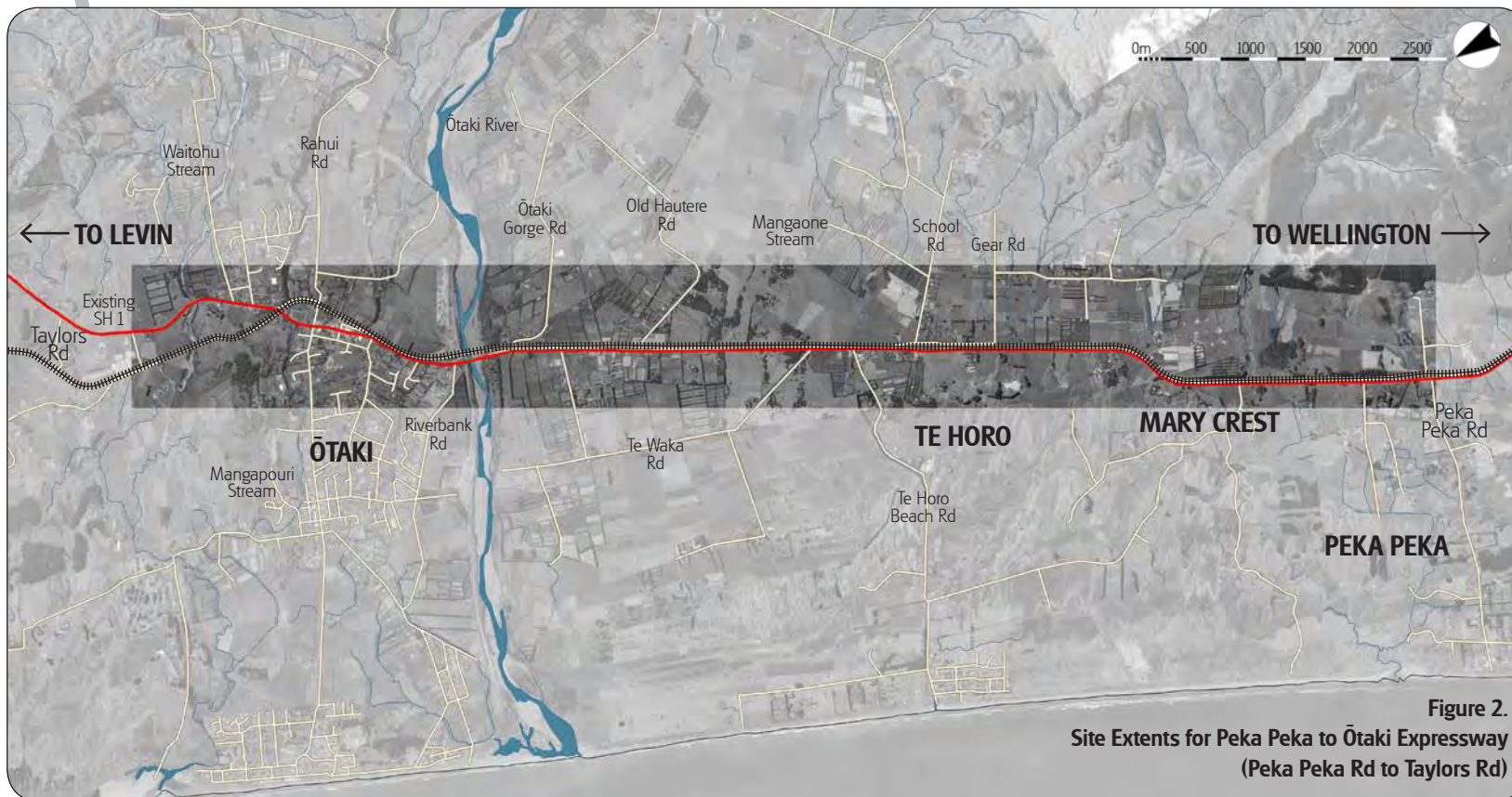


Figure 2.
Site Extents for Peka Peka to Otaki Expressway
(Peka Peka Rd to Taylors Rd)

This expressway project creates the opportunity to improve connections and networks and have a positive impact on the urban form of Otaki and Te Horo. However, failure to properly consider the way in which Otaki and Te Horo has developed, and could develop in future,

may result in infrastructure that leads to poor urban form and negative community outcomes. Urban design is therefore one of the primary considerations for this project. Its importance is recognised by our key stakeholders and local community.

- These include:
- NZTA (direct client)
 - Kāpiti Coast District Council
 - Greater Wellington Regional Council
 - KiwiRail
 - Local community
 - Local iwi
 - Users of SH1 and rail corridor

Note: A new section of local arterial will be constructed south of Mary Crest (as the expressway alignment will sit on the location of the existing SH1) and the project scope allows for removal of the passing lanes on the existing SH1 together with tie-in works to the expressway. Any further enhancements to the existing

State Highway 1, together with provision of a parallel walking and cycling facility (including the clip-on across the Otaki River Bridge), will be addressed as part of the state highway revocation process. Some ideas and opportunities for principles for the revocation project will be suggested throughout this ULDF.

1.2 Purpose of the ULDF

The purpose of this Urban and Landscape Design Framework (ULDF) is to describe/ set out urban and landscape design principles, objectives and high level concepts of the Peka Peka to Ōtaki expressway project. The ULDF will continue to evolve during the project scheme phase and will inform the design development for the project.

The document is intended for use as a guiding tool for the project consultants and engineers from concept through to detailed design. The ULDF should be included with the detailed design package, so that the construction team is also aware of the objectives and guiding principles of the project.

The ULDF is developed in accordance with NZTA guidance and supports the NoR application. It follows from the SH1 Kapiti Strategic Study (Contract 266PN), July 2008, and the Transit NZ Scheme Assessment Report for North Ōtaki to Peka Peka Rd, September 2002.

The ULDF seeks to establish a balance between RoNS network objectives, the desired future for Ōtaki as outlined in the Ōtaki Vision document 2007 (described in detail in Section 2.1 of this ULDF), and the specific urban and landscape context of the highway corridor.

1.3 Methodology / Structure of the ULDF

The ULDF is a product of urban design investigations of the project area, project team meetings, numerous multidisciplinary workshops, Wellington RoNS urban design workshops, and liaison with stakeholders.

The project is currently in the scoping phase, and the ULDF will continue to evolve as the project progresses into the scheme assessment phase.

All disciplines within the project team are kept up to date as the ULDF evolves, so that the urban design aims are known as the expressway design develops.

The study methodology is reflected in the ULDF structure, shown below:

Section 1. Introduction

Introducing the ULDF document, by outlining the purpose of the ULDF, the structure / methodology of the document, and defining the smaller study sections within the project extents (Peka Peka to Mary Crest, Te Horo, Ōtaki Township, and Ōtaki Railway Retail Area).

Section 2. Policy Context

Outlining additional influences and considerations which impact on the project. This includes the NZ Urban Design Protocol, and the objectives outlined in the Ōtaki Vision document provided by Kāpiti Coast District Council (KCDC).

Section 3. Corridor - Urban & Rural

Context

Analysis of the existing road corridor, identifying built, environmental and social constraints and opportunities. This includes surveys, multidisciplinary specialist inputs, information gathered from site visits, and view analysis to ensure familiarity with the route, a cohesive and integrated urban and landscape design vision for the road corridor, and; confirmation of key site parameters impacting upon the design development.

Section 4. Corridor Design

Development of a cohesive set of urban and landscape design principles for the road corridor, which reflect the route investigations of Section 3, as well as NZTA's objectives for the expressway and the objectives of the stakeholders.

These urban and landscape design principles have been broken up into numerous elements including: landscape, earthworks, structures, noise barriers, pedestrian, cycle and bridleway links, planting, road furniture, stormwater.

Section 5. Sector Design

Studying the smaller study sectors within the project extents in more detail, and identifying the design principles specific to the issues and existing characteristics of the smaller sectors.

1.4 Route Description

The project area is located along the Kāpiti Coast, approximately 70km north of Wellington. The route stretches for 13km from Peka Peka Road in the south to Taylors Road in the north, and bisects Ōtaki township. The project area comprises a mix of land uses including rural, residential, industrial, commercial, and horticultural. The area surrounding Ōtaki township is predominantly rural, with the Ōtaki economy relying largely on the farming communities.

The route passes through two townships; Te Horo, a small community of approximately 640 people, and Ōtaki, a larger town of approximately 5,600. Ōtaki is the northernmost urban centre of the Kāpiti Coast District and the Wellington Region.

The Kāpiti Coast is currently experiencing high growth and is one of the fastest growing districts in the lower North Island. Planned development in the Ōtaki area will place greater demand on the existing road network, and particularly on SH1 as a commuter route to Wellington. Additionally, there is increasing intensification of rural and horticultural activities.

The proposed route traverses relatively flat terrain, crossing the Mangaone Stream, the Ōtaki River, the Waitohu Stream, and railway line. State Highway 1 currently has priority over all except one intersection (the Ōtaki roundabout) along the route. This roundabout can cause significant traffic congestion issues, particularly during busy periods.

State Highway 1 and the adjacent North Island Main Trunk (NIMT) rail corridor severs Te Horo and Ōtaki. This is particularly an issue in Ōtaki as there is only one main east-west connection (Mill Rd / Rahui Rd) providing access across the corridor.

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Urban Design and Landscape Benefits and Opportunities

Pareomatangi Reserve (shown in Figure 19) is likely to change significantly as a result of the expressway. This provides opportunity:

- If the reserve is extended, it can be developed to provide separation between the expressway and Ōtaki township / residential areas.
- The open space allows any structure on Rahui Rd to be treated as a landscape element with longer ramps and a high-quality pedestrian environment.
- Combined with the proposed access ramp structures north of Ōtaki township, an enlarged Pareomatangi Reserve has potential to become a landscaped “gateway” experience for motorists entering/leaving Ōtaki.

At Ōtaki, the greater part of the settled area (and most potential for growth) is located west of the transport corridor. The proposed expressway corridor has less intrusive effect than if it was between Ōtaki Town and Ōtaki Beach communities, as it simply widens the existing severance corridor, rather than introducing another.

The Ōtaki River and its bridge provide a modest gateway experience for motorists entering or leaving south Ōtaki.

Over most of its route, the expressway follows the existing SH1/NIMT corridor. The impact of transport is localised and is largely restricted to areas which are already in close proximity to through traffic.

Driver experience of landscape on the expressway can be improved - the dynamic experience of arriving in/passing through/leaving the Kāpiti Coast.

Many of the urban design benefits of the expressway will be realised as improved environments for local motorists, pedestrians, and businesses within urban areas, as part of the state highway revocation project. The old highway provides opportunities for:

- streetscape enhancement, including enhanced pedestrian experience, integrated car parking and streetscape of the Ōtaki Railway Hub Precinct.
- enhanced connectivity and amenity value of regional walkways, cycleways and bridleways.

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Project Sectors

Within the project extents, the urban design team has divided the site into four main sectors: Peka Peka to Mary Crest, Te Horo, Ōtaki Township, and Ōtaki Railway Retail Area.

1. Peka Peka to Mary Crest

Peka Peka to Mary Crest is a section of the project area, predominantly of rural character, with the occasional lifestyle property evident.

2. Te Horo

Te Horo is a small rural community located toward the southern end of the study area. The urban form is a simple linear development, with the main community functions structured along School Rd, and market garden stalls on SH1. These areas are severed by both the existing SH1 and rail corridors.

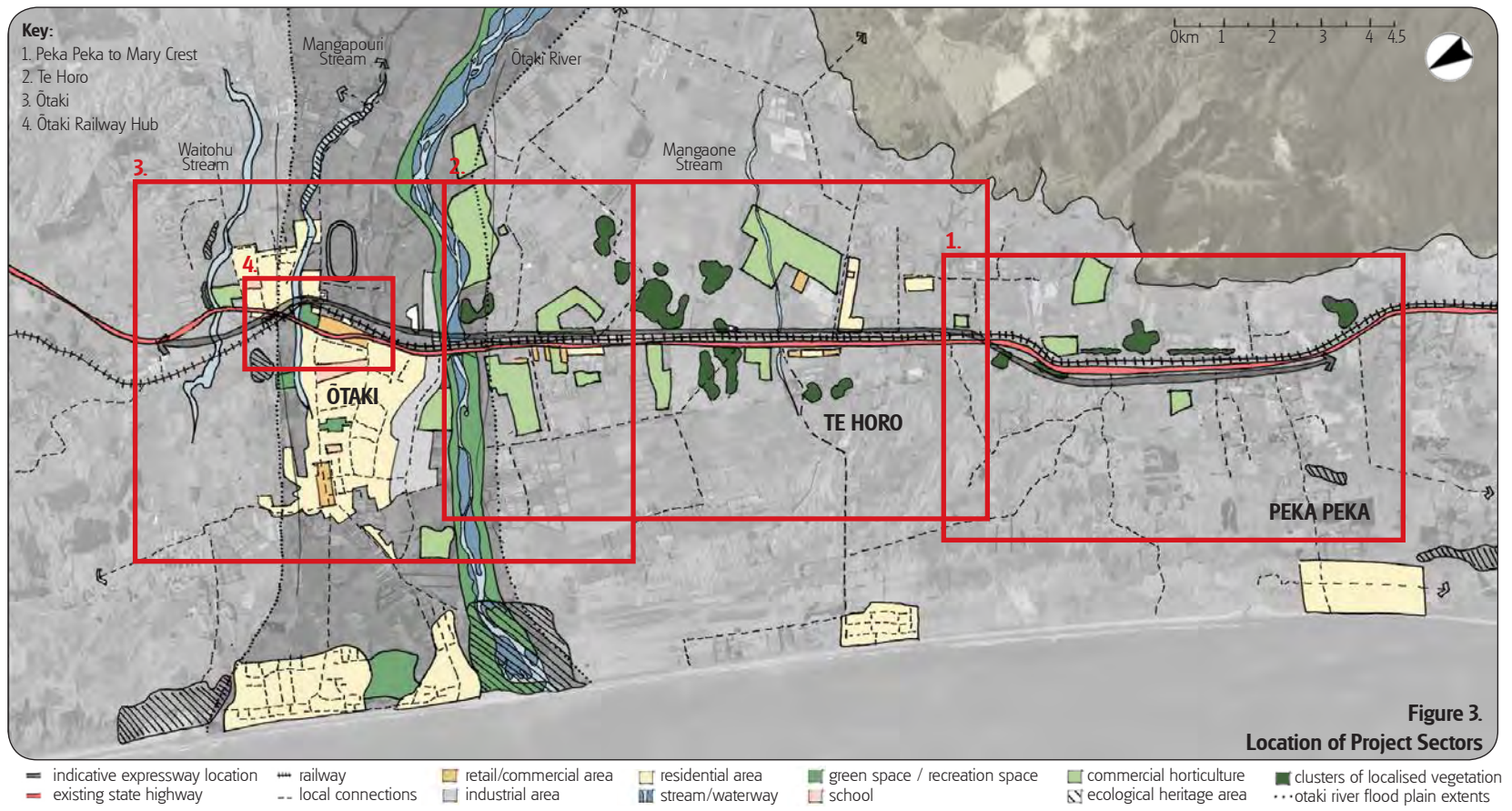
3. Ōtaki Township

Ōtaki township is the northernmost centre of three dominant settlements on the Kāpiti Coast. The urban boundaries of Ōtaki are the Ōtaki River to the south and the Waitohu Stream to the north. The majority of Ōtaki residents and community amenities are located west of the SH1 corridor with a smaller residential population to the north west on the Waitohu Plateau. The key connections between the two areas are via the existing SH1 and Rahui Rd.

4. Ōtaki Railway Retail Area

The Ōtaki Railway Retail Area is located along the existing SH1 in the form of a specialist and outlet retail strip between Waerenga Rd and the roundabout at SH1/Rahui intersection. The economic viability of the businesses in this area would be particularly sensitive to the form and legibility of off/on ramps to Ōtaki from the expressway bypass. The natural centre of the Railway Retail Area is the Arthur St intersection which acts as a minor east-west axis across SH1.

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The main issues affecting the project sectors outlined on the previous page include:

Severance/Community Connectivity

The proposed expressway alignment, in combination with the NIMT and current state highway create a strong severance corridor, affecting east-west connectivity along the extents of the project area.

Current and Future Land Use

It is important to consider how KCDC envisage Ōtaki and the surrounding communities to develop in the future. The design and location of connections and the expressway interchanges will affect future development, so it is important that KCDC's vision is understood during the design process.

Business Sustainability

The expressway will divert regional through-traffic away from the business areas of Te Horo and Ōtaki. It is important to consider the opportunity of developing business environments as a local destination, as well as creating easy, legible routes to and from these environments.

Recreational Access

KCDC puts great emphasis on access to recreational facilities. It is important the expressway design maintains/enhances connections to water bodies (including Ōtaki River and the coast), and open spaces (such as Pareomatangi Reserve).

Gateways (Local and Regional)

This issue is tied into business sustainability - it is important to create a legible, accessible entry and exit to and from Ōtaki, the Kāpiti Coast District, and the Wellington Region.

Potential Landlocked Sites

Landlocked sites need to be considered - how will these spaces be treated once the expressway is built? How will these spaces be used?

Figures 3A to 3D below explain some of the site wide issues in more detail.

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Severance and Community Connectivity

Severance and community connectivity were two of the main concerns expressed during the 2009 Submissions¹ process. The expressway project could potentially exacerbate the existing east-west severance created by the current state highway and railway corridors. Important east-west connections across these corridors are shown in Figure 3A - these connections need to be considered.

It is important that cross-corridor connections are legible and efficient, so that communities can still function successfully, even though local facilities and residences may be split on either side of the corridor.

Locating the expressway and the railway within a single transport corridor minimises the impact of the new road. Furthermore, Otaki township's relationship to this corridor is asymmetrical, i.e. the majority of the built-up area lies to the west of the corridor. Within this area, effective connectivity can be expected to improve, owing to the change in status of the existing highway which becomes a local arterial road. In this way, an overall increase in north-south connectivity partially compensates for any reduction in east-west access.

After the construction of the expressway, the current state highway will be a great asset in terms of an efficient (convenient for local residents, and catering for multi-modal use) local north-south arterial connection, and connections to the west of the state highway. Connections across the expressway/railway corridor to the east of the expressway will be where the main connectivity solutions will be required.

Recreational Access

Recreational access is a driving factor within the Ōtaki Vision document, and is tied in with severance and community connectivity. The east-west connections shown in Figure 3A are not only important for community connectivity, but also for providing access to recreational areas. The Ōtaki Vision document outlines the desire to maintain the existing riverside walkways (shown dotted in yellow in Figure 3B), and enhance the access to these walkways from Riverbank Rd.

Recreational areas are important for health, education, and economy through tourism, so it is important to ensure that access to these facilities is easy and legible.

1. Public consultation on the Peka Peka to Ōtaki expressway in 2009 resulted in 1720 submissions. Of these submissions, 1363 supported the expressway proposal, and 231 opposed it.

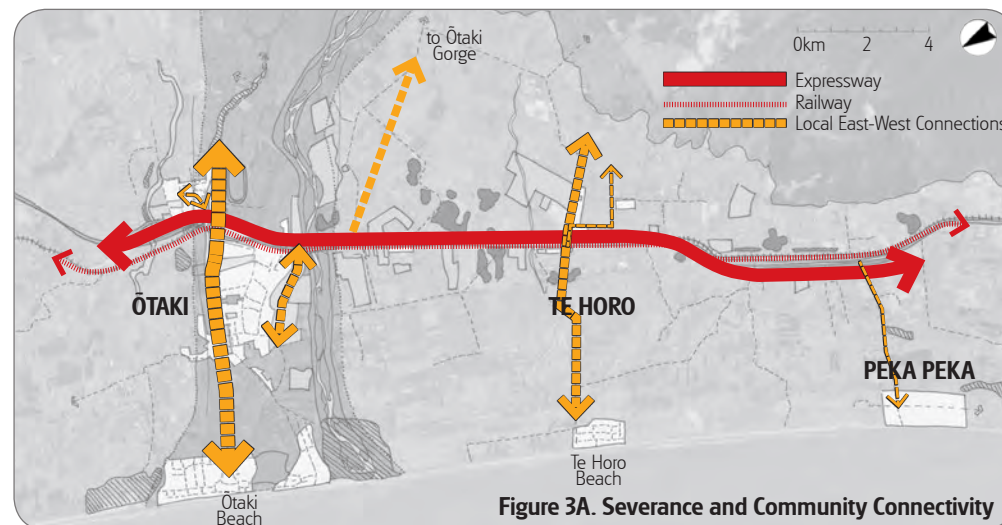


Figure 3A. Severance and Community Connectivity

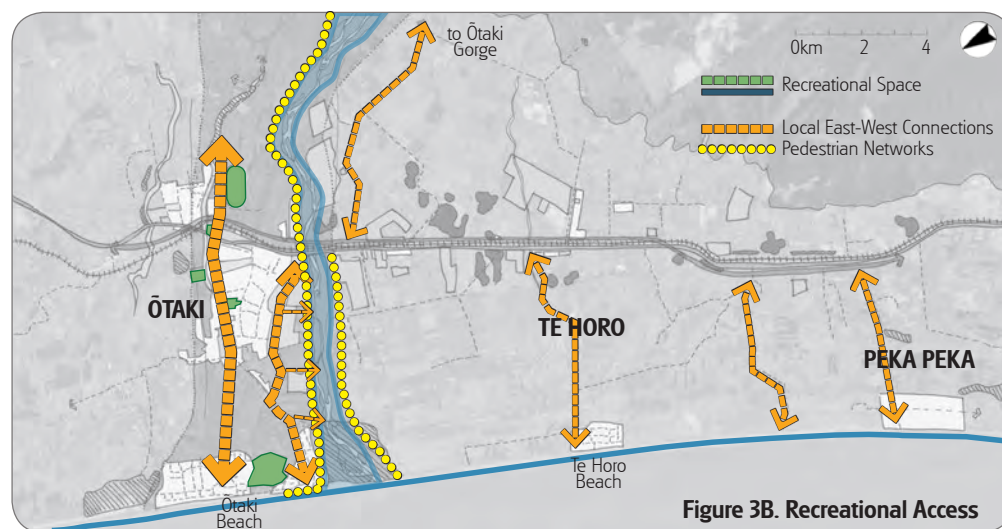


Figure 3B. Recreational Access

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Current and Future Land Use

Current and future land use is an important consideration when designing the expressway. The location and form of interchanges will have an impact on future land use. The Ōtaki Vision document expresses a desire for further development to continue at Ōtaki (both residential and industrial) and be discouraged at Te Horo. The emphasis is for Te Horo to utilise the fertile land in that area for horticulture or pastoral farming. Ōtaki also has plans for a 'Clean Technology' business park² to be developed to serve a regional purpose (shown in yellow in Figure 3C).

The Ōtaki River currently provides a natural containment line for development to the south of Ōtaki. The location of an interchange at south Ōtaki could depower the natural containment line here if placed significantly further south than the river. An interchange has not been planned at Te Horo, due to KCDC's desire to discourage further urban development there.

As illustrated in Figure 3D, the location of full interchanges and half diamond interchanges can influence where people want to develop land, due to accessibility. A half diamond interchange at both the north and south ends, provides improved containment points. For example, if half diamond interchanges were placed along the expressway where the containment lines are already shown at Ōtaki in Figure 3C, then development would be encouraged within the existing Ōtaki area, fulfilling an objective in the Ōtaki Vision document.

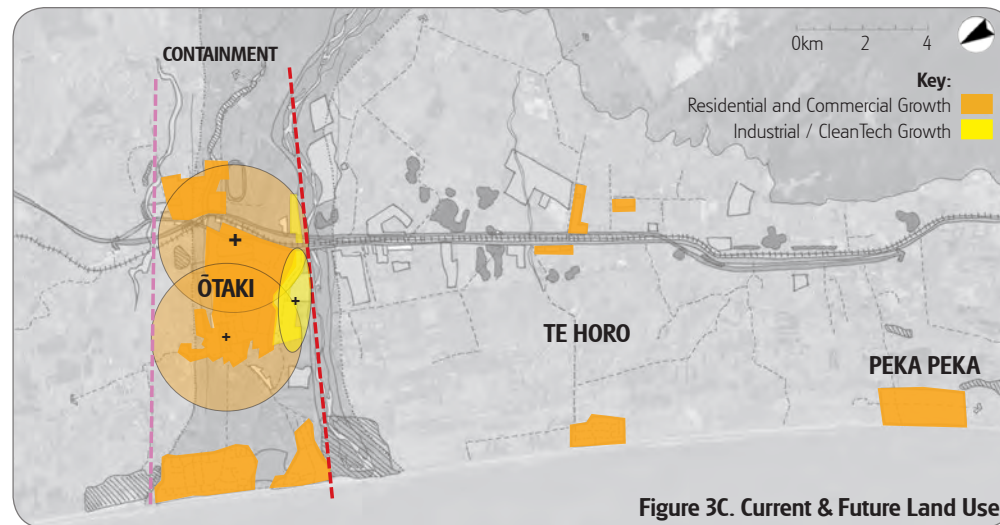


Figure 3C. Current & Future Land Use

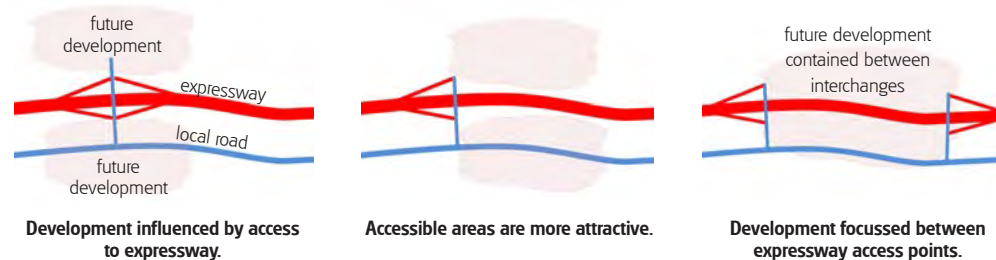


Figure 3D. Effect of Interchanges on Development

2. The business park will encourage the development of new 'clean' technologies and/or businesses producing sustainable products, such as plastic recycling, and environmentally friendly paints. The aim is to develop the economy of Ōtaki, as well as develop new employment opportunities for local people (as outlined in the Ōtaki Vision document).

2.1 Planning Policy

The NZ Urban Design Protocol 2005

The NZ Urban Design Protocol (NZUDP) was prepared by the Ministry for the Environment in 2005, and NZTA is a founding signatory.

The aim of the NZUDP is to make our towns and cities more successful through quality urban design.

Urban design seeks to ensure that the design of buildings, places, spaces and networks that make up our towns and cities, work for all of us, both now and in the future.

It is important that the NZUDP is considered during the design process, to ensure balanced decisions are reached which are to the benefit of the stakeholders and the local community.

The NZUDP identifies seven essential design qualities ('The 7 C's') that together create quality urban design.

It is these key design qualities that we must balance with the engineered form of the expressway, to ensure a vibrant and sustainable built form emerges:

Context

Urban design has a strong spatial dimension and optimises relationships between buildings, spaces, places, activities, and networks. It also recognises that towns and cities are part of a constantly evolving relationship between people, land, culture and the wider environment.

Character

Quality urban design reflects and enhances the distinctive character and culture of our urban environment and recognises that character is dynamic and evolving, not static. Fosters strong urban identities.

Choice

Fosters diversity and offers people choice in the urban form of our towns and cities, and choice in densities, building types, transport options and activities.

Creativity

Adds richness and diversity and turns a functional place into a memorable place.

Connections

Good connections enhance choice, support social cohesion, make places lively and safe, and facilitate contact among people. Healthy towns are created where networks connect, and where physical layouts and activity patterns are easily understood. It is important that residents and visitors can navigate easily.

Collaboration

Good communication and coordinated action from all decision-makers, involves communities, and supports best practice.

Custodianship

Reduces environmental impacts through environmentally sustainable, responsive design. It creates enjoyable safe public places and a quality environment that is cared for and a sense of ownership and responsibility in all guests and visitors.

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Otaki Local Outcomes:
Greater Ōtaki Vision 2007 (KCDC)

The Ōtaki Vision document was developed through meetings and consultation with the community and stakeholder groups. The aim of the document is to provide a framework and a strategic picture of how Ōtaki should develop and shape in the years to come.

A summary of the Ōtaki Vision Objectives is as follows:

TRANSPORT NETWORKS

- Develop Ōtaki as a safe and easily accessible place to travel to, from and about: rail, cycle, walking, bus, and cars;
- Encourage pedestrian and cycle activities (including the Pipi Trail), and develop a cycleway network across the district;
- Consider road safety in all future developments; and
- Ensure safe access to facilities (both educational and recreational) for young people.

MAIN STREET & TOWN CENTRE AREA

- Maintain and enhance Main St Town Centre as the civic heart with key services, local retail and historic attractions.

ŌTAKI RAILWAY AREA

- Ensure the area serves a sub-regional retail function with specialist shops and rail station;
- Celebrate local culture and design, using it to link this area with Main St .
- Provide safe access to retail, and adequate long-term parking;
- Enhance the overall appearance and nature of the area (planting, seating, lighting, signage, traffic calming, etc). to provide a safe, pleasant, stress-free shopping experience;
- Cater for cyclists and pedestrians; and
- Encourage the development of local businesses facing the railway station, to increase natural surveillance over the carpark.

INDUSTRIAL AREA: RIVERBANK RD

- Develop Riverbank Rd into a major industrial development ('CleanTech Business Park') and employment area of regional significance;
- Diversify the mix of industrial activity.
- Improve the overall image and appearance of the area;
- Connect the industrial area to the rest of the 'Ōtaki Loop' so that it is seen as part of the whole Ōtaki;
- Ensure existing businesses are supported to remain while still attracting new businesses; and
- Utilise the proximity of SH1 and the rail network.

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FRESH WATER (INCLUDING ŌTAKI RIVER)

- Maintain, protect and improve the waterways and water supply for future generations;
- Ensure the streams, lagoons and estuaries provide healthy habitats for birdlife and fish - especially inanga;
- Make Ōtaki River accessible by numerous transport modes; and
- Green the riverside of the industrial area to provide healthy ecologies, and provide cycleway and walkway networks through the industrial area to the riverside.

BEACHES / COASTAL AREAS

- Protect coast for future generations, by restoring and protecting the dunes, estuaries and shellfish areas;
- Ensure accessibility to the coast for a range of activities; and
- Restrict new development at Te Horo and Ōtaki beaches.

HERITAGE AND CHARACTER ELEMENTS

- Promote the heritage of Ōtaki by preserving and celebrating historic buildings, trees and sites;
- Promote the use of the Pipi Trail;
- Ensure valued elements and features of the community and the Greater Ōtaki area are protected; and
- Protect remaining native bush and coastal areas.

GROWTH FOR LOCAL BENEFIT

- Take a sustainable approach to development, and respect the character and identity of Ōtaki;
- Consolidate development within existing zoned residential areas. Discourage ribboned growth at Te Horo, and encourage clustered growth at Ōtaki;
- Realise the commercial and employment potential of Te Horo and the wider rural area; and
- Provide opportunities for local farmers' markets.

Response to Ōtaki Vision Objectives

In responding to the Greater Ōtaki Vision objectives, a number of benefits and opportunities beyond a narrow transportation focus of the expressway have been identified. By separating the expressway function from the Railway Retail Area the vision for Ōtaki as a safer, more connected and sustainable community is now more achievable.

Therefore key themes for this project include:

- Good access to and from the expressway to ensure an economically vibrant community, both now and into the future.
- An internally well connected community with multiple links, including cycle and pedestrian routes, across the expressway corridor.
- Opportunity to enhance the former state highway to provide a safer, more memorable experience that expresses the character and heritage of the Ōtaki township and surrounding area.
- Enhance the inherent natural landscape values of the region with well integrated new planting.
- Ensure high quality design for all structures, bridges, etc.

How these themes are integrated into the project are explored further in sections 4 and 5 of this document.

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Wellington Regional Strategy

The Wellington Regional Strategy (WRS) was developed by the region's nine local authorities. It is a sustainable economic growth strategy, outlining initiatives to develop the economic potential of Wellington Region. It addresses issues such as transport, housing, urban design and open spaces.

The strategy highlights the importance of efficient connectivity options - locally, nationally and internationally. The strategy notes that providing secure and reliable transport connections to the rest of New Zealand is important for regional economic development.

The WRS summarises the objectives for the Kāpiti Coast as:

- Better, more reliable access to Wellington;
- Managing growth sustainably;
- Strengthening the Kāpiti centres;
- Investment in key public infrastructure (e.g. roads); and
- Providing housing choice for diversity.

Development Management Strategy 2007 (KCDC)

This document outlines KCDC's strategy for the management of development and growth on the Kāpiti Coast. The strategy sets a framework for:

- The management of location and intensity of growth change;
- Improvement to the quality of the built environment; and
- The development management processes that Council will use.

The strategy outlines "future development in Ōtaki is to be managed in a way that:

- Consolidates development primarily within existing residential, commercial and industrial zoning;
- Makes effective use of existing infrastructure capacity and does not demand unnecessary geographic extension of that infrastructure;
- Supports community aspirations around improvement to existing centres for local employment;
- Avoids unnecessary loss of productive soils around Ōtaki; and
- Protects valued character."

Streetscape Strategy and Guideline 2008 (KCDC)

The Streetscape Strategy and Guideline sets out processes and methods for designing and improving streetscapes. The aim is to create safe, high-quality environments, which are desirable to be in and entice users to the area. The document describes general streetscape types, with examples of how each type should be treated and considered.

It is important to consider this document during the design development of the expressway, as "streets make a significant contribution to the local character and overall legibility of settlements because they are the main way in which we travel through and experience different areas."

NZTA Urban Design Policy 2007 (NZTA)

"As a signatory to the New Zealand Urban Design Protocol NZTA plans and designs state highways in a way that supports good urban design and value for money. In particular, NZTA aims to:

- Ensure state highways contribute to vibrant, attractive and safe urban and rural areas; and
- Achieve integration between state highways, local roads, public transport, cycling and walking networks and the land uses they serve."

The NZTA Urban Design Policy outlines a set of Urban Design Implementation Principles (UDIP) which are to be followed for all state highway projects.

Environmental Guidelines for Rural Living: Kāpiti and Horowhenua 2001 (KCDC)

This guideline document offers ideas, options and advice to assist landowners through the site development process. "It has the support of local and regional councils, who want our rural area to both look good and be a healthy place and is based on designing around natural systems."

Ideas and advice are given for various elements of site development including:

- Maintaining the rural aesthetic;
- Planning shelterbelts;
- Choosing a building site;
- Sewage system options;
- Dealing with pasture and driveway runoff; and
- Planting

"The challenge for Ōtaki is accommodating any future growth on existing zoned residential land while maintaining the overall character of the town and its local areas."

- Extract from the Development Management Strategy 2007 (KCDC)

2.2 Transport Policy

Towards a Sustainable Transport System: Managing Transport on the Kāpiti Coast 2008 (KCDC)

This document provides a long-term strategy for transport by all modes.

It recognises that the location of the district's main centres on the State Highway make them vulnerable to State Highway design and planning decisions. This is especially true of Ōtaki. Focus Area 5 of this Strategy discusses "Living with the State Highway". It recognises that "while seeking to maintain the functionality of the State Highway and the rail corridor, the wider urban form, economic development and social wellbeing needs of the community are acknowledged".

The bypassing of Ōtaki township is conditionally supported, provided that, amongst other things, "any selected bypass route has minimal possible effect on environmental amenity and provides for connection back into the Ōtaki town in a way that recognises the need for economic stability".

Wellington Regional Land Transport Strategy 2007-2016

The Wellington Regional Land Transport Strategy is the strategic transport document that guides the development of the Region's transport system including public transport, roads, walking, cycling and freight for the next 10 years and beyond.

The strategy recognises the importance of a strategic road network which operates safely and efficiently. It includes targets in relation to increasing the use of sustainable transport modes such as passenger transport, walking and cycling, reducing greenhouse gas emissions, improving road safety, reducing severe traffic congestion, improving freight efficiency and improving land use and transport integration.

The strategy recognises that increasing population and economic growth within the Region is likely to lead to increased demand for travel. The strategy indicates that the Region's population are making more trips, more often.

It contains policies focusing on:

- Network management;
- Economic development;
- Safety and personal security;
- Improved access and mobility;
- Land-use planning;
- Protecting/promoting public health;
- Environmental sustainability; and
- Travel demand management.

Regional Land Transport Programme 2009-2012

The RLTP is a three year programme that contains all the land transport activities to be undertaken throughout the region for the next three financial years (2009-2012), indicative activities of the following three financial years (2012-2015), plus a 10 year financial forecast.

The RLTP includes a set of policies which guide this process and matters to be taken into account when prioritising projects. Key objectives recognised in the programme are:

- Assist economic/regional development;
- Assist safety and personal security;
- Improve access, mobility and reliability;
- Protect and promote public health;
- Ensure environmental sustainability; and
- Ensure the Regional Transport Programme is affordable for the regional community.

The Peka Peka to Ōtaki Expressway project is part of the RoNS SH1 Levin to Airport investigations. It is included as a second priority activity in the RLTP, and as a significant activity in the next RLTP (2012-2015).

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Regional Cycling Plan 2008 (GWRC)

The Regional Cycling Plan was adopted in December 2008. It sets out an action plan with a series of high level initiatives aimed at contributing to the outcomes of the Wellington Regional Land Transport Strategy. A number of agencies are responsible for delivering the Cycling Plan, including the NZTA. The NZTA's role is to carry out improvements to the cycling network where appropriate and feasible. NZTA is also identified as providing funding support for a number of the initiatives in the Cycling Plan.

The Regional Cycling Network map identifies the core strategic routes which link the region's centres and should provide an acceptable level of services. State Highway 1 from Ōtaki to Peka Peka is one of these routes.

In addition, it is expected that each Council in the region will identify their important cycle routes through development of their local cycling strategies.

Cycleways, Walkways and Bridleways Strategy 2004 (KCDC)

The purpose of the Strategy is to set a clear strategic vision for cycling, walking and horse-riding on the Kāpiti Coast. The development of an inter-connected network of cycle, walking and horse-riding routes across the district is a key action identified by the Strategy.

In the vicinity of the Peka Peka and Ōtaki, this includes:

- The Ōtaki River walkway and cycleway;
- Completing the construction of the Kāpiti Coast District Coastal Walkway/ cycleway from Peka Peka through to Ōtaki; and
- Identifying and planning for a Tararua Foothills Walkway from Paekakariki to Ōtaki.

The Strategy identifies a number of issues for cyclists, pedestrians and horse-riders in Kāpiti noting that a major disincentive to cycling is the perception of danger from cars. It also states that personal security should be an important consideration in both route planning and detailed design. For example, avoid hidden areas, and dark corners.

Policy Context Summary

The Wellington Northern RoNS and specific project objectives incorporate the key transport related policy objectives as outlined in Section 2. The key challenge for the project design team is integration of the expressway project with some of the broader KCDC and local community objectives such as:

- Development and land-use management ;
- Environment and habitat improvement at both a macro and micro level;
- Improved outcomes for rehabilitated streetscapes (i.e. the existing SH1); and
- Integration and support for the wider network of walkways, cycleways and bridleways.

Section 3. Corridor - Urban and Rural Context

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3.1 Landform

Topography

- The proposed expressway travels between the eastern foothills (which reach up to 510m above sea level), and the coast which is 3-4km to the west.
- The proposed expressway travels through varying environments (residential, commercial, rural, horticultural, and recreation areas) and topography.
- North of Te Hapua Rd, the topography of the corridor generally flattens out, dropping down to cross the Ōtaki River and floodplain at Ōtaki.
- Between Peka Peka Rd and Te Hapua Rd, the proposed expressway route traverses lower lying areas (associated with interdune deposits) and undulating mounds (associated with sand dunes). This organically shaped topography should be considered during the design process of the expressway.
- These undulating sand dunes provide variation in what can be viewed from the existing state highway, and dictate which plant species grow there.



Figure 4. Topography

Reference: Base Map information taken from QuickMap V73.146

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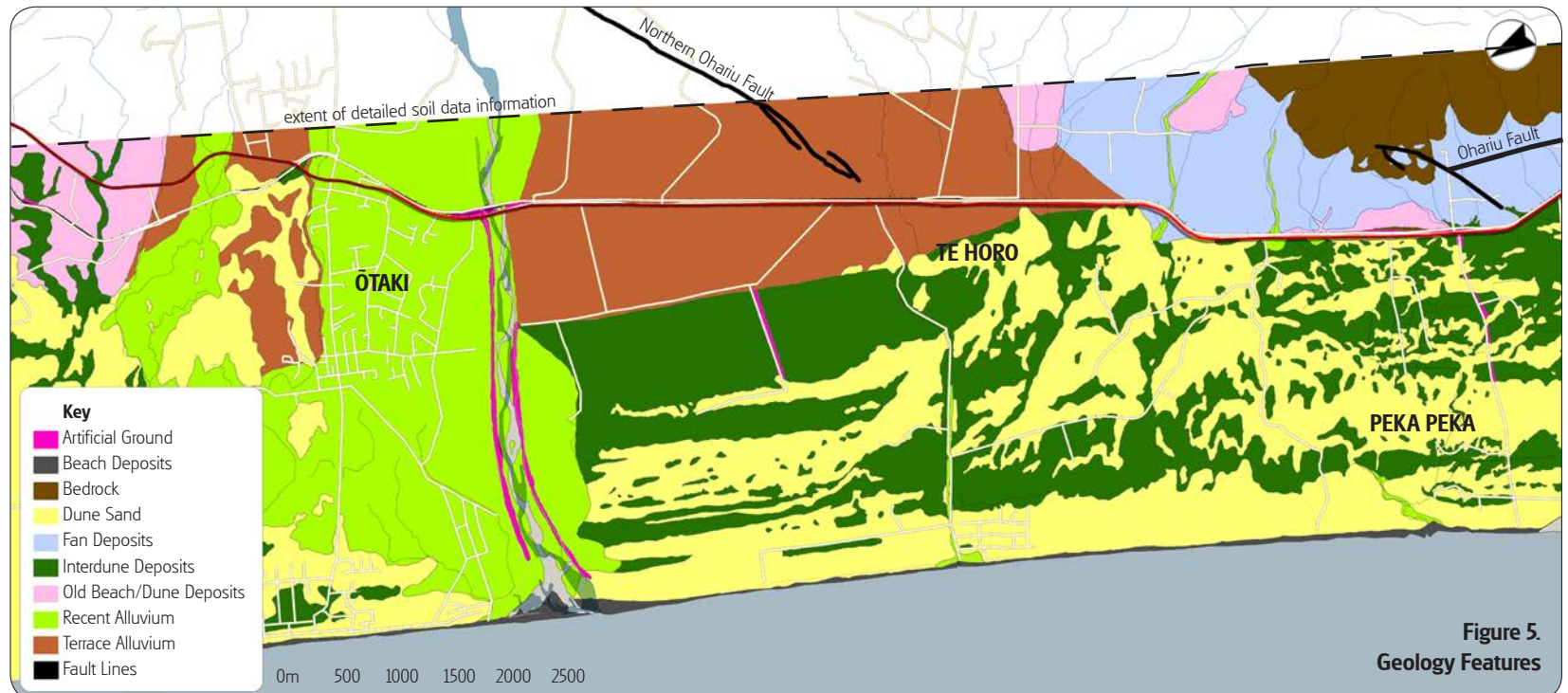
Geology

The landform of the project area is defined by a number of strong natural features including the coastal edge, the coastal plain, the eastern foothills, and the local rivers and streams.

Between Peka Peka Rd and Te Horo Beach Rd, there are underlying dune sand and interdune deposits, which are likely to comprise peat deposits. North of Te Horo Beach Rd, the underlying geology includes terrace alluvium and recent alluvium. These different soil types will need to be considered during landscape development and plant choice.

The floodplain around the Ōtaki River predominantly consists of premium flat, fertile soils which foster farming, market gardening and horticulture; all are of economic significance to the area.

Wellington is one of the most seismically active areas within NZ. There are several faults within the vicinity of the proposed route including the Ohariu Fault, the northern Ohariu Fault, the Gibbs Fault, the Ōtaki Forks Fault, and the Wellington Fault. Resilience and route security will need to be considered in the design of the expressway.



Reference: Greater Wellington Regional Council, Received 2006

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3.2 Hydrology

General

- The existing SH1 route crosses four significant water ways; as will the expressway.
- Balanced decisions need to be made in regards to keeping the expressway flood-free, as any changes to topography or levels are likely to divert flooding elsewhere.

Mangaone Stream

- The Mangaone Stream is located at Te Horo, and its flood patterns affect mainly rural lifestyle properties and rural land.
- The floodplain of this area is very flat, so small changes in topography could divert flooding elsewhere.
- The current state highway regularly floods, affecting route security. GWRC would like to see improvements.

Ōtaki River

- The Ōtaki River is the largest waterway in the project area, located on the southern side of Ōtaki, acting as a natural containment line for development.
- The properties along the Ōtaki River banks are generally of a recreational, industrial or rural nature.
- There is currently only one vehicle and one railway bridge crossing the Ōtaki River. In terms of route security this poses a significant threat.
- The most recent stopbank work protecting Ōtaki is the Chrystall Stopbank (shown in Figure 6), which ties into the existing railway embankment and bridge abutments.

Mangapouri Stream

- This waterway is located just north of Rahui Rd, and acts as a natural containment line for development to the north of Ōtaki.

Waitohu Stream

- The Waitohu Stream and the surrounding flood plain is located at the north end of the project area. The majority of properties affected by this waterway and its flood zone are rural properties.
- The Waitohu Stream is very active geomorphologically, and is not set to a stable alignment.
- The ground surrounding the watercourse is very swampy.

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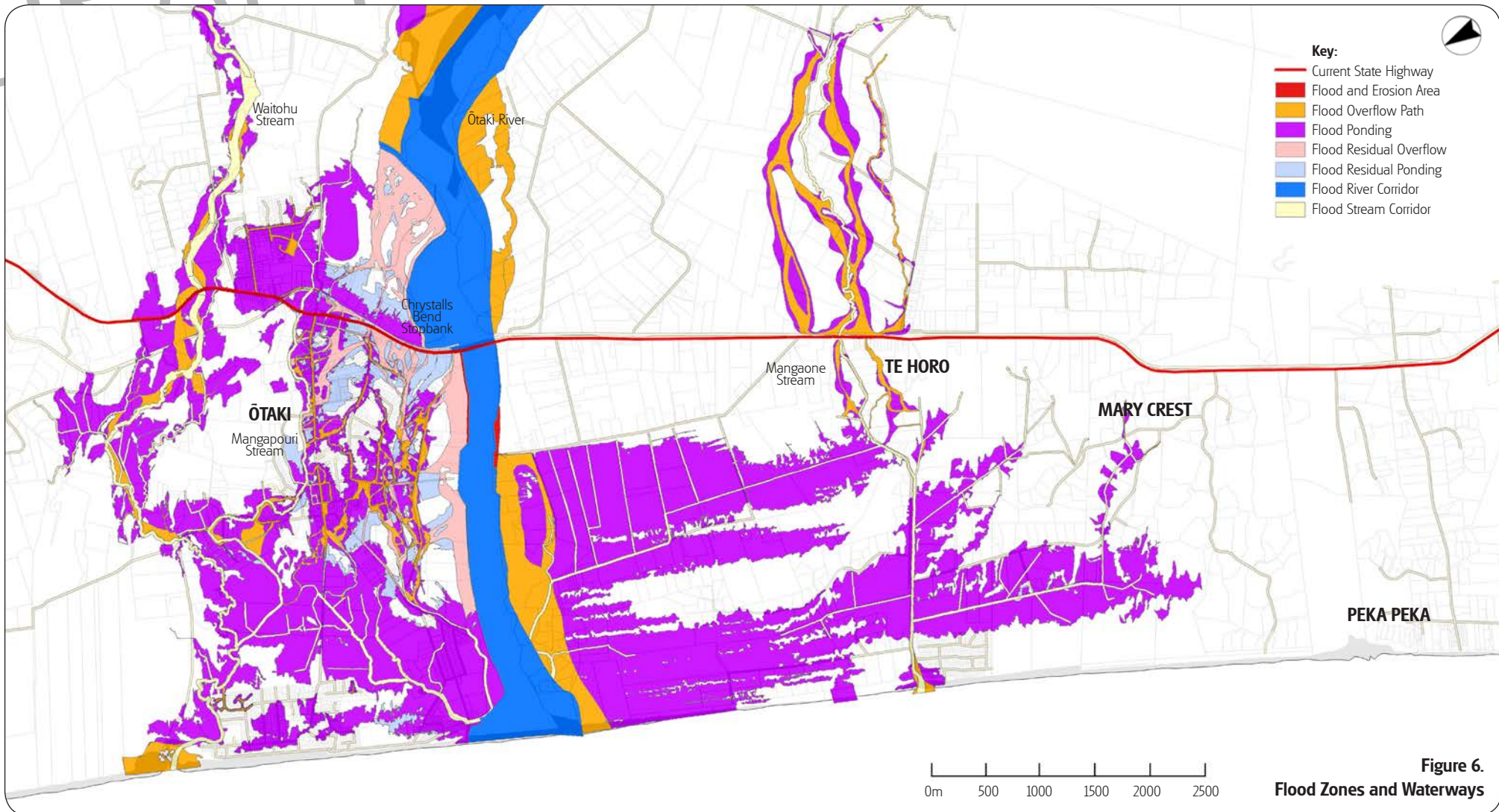


Figure 6.
Flood Zones and Waterways

Reference: Kapiti Coast District Council, Received 2010

3.3 Land Uses

Current

- The majority of the project area (Peka Peka to Ōtaki) is currently zoned as rural - Over 90% of the population in the Kāpiti District live on less than 4% of the land.⁴
- There are two zoned retail/commercial areas within Ōtaki: the Railway Retail Area, and Main St Town Centre. The Main St Town Centre serves the local Ōtaki community, while the Railway Retail Hub serves both a local and regional clientele.
- Many of Te Horo's community facilities (including Te Horo School) are located on the east side of the state highway, while the main residential area is on the west side. Therefore, connectivity across the state highway is important for the functionality of the settlement.

Future

- Within the project area, KCDC has expressed desire for future industrial and residential growth to be based around Ōtaki.
- Development of the existing industrial zone along Riverbank Rd is currently underway - As a 'CleanTech' business park. This is intended to be of local and regional significance.
- Although severance is more acute at Te Horo, the settlement is small and is likely to remain so as the KCDC Plan seeks to restrict residential development here, to retain the rural character.
- There is also a proposed Ōtaki Lake Development, which includes the development of a lake and amenities to the north of Stresscrete, on the northern bank of the Ōtaki River. The proposed alignment of the expressway currently runs along the eastern side of the Ōtaki Lake area, so consideration will need to be given to how local access to the area would be achieved.

4. <http://www.kapiticoast.govt.nz/Planning/District-Planning/District-Plan1/District-Plan--Volumes-1-and-2/>

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- Key:**
- Existing State Highway
 - Railway
 - Residential
 - Retail
 - Horticulture
 - Public Green Space
 - Ecological Heritage Site
 - Heritage Tree / Building
 - Industrial
 - Recreation
 - Education
 - Local Connection Routes
 - Stream / River
 - Proposed Expressway
 - 1 Main St Town Centre
 - 2 Raukawa Marae
 - 3 Pipi Trail
 - 4 Ōtaki Domain
 - 5 Haruatai Park
 - 6 Ōtaki College
 - 7 Ōtaki Railway Retail Area
 - 8 Ōtaki Racecourse
 - 9 Brown Sugar Cafe
 - 10 Stresscrete
 - 11 CleanTech Business Park
 - 12 Ōtaki Lake Development
 - 13 Recreational Access / Development

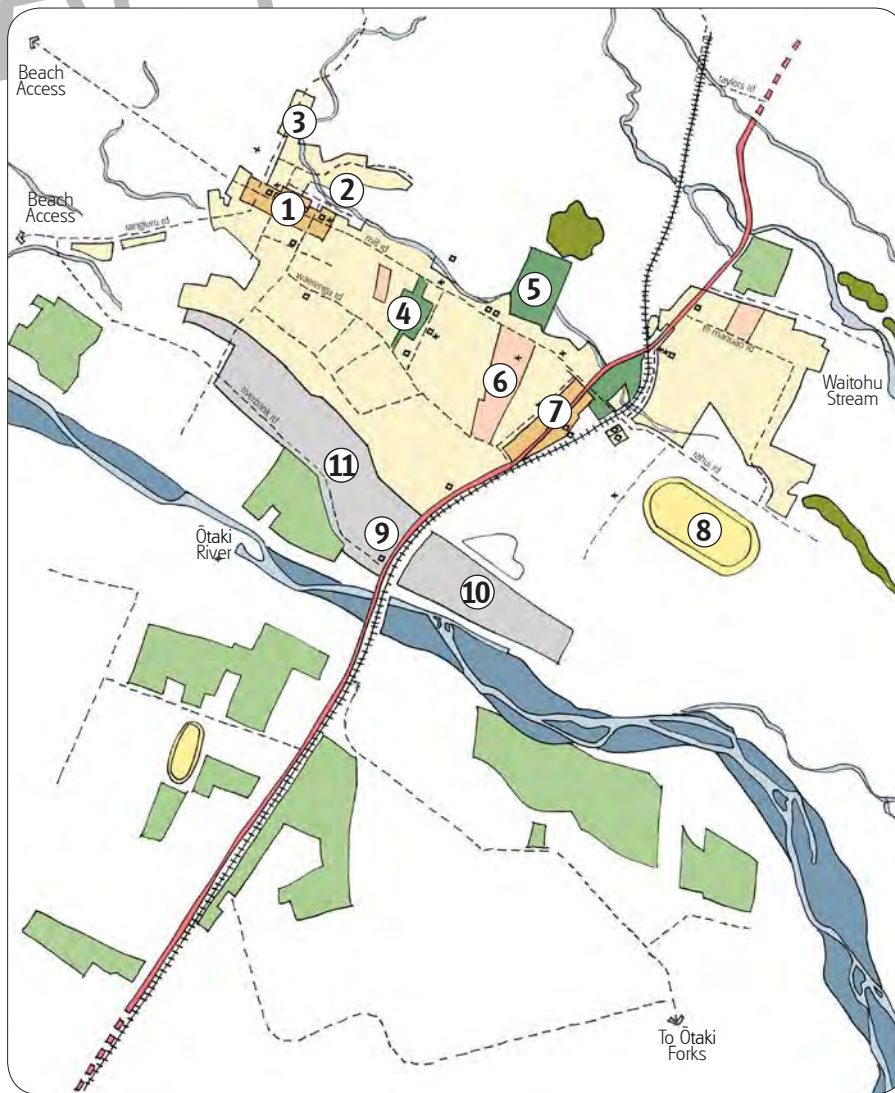


Figure 7.
Current Ōtaki Land Use

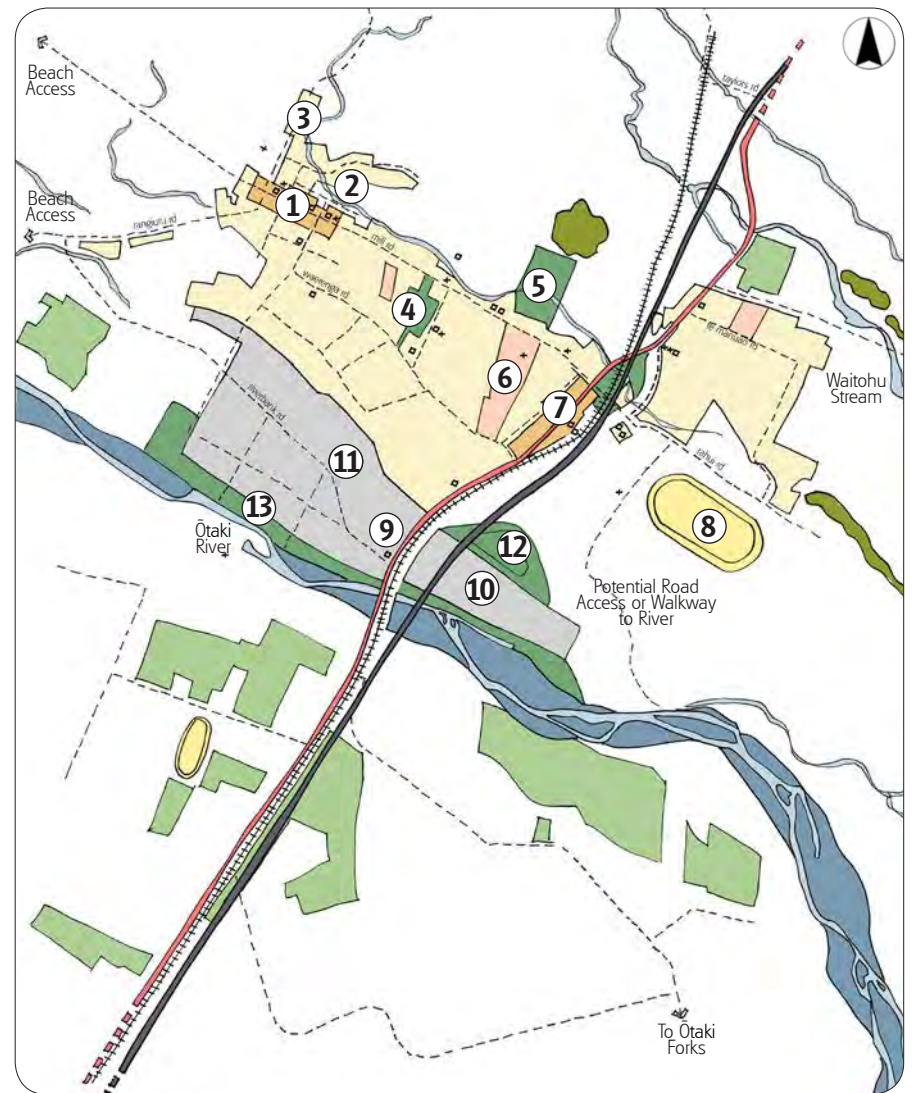


Figure 8.
Ōtaki Vision Land Use, Plus Expressway

3.4 Existing Vegetation

This section is to be read in conjunction with 3.9 Ecology.

As a generalisation, intense agriculture has resulted in an open landscape with scattered mature exotic trees and shelterbelts.

Indigenous vegetation is largely confined to a few small remnants. The preferred expressway alignment passes through stands of native mature trees and wetland in a few discrete localities along the alignment. Many of these sites are of local significance e.g. Cottles Bush.

Two areas of swamp forest have also been identified near Mary Crest. These are not identified as KCDC Heritage Sites and the ecological value of these has yet to be determined. However it is expected that they will be of at least local significance and potentially Regional Significance.

Other vegetation considerations include riparian vegetation along the watercourses crossed by the route.

Refer to Figure 9 - the areas of significant vegetation mentioned above are keyed as 'Significant Ecological Site,' and 'Other Potentially Significant Areas of Vegetation.'

Design Implications/Considerations

It is expected that habitat creation and enhancement will be required to mitigate losses of mature native trees and wetland habitat. Mitigation for loss of riparian habitat may also be required.

Pareomatangi Reserve is an important local feature, which has been a community project over a number of years. The expressway alignment will run through the middle of this reserve, impacting on its current form and vegetation. It is important to recognise this reserve as an area of local significance, and mitigate it accordingly.

The proposed road alignment as it is currently is likely to have negative impacts on features of local significance. For example, Cottles Bush and bush to the south of Old Hautere Rd.

The significance of the loss of swamp forest near Mary Crest that would result from the alignment currently proposed has yet to be determined. The current expressway and local arterial alignment at Mary Crest has been configured to minimise impact on the remnant bush area to the west of the alignment. Further mitigation may be required and will probably need to include creation of new habitat as well as enhancement of any remaining fragments. If plausible, remaining clusters of vegetation could be connected, making them larger and more sustainable, and more valuable for habitat purposes.

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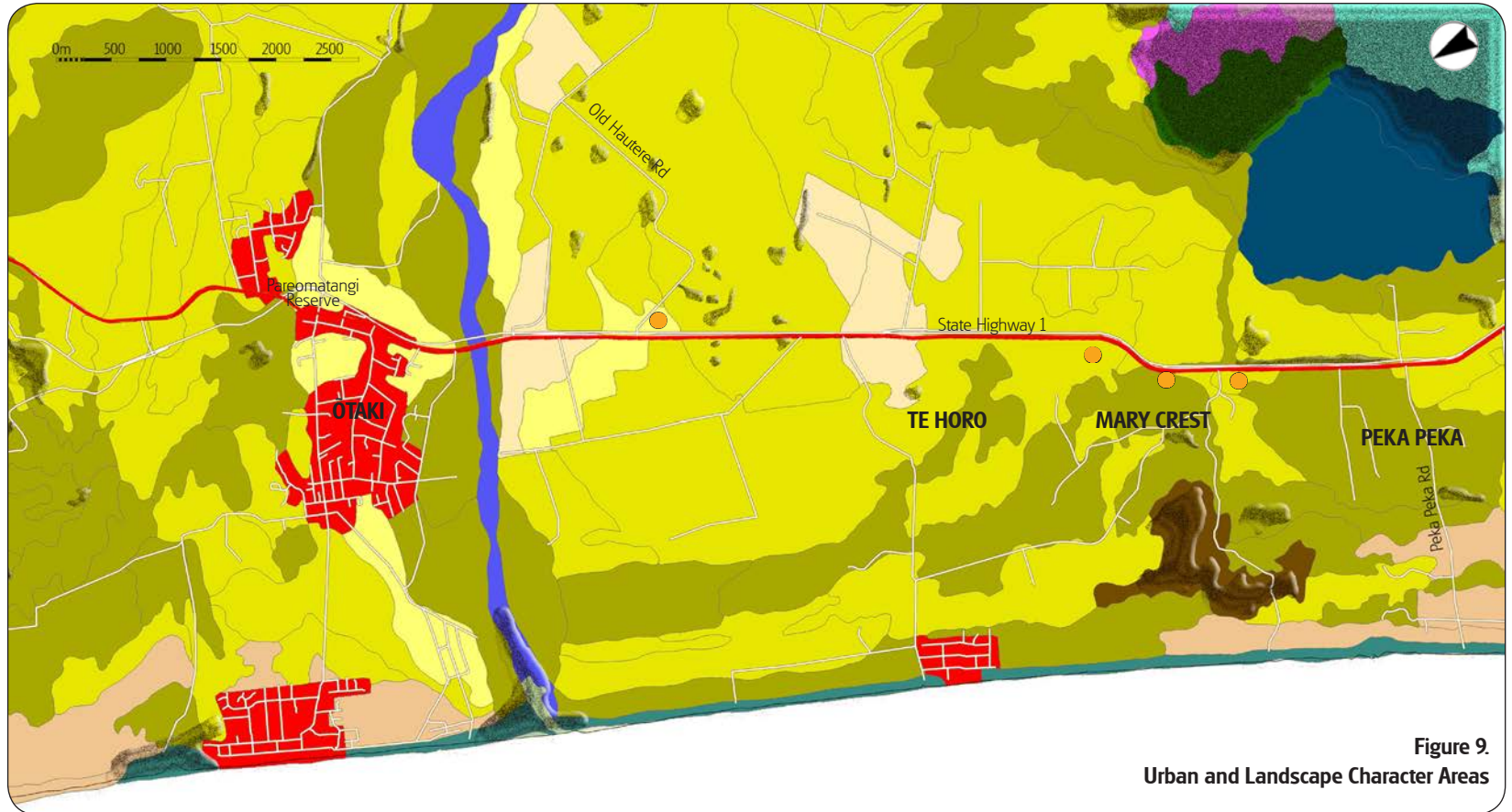


Figure 9
Urban and Landscape Character Areas

Reference: NZLRI Vegetation Cover, Landcare Research NZ Ltd, Published 2008, and Ecological Regions from KCDC, Received 2006

- | | | | |
|-----------------------------|----------------------------------|--|---|
| Swamp Vegetation | Hardwood Forest | Grassland Sane Dune Vegetation | Other Potentially Significant Areas of Vegetation |
| Mixed Sand Dune Vegetation | Exotic Forest | Cutover Hardwood Forest | |
| Orchards and Vineyards | Lowland Podocarp-Hardwood Forest | Cutover Lowland Podocarp-Hardwood Forest | |
| Horticultural Crops | High Producing Pasture | River | |
| Significant Ecological Site | Low Producing Pasture | Town | |

3.5 Character Areas

There are six different landuse types bordering the expressway corridor. These landuses, along with relatively subtle changes in landform, inform landscape character areas.

Rural

The majority of the expressway corridor passes through rural land as outlined in Figure 9, with the resultant character being dominant from Peka Peka to Ōtaki River (the Hautere Plains), and then from Waitohu Stream to Taylors Rd.

The former marine terrace escarpment immediately east of Peka Peka Rd intersection defines the southern end of the study area. To the west and northward extends the rolling contour of the local duneland topography. This area of pastoral farming is broken by an irregular pattern of conifer shelterbelts.

North of Te Horo and to the east of the highway and railway line the land flattens out to a localised area of broad plain that drains towards the Ōtaki River. This plain contains further pastoral farming and areas of horticultural production. The latter landuse has a regimented pattern of shelterbelts. There are also several small remnant stands of totara in the area.

A small area of rural landuse is visible east of the highway and railway line within the Ōtaki River floodplain and then the rural aspect becomes obvious again from the river terrace to the north of Rahui Rd. This terrace and another short ridge between the railway and the Waitohu Stream are the only landform features of note, other than the river and stream channels in the northern extent of the study area. To the north is the distinctly undulating farmland of the Horowhenua Plains.

Lifestyle

Directly related to the rural landuse and located within the rural character area are a number of smallholdings. These are more intensively subdivided, contain various dwellings and outbuildings and a variety of amenity and production tree and shrub plantings. Their intensity and diversity of development is what differentiates these 'lifestyle blocks' character from their immediate rural surroundings.

Residential

Within the expressway corridor the areas of residential character are confined to the Ōtaki township area with a section of residential ribbon development on the west side of the highway just north of Ōtaki River and on both sides of the existing highway immediately north of the northern river terrace and the local railway overbridge.

Many of the dwellings whose sections front onto the highway have relatively dense plantings of amenity trees and shrubs on their highway frontages. These have been planted as a buffer between the dwelling and the constant flow of highway traffic.

Reserve/open space

While quite rural in aspect, the few reserve areas within the study area are focussed on Ōtaki, being the immediate southern bank of the Ōtaki River and Pareomatangi Reserve, an 'island' of land between Rahui Rd, the highway and the railway.

Industrial

Currently industrial landuse within the expressway corridor is confined to the immediate area of the northern bank of the Ōtaki River. Gravel extraction from the bed of the river for aggregate and concrete making is the main business. The industrial activity is not highly visible from the current state highway as the bridge structure obscures the view.

Commercial/retail

Predominantly retail landuse forms the focus of the Ōtaki Railway Retail Area (described in section 54). The visual diversity and 'main street' business activity within this retail area is one of the most memorable aspects when travelling through this overall section of highway.

While this retail area contains many conflicting activity and visual images and is further degraded by traffic congestion, it is the focus and a vibrant part of the local community.

Transportation

A subsidiary landuse, but common to the whole of the study area is roading paralleled by railway. While this is not actually a character area, it bisects or forms the edge of a variety of character areas. It is the conduit from which the travelling public observes the local landscape and in turn impacts upon those landscapes.

Summary

The expressway corridor traverse two distinct overall landscape types - rural and urban - and in so doing it is important to acknowledge the specific landscape character areas and their particular opportunities and constraints during the design process. A particularly important consideration will be to ensure that the built or 'urban' form of the proposed expressway does not overwhelm the areas of rural landscape.

In rural areas it is important to consider integration or re-establishment of (but not limited to) the existing contours, existing vegetation patterns (such as shelterbelts), and landscaped noise mitigation rather than noise walls.

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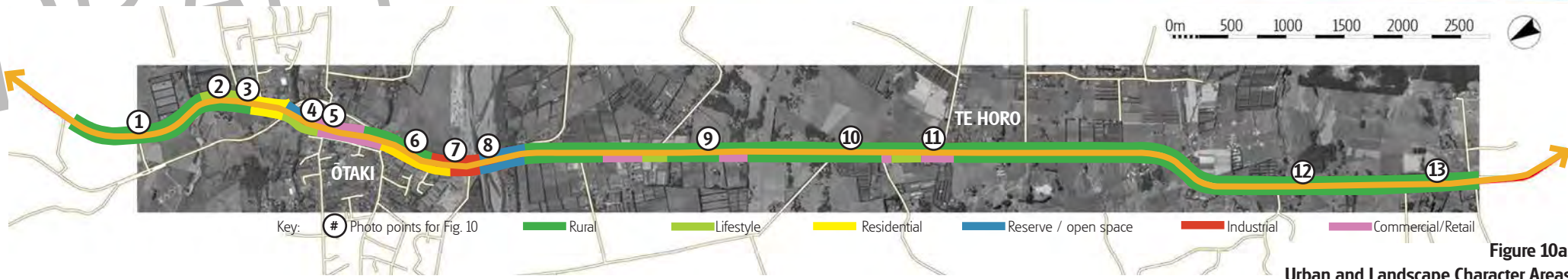


Figure 10a.
Urban and Landscape Character Areas



1. Taylors Rd

Rural Character, with eastern foothills in the background. Foothill views lessen on approach to urban Ōtaki.



2. Northern Regional Gateway

Lifestyle property to the east, rural and commercial to the west.



3. West Ōtaki Residential

Residential to the east and to the west, with scattered business activity.



4. Rahui Road Roundabout

Often currently congested at this roundabout due to State Highway traffic. Pareomatangi Reserve to the east.



5. Ōtaki Railway Retail Hub

Main strip of outlet shops both sides of highway. Amenities for through traffic e.g. coffee stalls and petrol stations.



6. Transition Area

Road parallel to railway on the east. Residences on the west, with occasional commercial e.g. Brown Sugar Cafe.



7. Industrial Area

Industrial character at the approach to the Ōtaki River. Eastern foothills visible again, indicating end of urban area.



8. Ōtaki River/Gateway Exit

The Ōtaki River and the Rest area to the east indicate the gateway of Ōtaki.



9. Rural / Light Commercial

Predominantly rural area, with some commercial and horticultural activity to the west. Clusters of localised vegetation.



10. Te Horo North

Modest gateway into Te Horo. Rural / lifestyle to the east, and a mix of lifestyle and businesses to the west.



11. Te Horo Beach Rd

Understated roads and rural/lifestyle properties both east and west sides of the highway. Clustered vegetation. Shelterbelt planting framing numerous rural properties.



12. Duneland / Rural

Predominantly rural character with undulating duneland. Clusters of localised vegetation, and scattered exotics. Shelterbelt planting framing numerous rural properties.



13. Peka Peka Rd

Rural character on both sides of the highway, with the eastern foothills still visible.

Figure 10b.
Existing State Highway Travel Experience

3.6 Heritage

3.7 Tāngata Whenua



The Kāpiti Coast has a rich history - both Māori and European. It is important to understand the diverse cultural heritage of Ōtaki, so that areas of significance are acknowledged and protected. It is also important to understand the cultural values and history of the area, so that the treatment of the corridor can be appropriately designed to represent/celebrate the area and the community.

The project team includes archaeologists and heritage specialists. Iwi liaison is also an integral part of the design process, to ensure that the project team is aware of, and considering tāngata whenua when developing the expressway design.

A Cultural Impact Assessment will be prepared for the Scheme Assessment Report Addendum phase of this project to ensure the key issues are captured.

The tāngata whenua of the District are Te Āti Awa ki Whakarongotai, Ngāti Raukawa ki te Tonga, Ngāti Toa Rangatira, and their whanau and hapu. Ngāti Raukawa ki te Tonga are the predominant iwi of the project area. Below are some of the events which have shaped the project area into the places we experience today.

Pre 1822- Muaupoko iwi lived on the Kāpiti Coast, utilising the areas marine, coastal, wetland and forest resources.

1822 to 1824- Te Rauparaha joined Ngāti Toa iwi from Kawhia to Kāpiti.

1825 to 1828- Te Rauparaha and his allies (Ngāti Raukawa and Te Āti Awa) migrated to Horowhenua and south of the Ōtaki River.

1833 to 1847- Shore whalers from Australia set up stations along the coast.

1834- The wars of Haowhenua in the Te Horo area.

1839- British missionary Octavius Hadfield worked in Ōtaki from 1839, and taught the Māori to cultivate wheat.

1840- Māori Chiefs of the 3 Kapiti tribes signed the Treaty of Waitangi.

1840s- British settlers arrived in the region. Christianity, literacy and farming spread rapidly among Māori of the region.

1851- Rangiatea Church built in 1851 by hundreds of Māori under the leadership of Te Rauparaha.

1853- Ōtaki Native Boys College was established. Hundreds of boarders came to the school from around the country. Some of the buildings now service Te Wānanga o Raukawa.

1859- St Mary's Catholic Church was built. This is considered to be NZ's oldest surviving Catholic church still in use.

1850s to 1880s- Sheep farms (Māori and Pakeha) were established in the area. The beach was used as a highway for trading produce with Wellington. A church school for Māori children and Ōtaki State School also opened during this time.

1886- Railway was established between Wellington and Longburn. Ōtaki Māori Racing Club established - This is the only Māori racing club in NZ.

1892- Te Horo School was built.

1906- A through road was completed, bridging the Waikanae and Otaki Rivers.

1890 to 1930- Dairying and horticulture flourished at Te Horo and Ōtaki.

1930- All Saints Anglican Church was built.

1975- An education programme was established for the region's iwi (Ngāti Raukawa, Ngāti Toa, and Te Āti Awa). Kohanga reo and schools were established.

1980s- Commerce and industry grew at Ōtaki

1981- Te Wānanga o Raukawa, the Māori University of Ōtaki was established.

1989- Kāpiti Coast District Council was established. A District Plan was drawn up to guide rural and urban growth.

1990s- Population growth was among the highest in New Zealand.

1991- Rangiatea Church (NZ's oldest surviving Māori Church) was destroyed by fire. Local iwi, hapu, the Anglican Church and KCDC worked together to rebuild the church in 2003. The roof alone is lined with 60,000 toetoe stems, and the tukutuku panels are made from 130,000 kiekie plant fibre strips.

1998- New library opened at Ōtaki.

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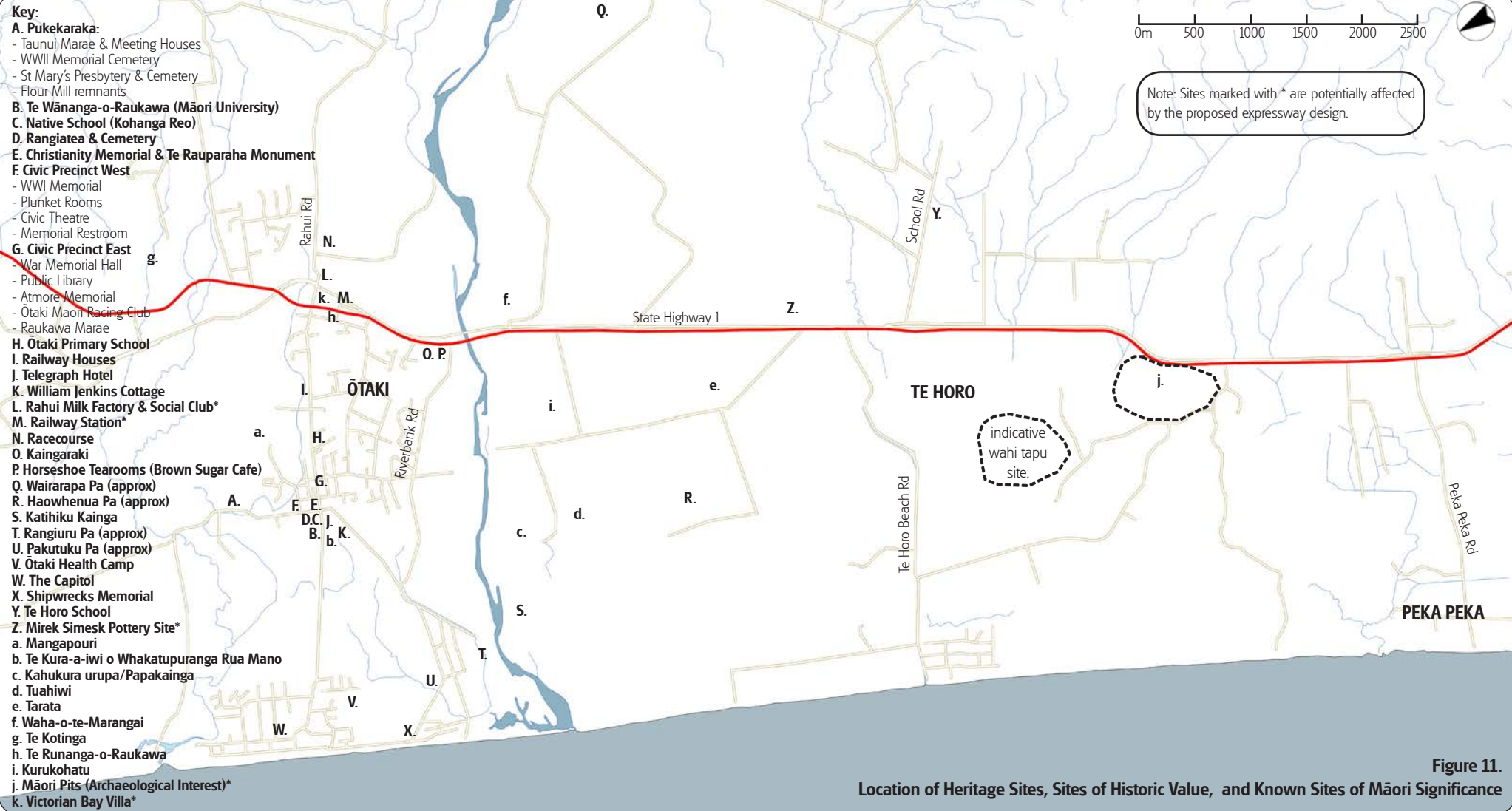


Figure 11.
Location of Heritage Sites, Sites of Historic Value, and Known Sites of Māori Significance

Reference: Base Map information taken from QuickMap V73.146

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3.8 Community Facilities

Town Centres

- The proposed expressway traverses residential and rural areas. The main residential area is around Ōtaki. In addition, there is the smaller settlement of Te Horo south of Ōtaki.
- The residential areas of Ōtaki township fall on both sides of the proposed corridor (east and west Ōtaki). Overall, the community is most densely settled around Ōtaki Main St Town Centre, on the western side of the corridor. There is also a residential area extending westward along Ōtaki Beach.

Churches

- The majority of churches are located along Mill Rd / Main St, which indicates that they will be affected by the expressway unless the strong east-west connection along Mill Rd / Rahui Rd is maintained as a main local route, or a viable alternative is provided.
- The Highway Baptist Church is also likely to be affected, as it is located on the current state highway, on the Te Manuao Rd corner.

Education

- Education facilities are well represented in the Ōtaki region, with 8 primary/secondary schools that fall within close proximity to the proposed expressway route: Te Horo Primary, Ōtaki College, Ōtaki School, Waitohu Primary, Ōtaki Health Camp School, St Peter Chanel School, Te Kura-a-lwi o Whakatapuranga Rua Mano, and Te Kura Kaupapa Māori o Te Rito.
- The wider impacts associated with accessibility, connectivity, and safety may impact on (or benefit) the schools within the project area, and need to be considered.
- The east-west connection along Rahui Rd, providing access between east and west Ōtaki is important for students to travel between school and residential areas.

- The schools located closest to the alignment, and therefore most likely to be affected are Ōtaki College, Waitohu Primary, Te Horo Primary, and Ōtaki School. In total there are approximately 1300 students attending schools within the general project area.
- The geographic area that the schools draw their students from is likely to be relatively large due to the distances between communities. This means that students may utilise various methods to get to school including walking, cycling, public transport, and private cars.
- The accessibility and safety of these various networks needs to be considered, given that the expressway may sever the current connections between residences and schools.

Sports Facilities

Ōtaki Racecourse (located along Rahui Rd) is home to the Otaki Maori Racing Club and the Levin Racing Club. It is a well used facility, used daily by up to 140 horses in training.³

Emergency Services

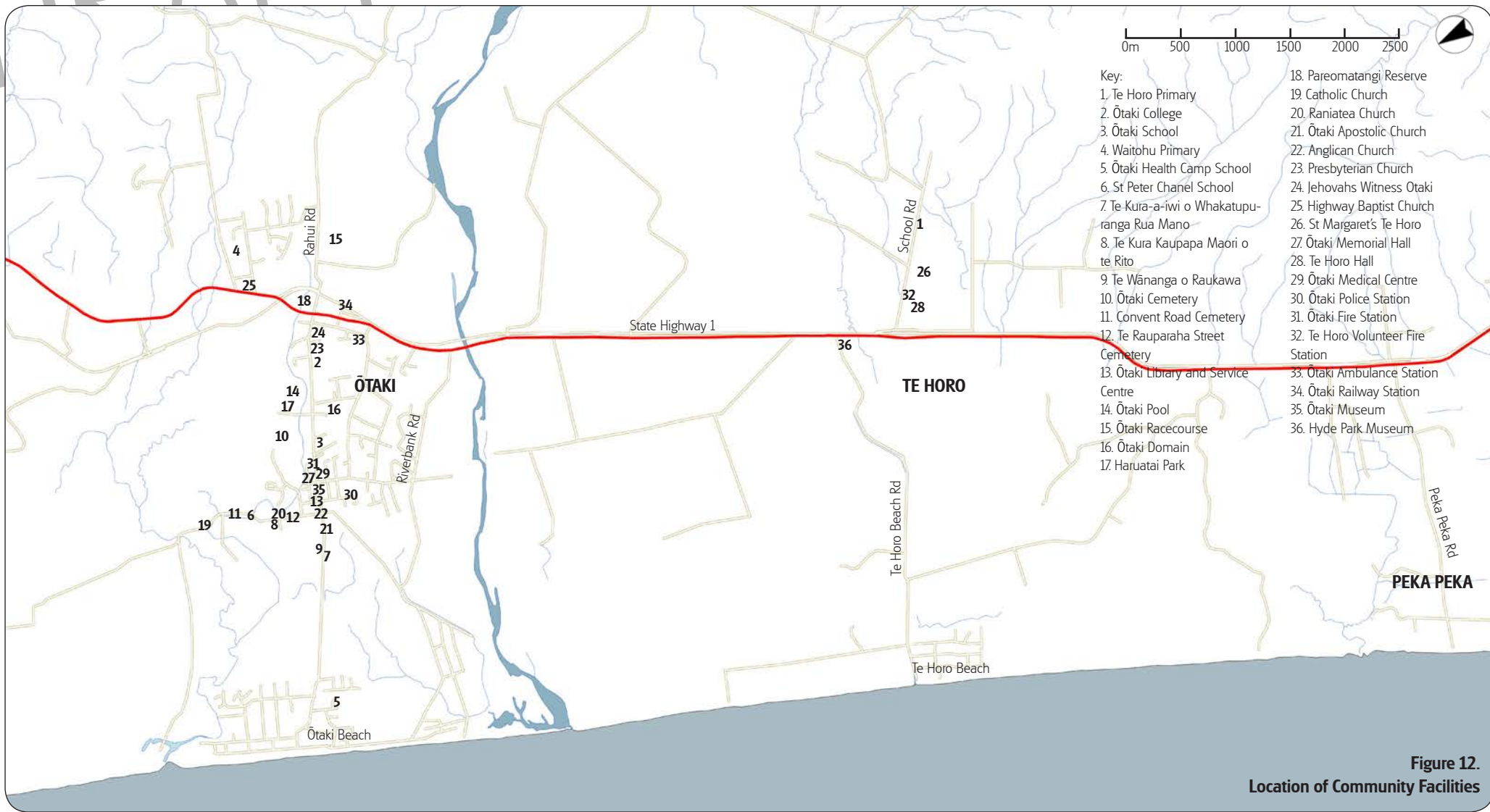
- It is important that police, fire services, and ambulance services have efficient, legible connections to and from the expressway, and around their local community.

Reserves

- Pareomatangi Reserve does not hold reserve status in the district plan, but is a green space of importance to the community.
- Pareomatangi Reserve is likely to change significantly as a result of the expressway. This provides opportunity: Firstly, if the reserve is extended, it can be developed to provide a buffer between the expressway and Ōtaki. Also, the open space allows any underpass on Rahui Rd to be treated as a landscape element with longer ramps to ensure a high-quality pedestrian environment.
- While the park might become known as a local and even regional landmark, quiet contemplative “naturalistic” landscapes may be more difficult to achieve.

³ <http://www.nzracing.co.nz/goracing/racecourse.aspx/29>

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- Key:
- | | |
|--|------------------------------------|
| 1. Te Horo Primary | 18. Pareomatangi Reserve |
| 2. Otaki College | 19. Catholic Church |
| 3. Otaki School | 20. Raniatea Church |
| 4. Waitohu Primary | 21. Otaki Apostolic Church |
| 5. Otaki Health Camp School | 22. Anglican Church |
| 6. St Peter Chanel School | 23. Presbyterian Church |
| 7. Te Kura-a-iwi o Whakatupuranga Rua Mano | 24. Jehovahs Witness Otaki |
| 8. Te Kura Kaupapa Maori o te Rito | 25. Highway Baptist Church |
| 9. Te Wānanga o Raukawa | 26. St Margaret's Te Horo |
| 10. Otaki Cemetery | 27. Otaki Memorial Hall |
| 11. Convent Road Cemetery | 28. Te Horo Hall |
| 12. Te Rauparaha Street Cemetery | 29. Otaki Medical Centre |
| 13. Otaki Library and Service Centre | 30. Otaki Police Station |
| 14. Otaki Pool | 31. Otaki Fire Station |
| 15. Otaki Racecourse | 32. Te Horo Volunteer Fire Station |
| 16. Otaki Domain | 33. Otaki Ambulance Station |
| 17. Haruatai Park | 34. Otaki Railway Station |
| | 35. Otaki Museum |
| | 36. Hyde Park Museum |

Figure 12.
Location of Community Facilities

Reference: Base Map information taken from QuickMap V73.146

3.9 Ecology

Background

'A Guide to Growing Native Plants in Kāpiti' outlines two distinct ecological zones in the project area: 'Duneland' and 'Lowland Terrace' zones - refer to Figure 13.

'A Guide to Growing Native Plants in Kāpiti' also provides the following information about the terrestrial ecology of the area:

- The Duneland zone is characterised by salt winds, dry summers, and winter frosts. There is a contrasting mix of wet areas (duneland streams and duneland wetlands) and dry areas (foredunes, dry duneland) in this zone, which provide diverse ecologies.
- The shrubs and grasses in the Duneland zone also provides habitat for a mix of insect species - which in turn provide great feeding opportunities for finches, larks and silvereyes. The copper butterfly is a common sight, because host plant *Muehlenbeckia complexa* grows well along the coast.
- The Lowland Terrace zone is characterised by dry summers, and light frosts. The soils tend to be rich and fertile, but free draining, which can cause them to dry out during summer. Totara, titoki and kohekohe are the dominant native species in this zone.

Freshwater Habitat

GWRC Regional Freshwater Plan (RFP) identifies the Waitohu Stream, Mangaone Stream and Ōtaki River as watercourses with nationally threatened indigenous fish in the catchment, including Brown Mudfish, Shortjawed Kokopu, Banded Kokopu, Giant Kokopu, and Koaro. Parts of the Ōtaki River are also identified as important trout habitat. Fish passage must be considered during design.

These native fish species and the healthy habitats they require must be considered wherever the expressway alignment is likely to affect waterways.

The Waitohu and Mangaone Streams have flourishing native bush cover along the upper reaches in the Tararua forest, providing clean streams with healthy habitat for native fish. The streams are likely to have a diverse native fish fauna and invertebrates. The lower reaches and tributaries flow through farms and Ōtaki/Te Horo townships, which increases levels of phosphorus, nitrate, ammonia, sediment and faecal bacteria, causing weeds and algae to grow.

Mangapouri Stream has been improved with native planting adjacent to Pareomatangi Reserve, but due to high pollutant levels in the stream, there are few invertebrate and fish species present. The Ōtaki River provides healthy habitat for native fish and invertebrates. However a lot of the small streams which run into the Ōtaki River do not. GWRC has put emphasis on improving these small streams.

Typical existing riparian planting for streamsides in the area include willows, pine, native grasses, and exotic shrubs. Native plants are being planted as streams are maintained.

Wetlands

Although the presence of numerous wetlands is indicated on topographic maps, the field inspection undertaken by Alastair Suren showed that most of these have now been converted into farmland.

Common Pest Plants

Existing common pest plants include gorse, ragwort, variegated thistle, pampas, wild ginger, blackberry, old man's beard, cathedral bells, banana passionfruit, nodding thistle, hemlock, boxthorn, and boneseed.

Pest Animals

Existing pest animals include rabbits, hares, possum, mustelids (ferrets, stoats and weasels), magpies, rats and mice.

Design Implications/Considerations

Unless properly designed, construction of the expressway will slowly accumulate transport derived contaminants such as copper, zinc, and hydrocarbons which are well known to have adverse effects on aquatic systems.

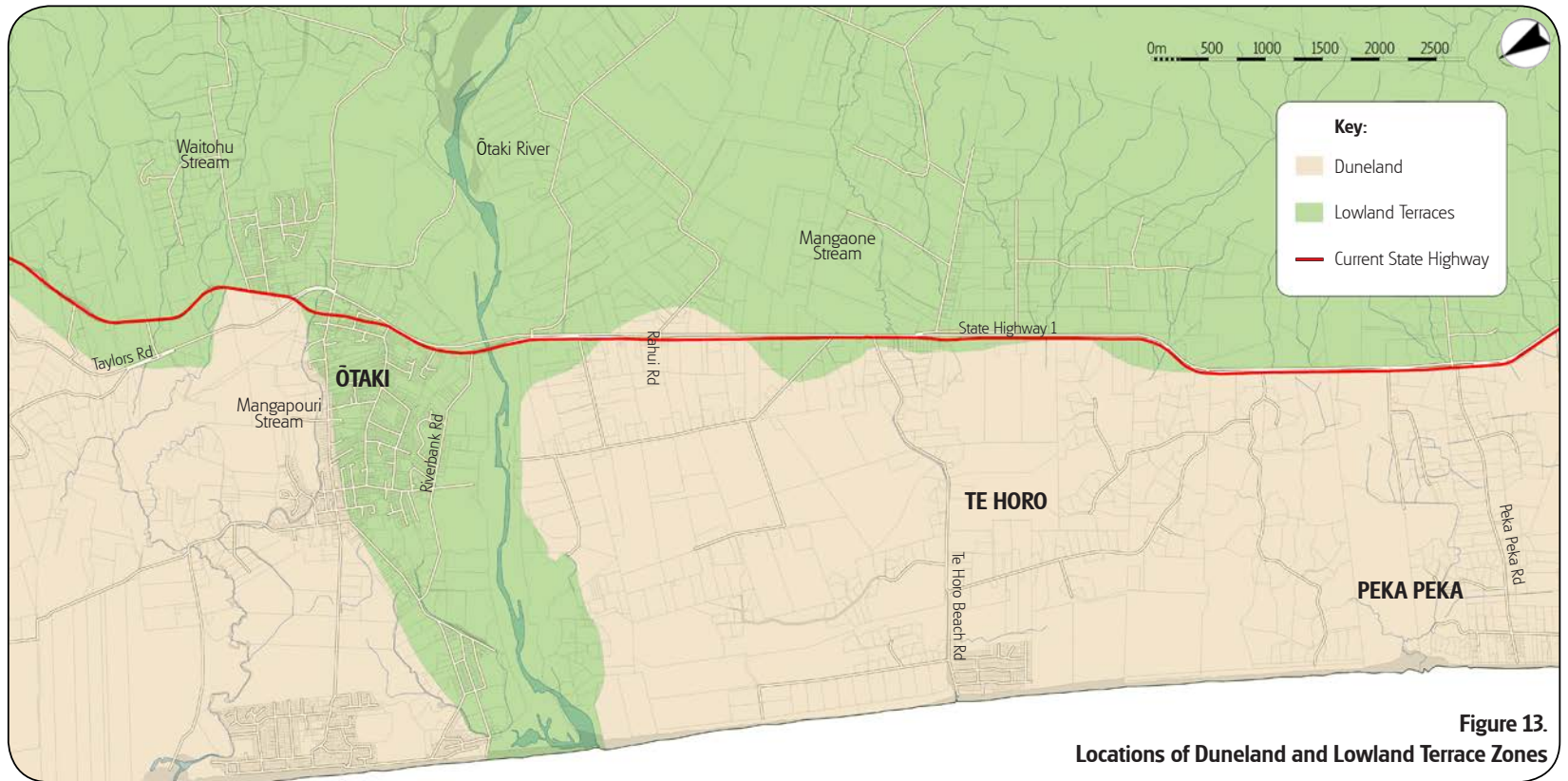
Principles to avoid/mitigate effects on aquatic ecology:

1. Minimise stream and river crossings;
2. Cater for fish passage in culvert design;
3. Allow for native plants along riparian margins to provide a diverse range of shelter for aquatic insects, which in turn provide food for fish and birds;
4. Avoid discharging sediments within flowing waters;
5. Encourage road surface run-off to flow directly off the roads and into the ground where plausible, or via an appropriate treatment train. Consider planting with native vegetation along road margins to help mitigate.

Principles to avoid/mitigate effects on terrestrial ecology:

1. Consider altering footprint where possible to minimise loss of indigenous habitats.
2. Provide specific habitat creation and enhancement to compensate for habitat lost to the project footprint where practicable.
3. Where appropriate use landscape and amenity plantings as an opportunity to increase indigenous vegetation elements within the landscape, thereby adding environmental benefits.
4. Where stormwater ponds or wetland treatment systems are required include ecological principles within the design where possible in order to create biodiversity values. This section is to be read in conjunction with 3.4 Existing Vegetation.

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Reference: Information for graphic taken from 'A Guide to Growing Native Plants in Kapiti,' written by Boffa Miskell for KCDC, and QuickMap V73.146

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3.10 Movement Networks

Currently the existing state highway creates severance for pedestrians, cyclists and horse riders - particularly in Ōtaki and Te Horo. The impact of this severance could increase with the creation of a four lane expressway. However, with careful consideration of the needs and movements of these users, decreased severance and improved community outcomes could result.

In Ōtaki, there is a strong diagonal desire line between Mill Rd and Te Manuao Rd. Therefore this movement network between the two residential areas should be maintained.

Mill Rd and Rahui Rd form the other key east - west connection, particularly to the Otaki Racecourse. Therefore some form of link (preferably allowing for vehicles, but cyclist and pedestrians as a minimum) between Mill Rd and Rahui Rd should be maintained where practicable.

Passenger transport must be able to easily access all parts of the community, including the residential area to the east of the existing state highway, the railway station, Ōtaki Beach and locations to the south.

In Te Horo, most community facilities are located to the east of the existing state highway, while the residential development is primarily on the western side. An appropriate link for all modes of transport should be provided between the two areas to minimise the severance created by the expressway and railway corridor.

The main bridleway routes run along the recreational paths parallel to the Ōtaki River, and southeast towards the river from Waitohu Valley Rd.

Design and alteration to movement networks must consider the current and future vision outlined in the KCDC Cycleways, Walkways and Bridleways Strategy (refer to Section 2.2).

Throughout the rest of the study area, distances are generally too great for walking to be a viable mode of transport. However, cycling is still feasible, especially for keen cyclists. The provision of a safe route for cyclists along the length of the study area in addition to connections across the expressway needs to be considered in the design of the project.

Allowance for future double tracking of the NIMT rail corridor along the length of the project area is a key criteria.

It is also important to maintain accessibility to the railway station at Ōtaki.

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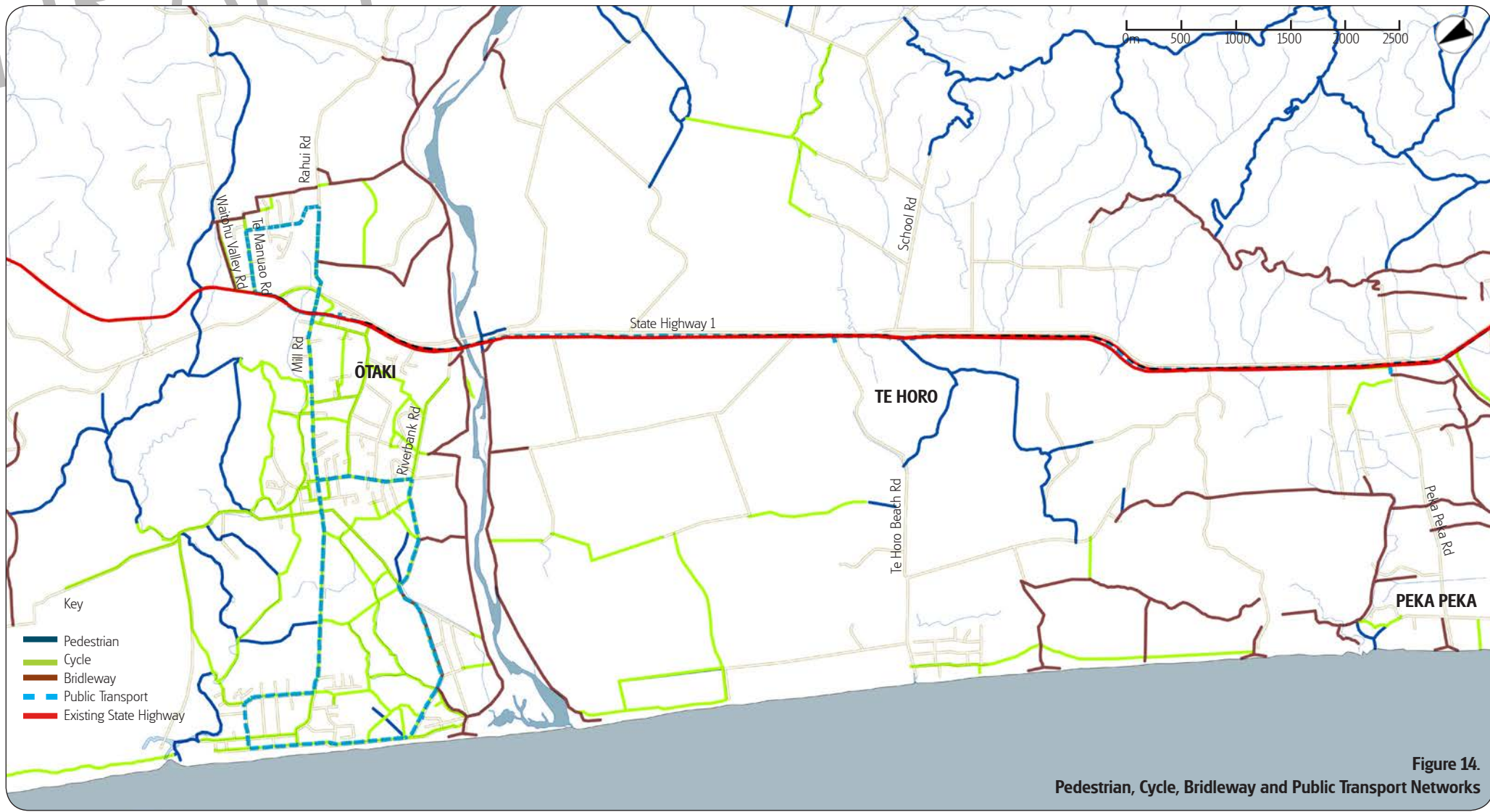


Figure 14.
Pedestrian, Cycle, Bridleway and Public Transport Networks

Reference: Kapiti Coast District Council, Received 2004

3.11 Community Consultation

Previous consultation was undertaken as part of both the Strategy Study produced by Meritec in 1998 and the Scheme Assessment Study completed in 2002/03.

Initially, consultation focused on key stakeholders, including preliminary meetings with local Iwi, and directly affected parties.

The objective of the first stage of public consultation was to re-engage with the community and to consult on the form, function and location of interchanges and local road connections.

The six-week consultation took place from 7 February to 18 March 2011 and included sending brochures to over 23,000 postal addresses in the Kāpiti Coast District, two public open days held in Ōtaki and Te Horo, and meetings with key stakeholders, including potentially affected property owners, the Kāpiti Coast District Council (KCDC) and local iwi.

A total of 473 submissions were received and the content of the submissions reflected a number of views and interests ranging from support to opposition to the proposals, and a combination of both.

The feedback from the community on the proposals for the interchanges and local road connections suggests a high level of

support for the interchanges to the north and south of Ōtaki. At Te Horo, there is a clear preference for a connection across the expressway around Te Horo Beach Road (Proposal B from the consultation brochure), and a desire to maintain the existing vehicular link to the Mill Road roundabout via Rahui Road.

Other key themes by the community through submissions include environmental effects such as flooding, noise, business viability, and safety, along with some concerns about the design for local access and interchanges being raised.

This feedback was carefully considered before moving to the next stage of design.

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4.1 Overarching Principles

DESIGN ISSUES	DESIGN OBJECTIVES
Local Connectivity	
The existing Kapiti communities are severed in places by the existing railway line and/or state highway. The proposed expressway could potentially exacerbate this.	Link the communities of the Kapiti Coast at a regional, and local scale. Maintain and enhance east-west connectivity across the SH 1 and NMIT corridors. Ensure that existing and future multi-modal networks are maintained or enhanced.
Design Continuity with the Overall RoNS	
The Peka Peka to Otaki project route is 12km long and passes through various character types. Other RoNS projects (e.g. McKays to Peka Peka) will tie into this project, and could be visually mismatched if not considered. It is important to achieve design continuity between the various RoNS projects within the Kapiti District. This continuity helps to create a unified character for the whole coastal area. For motorists on the expressway, it creates a consistent backdrop against which local variations and individual signature elements can be better understood.	Develop a coherent suite of highway elements in liaison with other RoNS project teams, to provide road users with a unified and integrated route that responds to its context (rural, lifestyle, urban). Highway elements contributing to design consistency include: cut and fill batters, bridges, culverts, retaining walls, side and median protection, landscape treatments, noise barriers, road furniture, drainage elements.
Legibility (Clear Routes for Wayfinding)	
The project length is predominantly rural, and without legible entry and exit points along the expressway, the Kapiti Coast economy and local connectivity will suffer.	Create legibility with design cues (including gateways to the north and south of Otaki), indicating the transition from rural to urban, and logical and efficient placement of entry and exit points along the expressway.
Integration in the Landscape	
The proposed expressway alignment crosses a number of waterways, areas of vegetation of ecological value, and introduces a large built element into a predominantly rural landscape.	To protect and enhance natural systems, characters and landforms. Design planting to improve water quality and habitats along streams. Design stormwater flow and treatment devices to minimise impact on water quality. Restore connections between areas of native vegetation to increase habitat and biodiversity levels.
The expressway project is likely to require the removal of localised native vegetation clusters. This has potential to affect the landscape character of parts of the route.	Minimise the removal of native vegetation where possible. Mitigate any vegetation removal by planting, building on or joining remaining remnant vegetation clusters where practicable.
Corridor Width / Footprint	
Due to the current state highway, expressway, rail and sometimes a local road all running parallel for parts of the project length, the footprint is likely to be quite dominant.	Ensure the footprint size is kept to the minimum practicable.
Business Sustainability	
Businesses along the existing highway are likely to change in a natural process of "succession". As through traffic is removed and the quality of the environment improves, retail is likely to become more local in character or take on a "visitor-destination" focus. There is some risk of large-format vehicle-oriented retail evolving along the strip of land between the existing highway and the proposed expressway. In this location, sites are conspicuous to motorists on the expressway and accessible via the new local arterial. However, this risk is substantially reduced by placing expressway off-ramps before the town.	Evoke a sense of place. Develop a design which enhances the Otaki shopping experience, and encourage business owners that the expressway will not be of detriment (hopefully it will be of benefit) to their businesses. Promote Otaki Railway Retail Area as a destination by enhancing the streetscape (a KCDC opportunity), and legibility (including gateways) in to and out of Otaki. Ensure that access to state highway businesses at Te Horo and Old Hautere Rd is also a legible, efficient and pleasant experience once the current state highway becomes a local route. Where practicable, specify materials in the expressway design which can be sourced locally (for example, aggregates), to support local economy.

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DESIGN ISSUES	DESIGN OBJECTIVES
Existing State Highway Treatment	
Community engagement: local businesses, iwi and community support is crucial.	Ensure the transition of the existing state highway to a local road is successful in terms of improving community connectivity, and being a pleasant local environment.
Route Character	
Route Character is one of several of design issues or objectives which take the motorists' experience of the Kapiti District into account. Given the number of motorists who will pass through the district, this is an important design consideration.	Where practicable, select a road alignment that retains and provides views of key features (e.g landform, waterways, historic sites, etc) along the route. Develop design responses (earthworks location and profiles, bridge and culvert structures, median treatments, barrier types and planting proposals) that are appropriate to the character of the adjacent landscape and land use. Celebrate views as part of the driver, pedestrian or cyclist experience.
Scale	
The route traverses both expansive rural areas and smaller scale urban areas.	Where practicable, design expressway and local road elements and landscape treatments that respond to the scale and landscape character of adjoining rural, lifestyle and urban areas.
Landlocked Sites	
The location of the expressway, alongside the railway line, current state highway, and in some places an additional local connection, creates some residual, landlocked 'dead' spaces. These spaces will be of little benefit to the community if not considered during the design process.	Ensure that residual spaces are considered during the design process. Make the spaces large enough to be usable if practicable, and consider what the spaces could be used for if they are likely to be disconnected or too small for productive use. It is possible that one use for residual or "landlocked" spaces is as a visual separation between different transport modes and speeds.
Flood Zones	
Change in levels and topography could divert flooding to new areas.	Consider the impact of changes to levels and topography. Appropriate, well considered changes could create a better overall community outcome e.g. reduction in flood risk.
Public Safety	
The project includes the use of bridges and culverts, which could create unsafe spaces.	Consider CPTED (Crime Prevention through Environmental Design) principles in the selection and development of design solutions.
Value for Money	
The expressway project involves considerable capital and potential future maintenance expenditure.	Consider whole of life costs, including maintenance costs, when selecting design solutions.
Stakeholder Support	
Community engagement with local businesses, iwi and community support is crucial for the project's success and progression.	Hold iwi and community engagement workshops, so that local business people, iwi and other members of the community can express their ideas and concerns.
Potential for NZTA, GWRC, KCDC and KiwiRail to have competing or conflicting views and priorities for the outcomes of the project.	Hold stakeholder workshops with all stakeholders to ensure that each stakeholder can express their views, and any conflicting views can be identified and resolved efficiently and to the satisfaction of all of the stakeholders.

4.2 Corridor-Wide Design Principles

4.2.1 Landscape

Section 4.2.1 is to be read in conjunction with 4.2.6 Planting.

GENERAL OBJECTIVES

- Maintain and the natural landform patterns where practicable;
- Roading solutions that are near to grade where practicable (excluding railway crossings);
- Protect natural drainage patterns;
- Enhance and retain views of significant landscape features where practicable. The key physical and cultural landscape features which are visible from the proposed expressway and/or the current state highway include:
 - Eastern foothills
 - Ōtaki River
 - Sand dunes
 - Ōtaki township
 - Brown Sugar Cafe
 - Ōtaki Railway Retail Area
 - Ōtaki Lake development
 - Ōtaki industrial area

- Create a landscape that contributes to improving ecological value and biodiversity within the designation and in the surrounding environment;
- Ensure that the experience of travelling through different character areas is maintained - both along the expressway and the current state highway. It is important that road users experience transitions between rural and urban environments for way-finding purposes, and for variety along the journey;
- Create a self sustaining, low maintenance landscape;
- Encourage road surface run-off to flow directly off the roads and into the ground where possible, or via an appropriate treatment process. Consider swales and/or planting with native vegetation along road margins to help mitigate;
- Where appropriate, establish shrubs and screen planting to reduce the visual effect of the expressway and traffic within the wider landscape. Refer to 4.2.6 Planting;

- Explore opportunities to restore indigenous duneland species and self sustaining ecosystems;
- Mitigate ecological impacts through habitat creation and enhancement (including water bodies);
- Where earthworks are required, integrate with the surrounding landscape by mimicking the natural landform and vegetation cover where practicable;
- Where practicable, integrate structures into the surrounding landscape so as not to compete with the landscape features. Project outcomes are more likely to be successful, if infrastructure and landscape are considered parts of a single design concept. Investing in high-quality landscape, infrastructure and "highway elements" is more likely to produce a favourable design result than "applied" decoration or overlaid enhancements.
- Reinforce safety requirements along the road corridor;

- Create a safe user environment by ensuring that the landscape treatment does not impede the efficient use of Cycleway/Walkway/Bridleway (CWB) and footpaths; and
- In regards to medians, the main driver is ensuring that the expressway fits into its context, and provides a high level of positive amenity for the highway user. Retention of grass within the median (requires a width of 6m or greater) is desirable as it will sit within the context of the rural open grassed expanses, and will tie in with the grassed medians of the semi-urban areas of the Wellington Northern Motorway. Grassed medians also have a lesser establishment and maintenance cost than a planted median. Planted medians are known for collecting wind-blown rubbish and are rarely repaired if damaged by accidents, so can look quite unkempt. Grassed medians are a tidy solution, which are appropriate to the context.

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EXPRESSWAY OBJECTIVES

- Establish the expressway as an attractive environment, integrated with the wider landscape.

EXISTING STATE HIGHWAY OBJECTIVES

The state highway revocation project should:

- Identify opportunities to convert the current state highway into an attractive local road environment, conducive to local traffic, as well as pedestrian and cyclist activity.
- Develop proposals for the existing SH1 treatment as part of a wider network plan. Landscape specific considerations should include the establishment of a planting and streetscape style, to emphasise the journey as a local road experience. Style should be appropriate to the surrounding character (e.g. rural and urban).

GATEWAY OBJECTIVES

- Gateway treatments should be located along the expressway before the approach to off-ramps which provide access to Ōtaki from the north and south. Informing expressway users of access points to Ōtaki with visual cues will enhance business sustainability for the Railway Retail Area in particular, but also the river-side industrial and proposed 'Clean Tech' areas.
- Utilise the natural urban containment lines of the waterways (Waitohu Stream in the north, and Ōtaki River to the south) to emphasise the gateway experience. These waterways are key thresholds in a sequence of gateway experiences, and where practicable, should be emphasised by open views towards the water, and formal landscape treatments from the approach to the off-ramps to the banks of the adjacent waterways, marking the entry into the urban environment.

- Lighting and local artwork could also be considered/integrated as part of an overall gateway theme.
- Employing natural features and elements of infrastructure as part of the gateway experience is likely to be more successful than just installing purpose-made signs, artworks or "markers".
- Signs and commissioned artwork should be considered as a complimentary part of the gateway experience and draw on the Ōtaki Vision and sense of place.

4.2.2 Earthworks

The earthworks related to the construction of the roading formation and the associated approach embankments for bridge structures have the potential to be an obvious visual element of the expressway. Any negative visual effects that arise from earthworks will need to be mitigated so that expressway is integrated with the surrounding landform.

Principles

Where practicable, the following principles will be applied to the design of earthworks:

- Given that the local rural landform and its contour are flat to gently rolling, where practicable, the earthwork profiles will be shaped to form gentle slopes consistent with the surrounding landscape.
- Round the top and toe of slopes to blend with the surrounding landform - especially in areas of duneland character.
- Avoid steep slopes over short lengths to reduce erosion and ensure good growth conditions; and
- In rural locations in particular, slopes should typically not exceed 1v:2h to allow for mowing if required and blend with the surrounding landform.

CUT BATTERS

- Where terrain is rolling with reduced batter heights, flatten the batter slopes where practicable, so that earthworks merge with adjacent terrain and so that cut batters can be readily topsoiled and re-vegetated.
- In non-sandy locations, scarify cut face to assist retention of topsoil.
- Re-spread topsoil and re-vegetate as appropriate in order to match adjacent land use.
- In duneland areas, use coconut fibre or similar surface blanket treatment to provide initial erosion protection and aid re-vegetation.

FILL BATTERS

- Where practicable, minimise fill batter slopes in order to merge with surrounding terrain, and to facilitate re-vegetation to merge with surrounding land use.
- Re-spread topsoil and re-vegetate as appropriate in order to match adjacent land use.

SPOIL DISPOSAL SITES

- Locate spoil disposal areas near terraces or natural benches, and around shallow basins at the head of localised gullies so that the disposal material can be readily shaped as part of the natural contour. Avoid locating spoil disposal sites in or close to streams or ephemeral watercourses.
- Locate spoil disposal on areas of pasture, avoiding areas of remnant or other significant vegetation.
- Maintain low profile landforms by restricting spoil disposal to a maximum 3m depth with rounded edges. It is preferable to occupy a larger footprint with low profile landforms on less sensitive sites than to create deep disposal sites in sensitive areas.
- Strip, stockpile and re-spread topsoil over completed spoil disposal sites and re-vegetate to merge.
- Consider the opportunity to use spoil in areas that require any noise bunding or screening.
- Locations for spoil disposal will be identified as the design progresses.

SOIL AND CONSTRUCTION ACTIVITIES

The construction activities associated with roading development generally results in the degradation of soil quality and therefore construction design and management needs to ensure that the potential effect on soil structure (including natural and drainage features) is minimised.

The following general principles for soil conservation will be followed where practicable:

- Construction activities will be limited to the footprint of the works (including the contractors yard and stockpile areas) to minimise unnecessary damage to soil structure.
- Prior to carrying out earthworks, topsoil will be sprayed with herbicide to eradicate rank grass and weed growth.
- Use topsoil harvested from site to cover exposed subsoils after construction is completed.

4.2.3 Structures

Bridges Objectives

1. Consider the design quality of the bridge: amenity, aesthetics, of the experience, safety, accessibility, resource efficiency, and landscape design.
2. Ensure new bridges are of an appropriate form, scale, design and quality, and consider the relationship to existing bridges (road and rail).
3. Make a positive contribution to the surrounding environment and communities.
4. Make a positive contribution to road users and the driving experience.
5. Consider the opportunities for consistency of bridge elements across the Coastal RoNS.
6. Ensure all users are considered and catered for.

7. Ensure the bridge location and geometry fits in well with the wider movement network, making a positive contribution to the urban form.
8. Create families of bridges according to type / hierarchy: expressway bridges, local arterial bridges, and minor local vehicle / pedestrian bridges.

ACCESSIBILITY (PEDESTRIAN AND CYCLE)

- All bridges (excluding main expressway bridges) should cater for pedestrian and cyclist access.
- Careful thought needs to be given to the location of pedestrian and cycle routes in relation to the main carriageway. It may be desirable to elevate pedestrians and cyclists slightly above the traffic, or to locate them outside crash barriers.

- Ensure pedestrian ramps are wheelchair accessible (no steeper than 1:12 or 8%, spread over a maximum of 9m). 5% grades are more preferable.

- Where bridges create detours for pedestrians (ie go against the desire line, or double back), consider steps or ramps off the bridge which are more direct. Ramps and stairs should be located as close to the structure as possible.

- Where practicable ensure that 2m width minimum is allowed for on at least one side of urban local road bridges for pedestrian and cycle pathways. Where there is high pedestrian/cyclist use, or potential for significant growth, consider facilities on both sides.

- Where a bridge is likely to, or does, link into a bridgeway network, it is desirable that the path widths are 2.5m minimum.

- Where possible, create new connections to existing pedestrian and cycle networks.

- Ensure that the shoulder width of the expressway is maintained across the bridge.

APPROACHES

- Design approach ramps as part of the bridge composition, and integrate them into the surrounding landform/landscape.

- Minimise the length of pedestrian/cycle ramps and staircases where possible, without compromising the gradient for wheelchair accessibility.

- Where practicable, plant or grass the embankments on bridge approaches with slopes 1h:2v or flatter.



Figure 15A. Concept for Bridge 4: Rahui Road Underpass

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BARRIERS

- Ensure that barriers are fully visible, with clean, uninterrupted, continuous lines.
- Consider sloping the top of the barrier inwards to minimise water staining on the outer face of the barrier.
- Ensure that barriers extend well past abutments to transition the bridge into the landscape.
- Ensure pedestrian bridge barriers allow through visibility for natural surveillance.
- Enhance the barrier surfaces through use of colour, form, and materials informed by the local topography, history, land use and ecology.
- Where a bridge crosses over the rail corridor, there is a preference to use horizontal barriers, rather than vertical where possible. This achieves a cleaner and consistent vertical profile.

CONTEXT

- Bridges should complement their context. This means considering factors such as, but not limited to: topography, location of watercourses, the rural or urban setting, bridge visibility, existing valuable vegetation or ecology features, proximity to houses or open spaces and the presence of pedestrian/cycle paths across or in the vicinity of the bridge.
- Consider how a new bridge will aesthetically tie in or contrast with other bridges nearby. For example, the existing road and rail bridges over Ōtaki River.

SERVICES

- Conceal drainage systems from all views, within the bridge structure.
- Ensure services are hidden from viewing points (including views from river walkways).

EXPERIENCE

- Consider the visual experience for both pedestrians and road users on and under the bridge.
- Consider viewshafts of the local landscape features (e.g. the eastern foothills, the dunescape, river corridors, etc) from the bridge which could be framed by the structure.
- If appropriate, integrate street furniture or pedestrian resting spots at key viewpoints along the bridge.

COLOUR

- Ensure that colour is not a dominant feature in rural settings (see Figure 9 for rural areas).

LANDSCAPE DEVELOPMENT

- Where suitable plant the bridge area, and any sloped abutments to provide integration into the surrounding landscape, and reduce the impact of ramps and barriers.
- Consider CPTED when planting. Natural surveillance should not be compromised.

LOCATION

- Acknowledge desire lines of pedestrians and road users.
- Avoid isolated locations.
- Consider the natural topography - could it be an advantage to the bridge design?
- Is it easily accessible for pedestrians?

MAINTENANCE

- Select durable materials and finishes.
- Use anti-graffiti coatings where required.
- Adopt Whole-of-Life principles in the selection of materials, joints, bridge bearings etc.

SAFETY

- Consider the safety of all users.
- Ensure path widths cater for both pedestrians and cyclists safely without collisions. Separate the paths if required.
- Ensure lighting design at interchange bridges (quantity, location and type) creates a safe environment for pedestrians, and prevents vandalism.
- Provide open abutments where practicable for cyclist and pedestrian safety i.e. prevent the 'tunnel effect.'
- Pedestrians and motorists often have quite different lighting needs. Sometimes, separate installations are required for each user group.

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FORM AND SCALE

- Objective 4 above, refers to “families” of bridges along the route of the expressway. This is an important design concept for many infrastructure elements. As well as a family resemblance, there should be a hierarchical relationship among the elements.
- For the major bridges, distinctive one-off design features could apply.
- A favourable design outcome is more likely to result from strong formal or visual integrity among the basic parts (bridges, ramps, retaining walls, etc.), than it is from an overlay of “decorative” or “mitigating” elements.
- Ensure the substructure is in harmony with the overall bridge form.
- Ensure that form and scale of the bridge complement the surrounding context when viewed by all users (e.g. users on the bridge, users under the bridge, and users viewing the bridge from a distance).

- Consider CPTED when designing the form of the bridge. Natural surveillance should be encouraged - can pedestrians be seen as they are using the bridge?
- If closed abutments are used in urban setting, ensure the edges have a ‘finished,’ clean appearance to approaching traffic.
- Ensure the ratio of height and span are carefully considered to achieve balance, and create a simple, elegant whole.
- Ensure that bridge length and position takes into account river/stream characteristics and hydraulics.
- Ensure that barriers and handrails compliment the bridge form.

PLACEMAKING DESIGN

- While the southern approach to Otaki is dominated by the Otaki River, the Waitohu Stream provides a far more subdued natural feature along the northern approach to the town. Yet, from a regional perspective, the northern approach is more important, acting as a threshold to the whole Wellington Region. For this reason, it may be beneficial to consider the northern gateway as a series of events, which includes the Waitohu bridge, as well as the expressway ramps and Pareomatangi Reserve as part of the gateway experience.
- Design elements of the bridges to be visually consistent within family groups: expressway bridges (including gateways), local arterial bridges, and minor local bridges. A visual consistency between the bridges will reinforce the placemaking aspect for the Ōtaki area. This can be through use of colour, planting, bridge form, or surface treatment.

COASTAL RōNS CONSISTENCY

- The aspiration for design consistency of structures were agreed across the Coastal RōNS, as shown in Table 15a.
- It has been agreed that design consistencies are desirable for structures/elements which are experienced by the expressway user, as it is the expressway user that will experience the route as a whole. Structures and elements which are experienced by the local community need to be considered, but do not need to be consistent, as these experiences are localised. Structures/elements which are experienced by the local community should respond to local context and reflect local themes. The table below reflects this principle of being based on user experiences.

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User Experience Considered	Elements of Design Consistency	Consistent Design Solution
Expressway User on Bridge	<ul style="list-style-type: none"> A. Bridge form B. Bridge barriers C. Barrier transition (wire rope to Texas HT) D. Shoulder widths approaching and on bridges E. Bridge drainage design F. Median width on bridges G. Median shoulder on bridges H. Consistencies to be made for economic efficiency 	<ul style="list-style-type: none"> A. Spilt bridges to provide light between structures. Efficient solution for proposed median width (6m). B. Bridge barriers should be Texas HT and Rail. No patterns to be added. C. Barrier transitions – details TBC. D. Consistent shoulder widths of 2.5m. E. Kerb and channel on bridges, and crossfall design. F. No narrowing of medians on bridges – maintain consistent 6m or 4m. G. No narrowing of median shoulders . Consistent width of 1m from white edge line to face of barrier. H. To be discussed further. May include prefabrication.
Expressway User Under Local Vehicular Bridge	<ul style="list-style-type: none"> A. Barrier/edge treatment B. Bridge structure C. Pier arrangement relative to expressway D. Bridge abutments E. Pier cap and pier form 	<ul style="list-style-type: none"> A. Barrier/edge treatment reflects user on bridge: TL4/5 plus height (rail corridor, horse, pedestrians, cycle). B. Super T Structure to be used for all local bridges where practicable. C. Central pier in expressway median. D. Spill through abutments where possible. E. Pier form and pier cap should be a consistent, integrated and elegant solution. Pier caps should be hidden by a consistent edge treatment.
Local User Under Expressway Bridge (cyclist, walker, horse rider, river user, local road vehicles)	<ul style="list-style-type: none"> A. Bridge form B. Considerations for recreational users underneath the bridge structure C. Bridge structure 	<ul style="list-style-type: none"> A. Spilt bridges to provide light between structures in urban areas. B. Consider best outcome/experience for recreational users underneath. Outcomes will vary and should have a context/community driven approach. C. Structural form can vary providing consistency for expressway users is maintained.
All Users at a Pedestrian/Cyclist Bridge over Expressway	<ul style="list-style-type: none"> A. Opportunity to provide variety for expressway traffic passing underneath B. Should respond to local context and sense of place C. Context/community driven approach 	None
Train User or Resident Accessing Property Under Bridge	<ul style="list-style-type: none"> A. Context driven approach 	None

Table 15A. Aspiration for Design Consistency of Structure Types, Developed with Mackays to Peka Peka Bridge and Urban Design Teams

Design development:

The bridge design has been developed with careful consideration of consistency (including principles agreed above), user experience and value.

Table 15B summarises the design development considerations and describes the proposed solution. Further details of the process are included in the bridge design statement.

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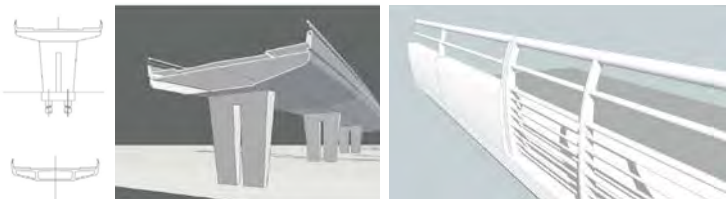

User	Expressway Underpasses - Expressway User Under Local Vehicular Bridge	River Bridges - Local User Under Expressway Bridge
Considerations	<ul style="list-style-type: none"> At four locations the Expressway passes underneath local roads. These are bridges 2, 4, 6 and 8. At these locations, all Expressway users will have a clear view of the structure. These structures will be most visible (viewed by the most people each day) of any along the route. They are local roads and located within the most densely populated areas along the route. There is a desire for these structures to be consistent in design approach. Two of these structures are located on a skew that would make it difficult to provide a clear span across the Expressway. Attempting to provide this clear span would increase the depth of the structure and remove the ability to achieve some of the desired structural and visual design outcomes. At Rahui Road there is a need to reduce the overall bridge structure depth to provide improved safety and visual outcomes. 	<ul style="list-style-type: none"> There are two river bridges, 1 and 5 (crossing the Waitohu Stream and Ōtaki River). These bridges will be mostly visible to recreational users passing under the structures. There is more of a factor at the Ōtaki River, at present there is no intention for there to be recreational access under the Waitohu Bridge. Proposal to use 30m spans and have 10 piers within the river corridor. Proposing a bridge with this span arrangement will provide the opportunity to increase the span lengths in the future if desired. Due to the location of the local arterial and rail bridges the expressway bridge will have only limited visibility from local roads. The intention is to limit the design quality at this location, ensuring a clean, simple design that provides open views for users on the expressway.
Design Priority	Highest	Moderate
Proposed Solution	<p>Architecturally designed concrete bridge deck and substructure.</p> <ul style="list-style-type: none"> The bridge soffit, deck and road barrier are all profiled to present an integrated single form to enhance and highlight the slender profile of the bridge. Integrated blade pier and pier cap reflect the deck geometry and present a single rhythmic elegance, demonstrating a single design aesthetic. The robust form lends itself to a variety of configurations, using common elements and thus making it suitable (and efficient) for a series of bridges. Symmetrical elevation with piers on a central median. 	<p>Architecturally designed Super T</p> <ul style="list-style-type: none"> Angled 'spill through' MSE approach embankments. Tapered piers. Split bridges providing light between. Barrier articulated at the pier junctions to tie-in with expressway underpass cross-sectional profile. Barrier is extended below the deck level to partially mask the Super T and present a sharp elevational profile for nearby road/rail users as well as for pedestrian and recreational users below.
Bridges	<ul style="list-style-type: none"> Bridge 2 Bridge 4: Rahui Road Underpass Bridge 6 Bridge 8: Te Horo Underpass  <p>Concept images for Bridge 4: Rahui Road Underpass.</p>	<ul style="list-style-type: none"> Bridge 1: Waitohu Stream Bridge Bridge 5: Ōtaki River Bridge  <p>Concept images for Bridge 5: Ōtaki River Bridge.</p>

Table 15B. User Experience and Proposed Solution (continued on next page)

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User	Rail Bridges - Train User or Property Access Under Expressway Bridge	Pedestrian Facility - All Users on or Adjacent to Structure
Considerations	<ul style="list-style-type: none"> There are two locations where local road has a short span across the rail corridor (bridges 3 and 7). At Mary Crest the expressway crosses the rail corridor and a local property access serving approximately 9 properties. Other than by rail users, bridges 3 and 7 are relatively hidden from view and are barely visible from the expressway and local road. At these locations, the proposal is to use a simple thin and efficient design that provides best value for money. A similarly efficient design will be employed at the Mary Crest crossing but due to the length of this crossing, the skew and geometry of bridge to rail and the fact that it will be used by a small number of local property owners further consideration is being given to opening up some of the end sections of the structure to provide a propped trench feel that will provide a more open and naturally lit experience. 	<ul style="list-style-type: none"> The user experience is important, so consideration have been given to edge treatment and widths. The bridge is visible to very few other users as it faces the rail bridge and is removed from the expressway. Efficiency and value for money are important considerations.
Design Priority	Low	Moderate - Low
Proposed Solution	Precast span hollow core at north and south Otaki. Precast beam and slab bridge at Mary Crest. <ul style="list-style-type: none"> Efficient designs enabling design quality focus at other locations. More visible solution at Mary Crest provides: <ul style="list-style-type: none"> Open structural portals, maximising the natural light and providing a cost effective, yet sculptural quality. 	Separate single Super T girder founded on new circular columns. Retaining existing ballustrade of current bridge and enabling provision of lightweight architecturally designed balustrade to outer edge of pedestrian facility.
Bridges	<ul style="list-style-type: none"> Bridge 3 Bridge 7 Bridge 9: Mary Crest Rail Bridge <div data-bbox="311 954 1088 1150" data-label="Image"> </div> <p>Concept images for Bridge 9: Mary Crest Rail Bridge. Concepts for Bridges 3 and 7 will differ.</p>	<ul style="list-style-type: none"> Otaki River Pedestrian/Cycle 'Clip on' Facility <div data-bbox="1249 954 1648 1150" data-label="Image"> </div> <p>Concept image for pedestrian/cycle 'clip on' bridge for current SH1 Ōtaki River Bridge.</p>

Table 15B. continued.

Retaining Walls

Where retaining walls will be visible to road users and/or members of the community, the following design principles apply:

- Where practicable, avoid the use of retaining walls in areas of rural character. Instead, use engineered fill vegetated to match adjacent landuse.
- Large areas of retaining wall should be treated with colour, texture and/or pattern. It is preferable that texture and pattern are derived from the materials and details of construction rather than from applied finishes or motifs.
- Large areas of retaining wall should be treated with colour, texture and/or pattern to soften the monotony and visual impact of the structure.
- Another method to reduce the visual impact of a large retaining wall is benching (i.e. terracing or stepping the retaining wall back) and vegetating the step. This method is only to be used where increased footprint is not an issue.
- Soften and reduce the visible area of retaining walls with planting where practicable (refer to 4.2.6 Planting).

Culverts

KCDC have expressed a desire for small bridges in place of culverts. However if culverts are to be used, are are visible to road users and/or members of the community, the following design principles apply:

HEADWALLS

- Minimise impact to streams and watercourses by designing shorter culvert lengths, and providing energy dissipation where practicable.
- For visual consistency, as well as ease of maintenance and construction, design similar headwall solutions along the length of the project.

FISH PASSAGE

- Provide fish passage in all permanently flowing watercourses.
- Set culvert at shallow gradient.
- Install below natural bed of stream to enable natural material to build up on base of culvert.
- Insert natural durable rock or artificial baffles within base of culvert to assist build up of natural material and to provide fish passage following storms.
- Construct rock ladders below downstream portal to prevent scouring and to avoid perched culverts.

4.24 Noise Mitigation

Objectives

1. Consider the design quality of noise barriers and bunding: amenity, safety, context.
2. Ensure an appropriate form and scale.
3. Make a positive contribution to the surrounding communities.
4. Make a positive contribution to road users and the driving experience.

ALIGNMENT

- Ensure that where practical, noise barriers (including bunds) follow the road geometry.

DETAILING

- Ensure that detailing on any noise barrier is carefully considered, to prevent driver distraction. Monotonous and/or overly-busy patterns should be avoided. Simple, abstract, linear patterns are best
- It is preferable that any visual interest is introduced by inventive use of materials and construction details, rather than from applied motifs.

LENGTH

- Avoid using excessively long sections of noise barrier on both sides of the road.

LOCATION

- Consider the effect on flood zones when creating noise barriers.
- Avoid locating noise barriers where they will obstruct significant views, both towards and from the road.
- Consider integration of noise barriers with swale design.

FORM

- Due to the predominantly rural nature of the project site, and a need for consistency along the route, where practical, planted earth bunds and other noise control methods such as low noise road surfaces and solid safety barriers should be used in preference to noise walls.
- If noise walls are used, ensure they complement and tie in to the overall corridor concept and complement the road structures, landscape treatment and safety barriers.
- If there is any excess fill from the project, consider using it in the creation of earth bunds.
- Ensure that the height of any noise barrier considers the balance between noise and visual impact.
- Tilting a noise barrier outwards slightly can reduce the visual 'tunnel' effect for drivers if this is an issue.
- Consider the design of both sides of a noise barrier - one side will be viewed at speed by road users, the other side will be viewed from the landscape or residences, and so will require a high level of detailing and design consideration. Consider tapering the ends of walls into adjacent landforms.
- Ensure a consistency in the design of noise barriers (materials, aspects of form, colour and detailing).

LANDSCAPE DEVELOPMENT

- Ensure landscape treatment of earth bunds is integrated with the surrounding landform and character.
- Where appropriate (particularly in rural areas), ensure planting is used where appropriate to soften or screen the effects of the wall, and provide an attractive interface to nearby properties, reserves (especially Pareomatangi Reserve if affected) and paths.
- Ensure planting design considers access to structures for maintenance.

MAINTENANCE

- Adopt Whole-of-Life principles in the selection and treatment of materials. Select durable materials and finishes.

SAFETY

- Avoid placing noise barriers too close to properties, blocking sightlines required for natural surveillance. Find a balance between reducing traffic noise, and CPTED measures.
- Ensure that detailing on any noise walls is carefully considered, to prevent driver distraction. Avoid monotonous and/or overly-busy patterns. Simple, abstract, linear patterns are best.

GATEWAYS

- If a noise wall is required in a gateway location, consider a statement wall, to reflect the transition into the urban context. Consider input from a local artist if patterns are desired - to enforce the local identity of the area.

The best practicable option for noise mitigation along the corridor will be confirmed at AEE stage, taking into account a range of factors including the urban or rural context in which it sits.

4.2.5 Pedestrian, Cycle and Bridleway Links

The transition of the current state highway to a local road provides the opportunity for a safe, pleasant pedestrian and cycle corridor along the alignment. It also provides the opportunity to enhance connections of the existing bridleway network. The location of the potential recreational corridor is shown in Figure 16, and will tie in to existing recreational pathways such as Chrystals Bend Walkway on the Ōtaki River's northern bank, existing bridleway networks which traverse east from the existing state highway towards Ōtaki Forks, and Pareomatangi Reserve.

Design of pedestrian, cycle and bridleway links needs to be take into consideration the vision outlined in KCDC's 'Cycleways, Walkways and Bridleways Strategy', and 'Streetscape Strategy and Guideline.'

The following principles should also be considered in the design of these pedestrian, cycle and bridleway opportunities:

SHARED AND CYCLE PATHS

- Safety, coherence, directness, comfort and attractiveness must be considered in all path designs.
- Shared paths are for use by pedestrians and low speed recreational cyclists. Path gradients will be consistent with NZ accessibility standards where possible.
- The preferred gradient for shared cycle and pedestrian paths is a mean of 5%, with a maximum of 8% overall, although the natural topography also needs to be considered as it provides variation, interest, and represents the local area. Where relevant, pathways should follow the contours and ridgeline of the existing dunes, acknowledging existing landform.

- Shared and cycle paths must be continuous and link with existing and planned open space and pedestrian / cycle networks.
- Shared and cycle paths must consider the desire lines of the users, and be convenient to use.
- Where the route traverses steep land, a smooth gradual gradient change with regular landings for resting will be provided where practicable.
- Intersection design must take into account safe, easy crossing for pedestrians, cyclist and where appropriate, horses.
- Recognise the potential for education in association with habitat creation at the Ōtaki River and stream crossings by providing interpretation boards etc.

- Shared pedestrian / cycle paths should be a minimum of 2.5m wide to allow cyclists to safely pass pedestrians and other cyclists. Motorists are likely to travel at speeds of up to 80-100kmph on some sections of the old SH1. The existing shoulder will provide around 2m of separation from traffic. In addition it is desirable to provide a planted separation from the edge of seal. This will provide a buffer between vehicles and children or inexperienced cyclists using the path. Path design and landscape treatment should allow natural surveillance from the road and/or adjacent land.
- Design paths to maximise forward visibility and minimise the potential for pedestrian-cyclist conflicts.

- The design of bridge structures crossing the expressway are being developed at Te Horo, Rahui Rd, and Ōtaki Gorge Rd. These will allow pedestrians and cyclists to cross. Refer to 4.2.3 Structures for bridge design principles.
- Consider viewpoint opportunities at the following locations Ōtaki River and Waitohu Stream.
- Shared lanes must have an even and continuous sealed surface.

Note: The recreational walkway/cycleway proposed (as well as the work required to change the current SH1 environment to a local arterial) shall be part of the separate State Highway 1 revocation project. However, the design of the recreational walkway/cycleway should aim to integrate the principles listed in this section.

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BRIDLEWAY SPECIFIC PRINCIPLES

- Consider the needs and behaviour of horses during the design of any bridleways. This includes material selection of ground surfaces (soft surfaces such as grass are preferable over asphalt concrete), and proximity to roads and other pathways.
- Maintenance must be considered if clay is the chosen ground surface.
- For bridge requirements in regards to any bridleways, refer to 4.2.3 Bridges.

Potential Future Developments

- There is an opportunity for KDCDC to develop a new pedestrian link between the Ōtaki Railway Station and the Ōtaki Race Course. This would emphasise Ōtaki as a destination for special race events, and could spur more train activity.
- Consider increasing the walkway access along the southern bank of the Ōtaki River.
- For an additional potential future pedestrian, cycle and bridleway link that could benefit Ōtaki, refer to Figure 20D.

* Refer to Transportation Report for recommendation on this location, and other potential placement options.

More work is required on this possible recreation corridor, particularly final location, landform, low bunding and planting design to improve amenity, and to suit intended users.



Figure 16. Typical Cross Section North of Te Horo

4.2.6 Planting

Where practicable, the following principles will be applied:

- Design planting to emphasise the surrounding landscape and to reflect adjacent landuse and vegetation patterns.
- Emphasise underlying topography, for instance by establishing riparian planting along margins of streams but leaving the high points within duneland areas in open pasture.
- Plant in a bold manner using restricted species palettes and broad spatial patterns in order to suit the scale of the landscape, and the speed at which motorists will view it.
- Design planting within the expressway corridor to achieve continuity with vegetation and landuse patterns beyond the corridor.

- Other than where road margins are being returned to a pastoral use or there is a specific urban context, re-vegetate cut and fill batters with a simple palette of pioneer shrubland and grassland species specific to the Kāpiti Ecological District.
- Ensure that underlying landscape patterns continue on both sides of the expressway and its associated roading development.
- Provide planting patterns that create a sequence of enclosure and openness that reflects the surrounding landscape.
- Bring landuse and vegetation patterns as close to the carriageway as practicable.

Design planting to reflect the character of specific aspects and locations along the expressway as follows:

RIPARIAN MARGINS

- Re-vegetate margins of all waterways crossed by the expressway in order to emphasise natural topography, enhance habitat and improve water quality.
- Extend planting to the embankment fill batters at all stream crossings. Use species that are appropriate for the conditions on fill batters and that merge with the character of the adjacent stream planting. Plant tall species in suitable locations, where they do not restrict views along the stream.
- Any stream banks which are affected by construction works should be appropriately replanted to prevent

erosion, encourage habitat and restore vitality to the waterways.

- Encourage multifunctional riparian planting: aim to provide shade for stock, a healthy habitat for aquatic fauna, as well as emphasising the waterways across the land.
- Plant any proposed stormwater wetlands with indigenous wetland species naturally found along the Kāpiti Coast. Where adjacent to rural land, plant banks above wetlands to provide a filter for nutrients and contaminants in runoff.
- Use riparian and margin species indigenous to the area. <http://www.gw.govt.nz/ecological-zones-of-the-wellington-region/> lists appropriate plant species.
- Where practicable, follow Figure 17 as a guide for streamside planting for habitat development.

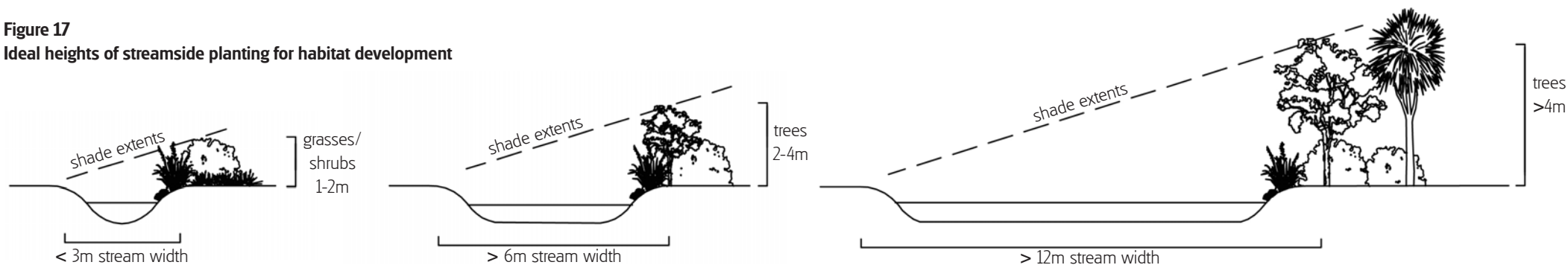
CUT BATTERS

- Re-vegetate cut batters with a simple palette of low-growing pioneer shrubland and grassland species, as appropriate.
- Select planting types and species to respond to adjacent landscape character.

FILL BATTERS

- Rehabilitate fill batters to merge with surrounding landscape patterns.
- Merge re-vegetation on fill batters with adjacent riparian planting at stream crossings.
- Overfill and re-grass fill batters where they merge with existing pasture. In such instances the fence-line might be located inside the designation so that the adjacent land use appears to extend as far as the road.

Figure 17
Ideal heights of streamside planting for habitat development



SCREEN/BUFFER AREAS AND OTHER GENERAL PLANTING AREAS

- Where appropriate, place screen planting to mitigate the visual effects that the expressway will have on the travelling public and residential properties, while contributing to the visual qualities of the designation corridor.
- Planting will provide all year round visual interest, maintain ecological corridors along the expressway and will also be located to frame key views towards the eastern foothills to the east, and gateways.
- The retention of existing planting will be considered to retain screening for various properties adjoining the expressway designation.
- CPTED principles will be applied.

URBAN AND RECREATION AREAS

- Planting design for areas that will become KCDC's maintenance responsibility such as along the current state highway and in Ōtaki township, needs to be designed in conjunction with KCDC's 'Streetscape Strategy and Guideline' document.
- Where appropriate, existing planting will be retained as part of the landscape and urban design redevelopment of the Ōtaki Railway Retail Area. Particular consideration will be given to the retention of large trees given the scale and stature they bring to what will be a significantly re-built part of the local community. Consideration will also be given to retaining existing shrub and 'front garden' plantings as screening for various properties adjoining the expressway designation.
- CPTED principles will be applied, with particular consideration given to ensuring visibility of pedestrian and cyclists relative to personal safety and traffic safety.
- Consider the mature size of plant species and locate them practically. For example, flax should be planted a minimum of 2m away from the edge of footpaths or kerbs to prevent trip hazards or maintenance issues when it has reached a mature size.

GATEWAYS

- Formal, bold planting design shall be integrated with signage at entry/exit thresholds to Ōtaki. Consider integration of sculptural or cultural elements influenced by local artists in these formal planted gateway areas.

4.2.7 Road Furniture

Road Furniture needs to be incorporated into the Peka Peka to Ōtaki project in different ways along the existing state highway and the proposed expressway.

Provision for safe maintenance access shall be considered as part of the design process

The expressway will be largely reliant on wayfinding signs and gateway artworks, where as identification of opportunities for the old state highway (especially through Ōtaki township) will need to be more considered in regards to streetscape elements such as benches, rubbish bins, wayfinding signs, pavers etc.

This will provide an added dimension to the creation of a 'sense of place' for each character area and the improvement/establishment of gateway features to further emphasise this idea.

Expressway Principles

Along the length of the expressway, wherever practicable, elements such as lighting, sign gantries and signage, retaining walls, guard rails, fences, wire rope barriers and median barriers should be consistent with that specified for other RoNS projects in the Wellington region, particularly the 'Coastal RoNS section.'

However, there may be some site specific traits which need to be treated differently (e.g. to avoid negative impacts on landscape features, or to enhance important views, or to create a gateway). In this case, the following principles below should be followed for road furniture of the expressway:

SIDE BARRIERS - BRIDGES

Where side barriers are required on bridges they shall:

- The barrier length shall be at least as long as the bridge span.
- The incorporation of a capping pipe should be used where practicable to reduce the visual height of concrete barriers.
- Whilst coloration of concrete barriers is acceptable it should be subdued.

SIDE BARRIERS - ROADS

The use of side barriers should be avoided where practicable, through the overfilling of fill batters to increase run off areas. Where side barriers are required (excluding bridges) either low earth mounds, or concrete or steel barriers should be used where practicable:

- The height of all barriers should be kept to a minimum to retain views beyond the carriageway.
- Short sections of steel barrier should be avoided, but where they are required (i.e. between cut faces) earth mounds shall be the priority.
- Where barriers are required on both sides of carriageway they should be the same.
- The profile and surface treatment (refer to 4.2.6 Planting) of earth mounds should transition smoothly into adjacent land forms and finished ground level. Abrupt and hard ends to barriers should be avoided - the start and finish of barriers should be considered as an integral part of an overall design concept.
- To limit visual clutter, where both noise mitigation structures and safety barriers are required they should be integrated so they appear as a common element.

LIGHTING COLUMNS

Design light standards as part of a coherent suite of highway furniture, and otherwise to be visually recessive.

- Lighting shall be located at interchanges only, in accordance with RoNS guide. Consider lighting between interchanges if they are close together in order to avoid eyes having to adjust.
- Lighting poles should be located on outer edges, not in the median.
- Adopt steel light standards with a plain galvanised finish.
- Adopt light standards with either a sharp angle between pole and arm, or fix fittings directly to the pole.
- To avoid visual clutter, use consistent heights within each group of light standards (for instance within each interchange).
- See 4.2.3 for other lighting principles.

SIGN GANTRIES AND SIGNAGE POSTS

- Construct pillars to prevent unauthorised access without the need for such secondary fittings as barbed wire.
- Use simple steel posts for smaller signs installed adjacent to highway.
- Where appropriate, design gantry to be integrated with the signage.
- When specifying/designing gantries, include the landscape and urban design team in the process.
- When specifying/designing gantries, consider the design consistency along the Coastal RoNS.

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GATEWAYS

Gateways that make use of landscape design, lighting, public art, and community signage help orient visitors to the environment, and communicates to the motorist that they are approaching a slower speed environment.

A theme and opportunities for any public art, lighting community signage and landscaping at gateways should be established with KCDC. Public art should be from local artists, and enforce the cultural identity of the area.

Existing State Highway Principles

As part of the SH1 revocation project, road furniture and streetscape treatments for the current state highway should be developed as part of a network plan process. Issues to consider include:

- Continuity in themes, materials, texture and forms.
- Street furniture palette: it is important that this is consistent with the theme and art strategy.
- Public art strategy: this needs to be consistent with the proposed theme (to be progressed by KCDC).
- KCDC guideline documents: the road furniture design should consider the KCDC 'Streetscape Strategy and Guideline' document.
- The local road experience.
- Local identity.
- The public domain of the street should possess a simple but high-quality palette of materials and elements. This simplicity helps to unify the inevitable variety and complexity of private property developments along the sides of the street.

4.2.8 Stormwater

For culvert design principals, refer to 4.2.3

Principles

1. Respect the natural landform patterns.
2. Preserve natural drainage patterns.
3. Where practicable, restore native biodiversity and create amenity features around stormwater features.
4. Where practicable, use low impact design measures to treat surface waters before they are released in nearby waterways.

WETLANDS AND STORMWATER BASINS

- Where appropriate, optimise natural character and landscape amenity value of wetlands and stormwater basins.
- Create stormwater basins and wetlands with variable depths and irregular margins to create a natural appearance and provide a variety of niches for plants.
- Where practicable, vary the shape and gradient of fill embankments to mimic the surrounding rolling dune landscape.
- Choose plant species indigenous to the Kāpiti Coast, and that are suitable to the hydrological characteristics of the wetland or basin, and clear weeds and non-native species.
- Design shallow sides and shelves in any wet ponds for safety reasons;
- Minimise the use of safety fencing around wetlands through appropriate planting and design treatment.
- Seek to integrate proposed wetlands with natural stream environments to connect them visually and ecologically, if not hydrologically.
- Design wetlands and stormwater basins so they could tie in to a recreational/educational walkway/cycleway/bridleway in the future.
- Provide for maintenance access.

SWALES

- Encourage road surface run-off to flow directly off the roads and into swales parallel to the carriageway as part of the stormwater treatment train where practicable.
- Vegetate swales primarily with low groundcovers and where appropriate, enhance with a mixture of native trees and shrubs, depending on the location and character area.
- Select plant species which will assist with stormwater treatment.
- Arrange the planting design to mimic the surrounding landscape character and create a natural appearance.
- The design of planted areas and selection of species shall comply with sightline and surveillance requirements.
- Use kerb and channel only at intersections and in locations where space is constrained.

5.1 Peka Peka to Mary Crest

Peka Peka to Mary Crest is a section of the project area, predominantly of rural character, with the occasional lifestyle property evident. Between Peka Peka Rd and Te Hapua Rd, the landscape has visible sand dune characteristics. The organically shaped topography and rural character should be considered during the design process of the expressway. There are also clusters of localised vegetation (including pohutukawa, kauri, kahikatea, tawa, totara and nikau) near Mary Crest. These clusters are likely to be affected by the expressway proposal, and need to be considered. Refer to Figure 18 for their locations.

Key Issues:

- Severance and community connectivity - this is the only sector within the project, which includes the design of a new local arterial road, so design principles specific to this new road are required.
- Coherence – integration with the Mackay's to Peka Peka project, and the character of the surrounding landscape.
- Native vegetation clusters - there are clusters of vegetation which are likely to be affected by the expressway. Mitigation measures will need to be put in place.

Therefore our specific objectives are:

- Create good quality local connections. Consider the possibility of the proposed new local arterial following the natural topography, to minimise impact on the landscape, and to achieve a visual buffer between the local road and the expressway.
- Protect the sand dune character and quality of the rural environment.

- Protect native vegetation clusters where possible, by minimising expressway footprint, and mitigate if vegetation is removed. Mitigation could include connecting remaining clusters to form one large cluster, or expanding on a remaining cluster, to form a more sustainable, diverse plantation and habitat.
- At the main bend of Mary Crest, there is mature vegetation, with low rounded dunes. This is an important landscape feature of this sector, and so if possible, there should not be any retaining walls or structures which will impede on these views, or compete with the rolling topography of the area.

- Consider how KiwiRail might be able to integrate with the proposal in the future - for example, smoothing curves in the existing railway alignment.
- Refer to Landscape Scheme Drawings to see how these objectives are currently being met in the landscape design. These drawings also provide more detail around interchanges and expressway alignment. A4 versions of the drawings can be found from page 76 of the ULDF, or A3 versions in the Scheme Assessment Report.**

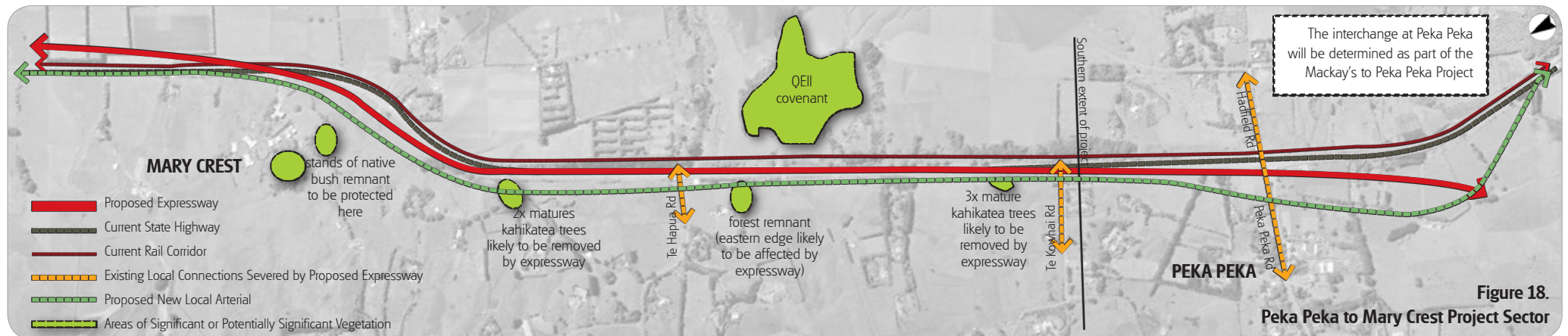


Figure 18.
Peka Peka to Mary Crest Project Sector

Refer to engineering drawings in the scheme assessment report for further detail

5.2 Te Horo

Te Horo is a small rural community located at the southern end of the study area. There is also Te Horo Beach settlement on the coast accessed via SH1 via Te Horo Beach Rd, but also accessible via Peka Peka turn-off. The urban form is a simple linear development, structured along School Rd on the east with the main community functions – Church, Town Hall, Primary School, Rural Fire Station, Tennis Club, etc - and SH1 on the west with market garden stalls. These are at right angles to each other and severed by both the existing SH1 and rail corridors. Gear Rd to the south offers local access and is currently linked to School Rd parallel to SH1.

In urban design terms there is an opportunity with the expressway and new local link to create better community connectivity for Te Horo across the corridors and overcome the existing severance issues.

Key Issues:

- Severance and community connectivity - Access between School Rd (main community facilities), and Te Horo beach (a residential area of Te Horo).

- Sandwiched properties. Properties between expressway and local roads.
- Business viability.
- Native vegetation clusters - there are clusters of vegetation which are likely to be affected by the expressway. Mitigation measures will need to be put in place.

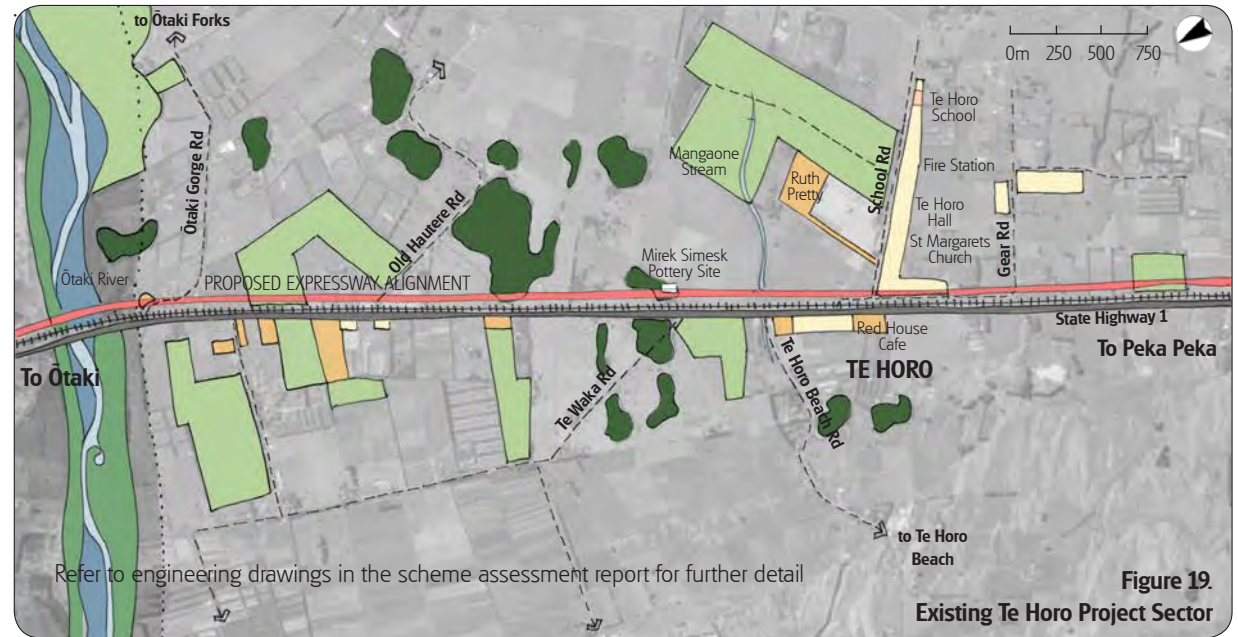
Therefore our specific objectives are:

- Create a good quality pedestrian, cycle and vehicular connection across the expressway and rail corridors for local movements. At Te Horo, a bridge structure across the expressway only needs to allow for shared pathway along one side of the structure, due to low demand. Horse riders should be able to use this shared path across the bridge, provided they are dismantled (this keeps barrier heights reduced to the 1.4m required for cycle paths).
- Protect native vegetation clusters where possible, (e.g. adjacent to Te Waka Rd), by minimising expressway footprint, and mitigate if vegetation is removed. Mitigation could include connecting remaining clusters to form one large cluster, or expanding on a remaining cluster, to form a more sustainable, diverse plantation and habitat.

- Protect the sand dune character and quality of the rural environment
- Minimise residual or landlocked spaces due to road alignment and geometry.
- Where crossing the Mangaone Stream, protect and enhance the riparian environment.
- Protect the character and quality of the rural environment. This includes the design of bridge structures, to sit within the rural context.
- Ensure positive pedestrian and cycle networks for the local community.

- Avoid the use of MSE walls where practicable. If MSE walls are required, plant the batter. Treat MSE colour, pigment and design differently to the bridge, to visually break up the structure.
- As mentioned in Section 4.2.3, there is a preference for horizontal barriers, rather than vertical barriers on bridges over rail (e.g. Te Horo bridge).
- If practicable, ensure any bridge structure at Te Horo is not a statement structure, and respects the rural character.

- Refer to Landscape Scheme Drawings to see how these objectives are currently being met in the landscape design. These drawings also provide more detail around interchanges and expressway alignment. A4 versions of the drawings can be found from page 76 of the ULDF, or A3 versions in the Scheme Assessment Report.



Refer to engineering drawings in the scheme assessment report for further detail

— existing state highway	— railway	■ retail/commercial area	■ residential area	■ green space / recreation space
— indicative expressway location	- - local connections	■ industrial area	■ stream/waterway	■ school
			■ clusters of localised vegetation	■ commercial horticulture
			... otaki river flood plain extents	■ ecological heritage area

Figure 19. Existing Te Horo Project Sector

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Severance & Community Connectivity

The Te Horo community is already bifurcated by the railway and the existing State Highway. The expressway will significantly increase the width of this transport corridor, adding a further sense of visual separation between the east and west communities. However if, a good quality pedestrian, cycle and vehicular connection is provided across the road/rail corridor, the functional and social separation of the two sides of Te Horo may be reduced.

At consultation, two options were tabled for the community to provide feedback on. The option which was the local community's preferred option (Proposal B) was not Opus' preferred option (Proposal A). Proposal A provided a direct connection between the Te Horo communities on either side of the current state highway, and would have improved the pedestrian and cycling connectivity. Proposal B minimised the physical effects on local property and business. It is important to recognise the community feedback, so Proposal B will be progressed, and the landscape and urban design will strive to create the best possible local walking/cycling connectivity achievable with Proposal B.

- Expressway
- Local Connections

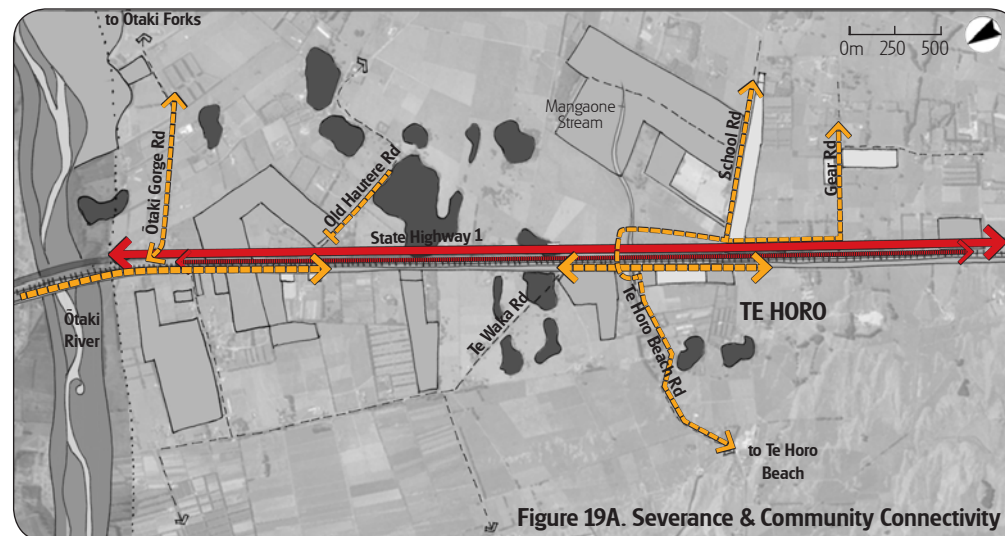


Figure 19A. Severance & Community Connectivity

Business Sustainability

Future residential growth is to be discouraged at Te Horo (as discussed on the following page), and SH1 businesses' exposure to through-traffic will be reduced. This is likely to impact on some of the businesses (especially those relying on through-traffic), so it is important to provide easy legible access between the proposed east-west link and the existing highway. Good connections between these two local routes will improve the environment for businesses along the old highway.

The mix of business along the current state highway may change due to the nature of traffic flows, but it is important to maintain the quality and character of the area.

- Key Commercial Activities
- Local Connections

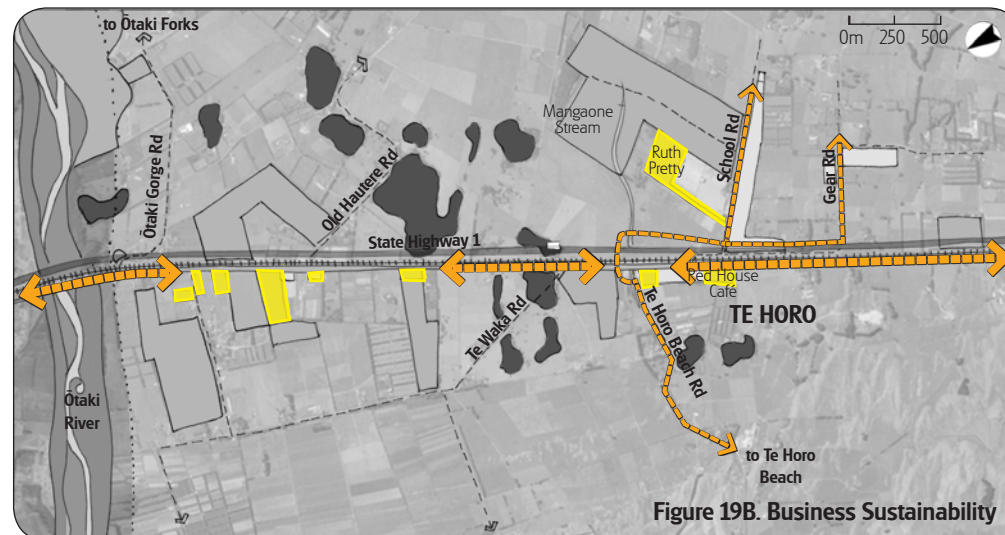


Figure 19B. Business Sustainability

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Potential Landlocked Sites

The expressway and local road connectivity options currently being developed at Te Horo will create some landlocked or residual spaces. It is important to either minimise these spaces, or ensure they are of a usable size and accessible for rural, horticultural, or recreational development. Small residual spaces are to be functional; these spaces could serve a stormwater function, a recreational function, and/or a mitigation vegetation function. When the design is further developed, a plan will define these landlocked spaces, and suggest treatment/mitigation.

The expressway design must also ensure that viable street frontages are still achievable.

Current and Future Land Use

KCDC has outlined a desire for residential growth at Te Horo to be discouraged (to protect the rural character of the area), and that agricultural and horticultural development is to be encouraged (to utilise the fertile land of the area). This vision for Te Horo means that the expressway design must minimise the footprint around local connections, so that the underlying rural and horticultural land use is maintained.

Future Potential: Shared Recreational Pathway between Te Horo and Ōtaki

As shown in Figure 19C, there is an future opportunity to create a shared pathway (perhaps including bridleway), linking Te Horo and Ōtaki. Some of the road width of the current state highway could be given to this pathway, when it transitions into a local road, and no longer requires the same road width (or space between the rail and existing SH1 corridor could be utilised). This recreational corridor could tie into existing amenities, such as the Ōtaki River walkways, the rest area on the southern bank of the Ōtaki River, the Red House Café, the Mangaone Stream, Brown Sugar Café, the various businesses along the current SH1, as well as the proposed Ōtaki Lake development. The expressway diverts through-traffic away from the current SH1 businesses, whereas the proposed pathway could re-establish a new form of traffic to mitigate some of the loss of business. For example, it could become a weekend activity to walk or cycle from home along the shared pathway, to one of the fruit and vegetable markets, or to one of the cafes along the current SH1.

The stormwater specialists have indicated that they will be incorporating stormwater ponds into the design of the expressway, in the residual spaces. The walkway could also be tied into these areas, to create variety, and access to a new recreational area.

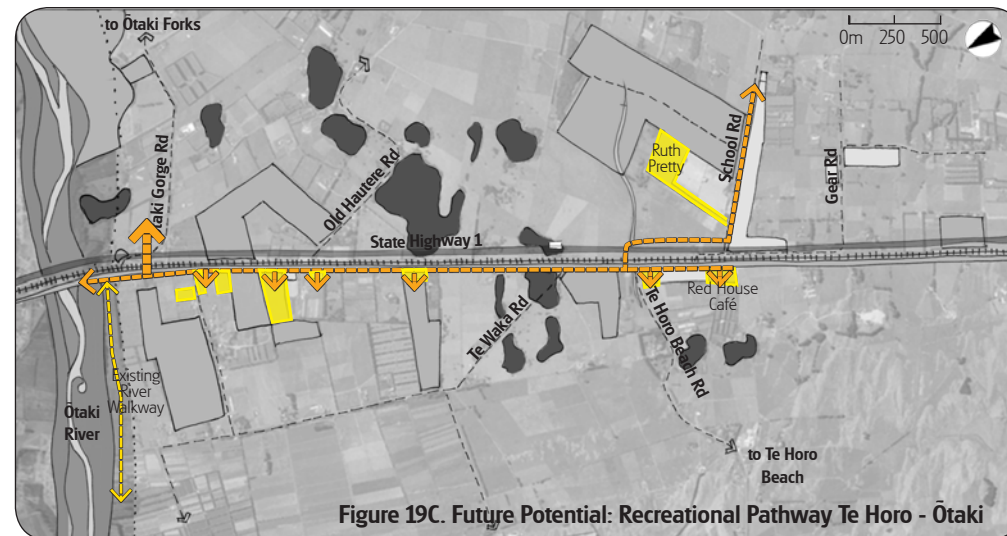


Figure 19C. Future Potential: Recreational Pathway Te Horo - Ōtaki

- Key Commercial Activities
- Shared Path Opportunity
- Existing Recreational River Walk/Cycleway

5.3 Ōtaki

In Ōtaki, much of the retail development is linear and follows the state highway corridor so that large numbers of commercial properties abut or are in close proximity to the state highway. An older centre (the Main St Town Centre) is located approximately 1km to the west of SH1 catering for local residents needs - i.e. groceries. The Main St Town Centre is equidistant from SH1 and Ōtaki Beach. Industrial development is located on either side of SH1, along the northern bank of the Ōtaki River. This Industrial development has a regional focus, and the Ōtaki Vision document expresses a desire to enhance and grow the industrial development.

The majority of residential development is located to the west of SH1, east of the Main St Town Centre. There is also a smaller residential area, disconnected from the main urban area (due to severance caused by the state highway and rail) located east of State Highway 1, near the Waitohu Stream and elevated above on a plateau.

Key Issues:

- Severance and Community Connectivity
- Current and Future Land Use
- Local Gateways
- Potential Landlocked Sites
- The Quality of the Urban Environment
- Business Sustainability

Therefore our Specific Objectives are:

- Create good quality connections across SH1 and rail corridors.
- Create and emphasise legible routes and networks across the corridors – e.g. smaller ‘loop routes’ along pedestrian desire lines reinforce connections and choices.
- Place importance on upgrading the current state highway (especially in the ‘Railway Retail Area,’ and extending into Arthur St), to ensure a pleasant shopping experience, and to ensure the viability of the commercial businesses. This includes parking improvements, and general streetscape design (refer to Section 4).
- Create a sustainable, viable community.
- Enhance external (regional) access.
- Consider opportunities for improved internal (local) connectivity
- Emphasise the quality (design, material, etc) of the urban environment – including around new interchange(s). The interchange should complement the context of the wider built environment.
- Reduce ‘sterilisation’ and residual spaces created by single focus on only vehicular transport modes.
- Encourage industrial development along Riverbank Rd by providing legible, easy access for heavy vehicles.
- Encourage residential development to ‘radiate’ from the Main St Town Centre and the ‘Railway Retail Area’, within the containment zones outlined in Figures 3C and 3D.
- Create visually strong gateways to the north and south of Ōtaki, between the off-ramps and the natural containment lines of the township (the Waitohu Stream and the Ōtaki River). Ensure that views of Ōtaki River are still possible from the expressway, as the river itself is a gateway marker. Refer to 4.2.7 and 4.2.3 for more detail.
- **Refer to Landscape Scheme Drawings to see how these objectives are currently being met in the landscape design. These drawings also provide more detail around interchanges and expressway alignment. A4 versions of the drawings can be found from page 76 of the ULDF, or A3 versions in the Scheme Assessment Report.**

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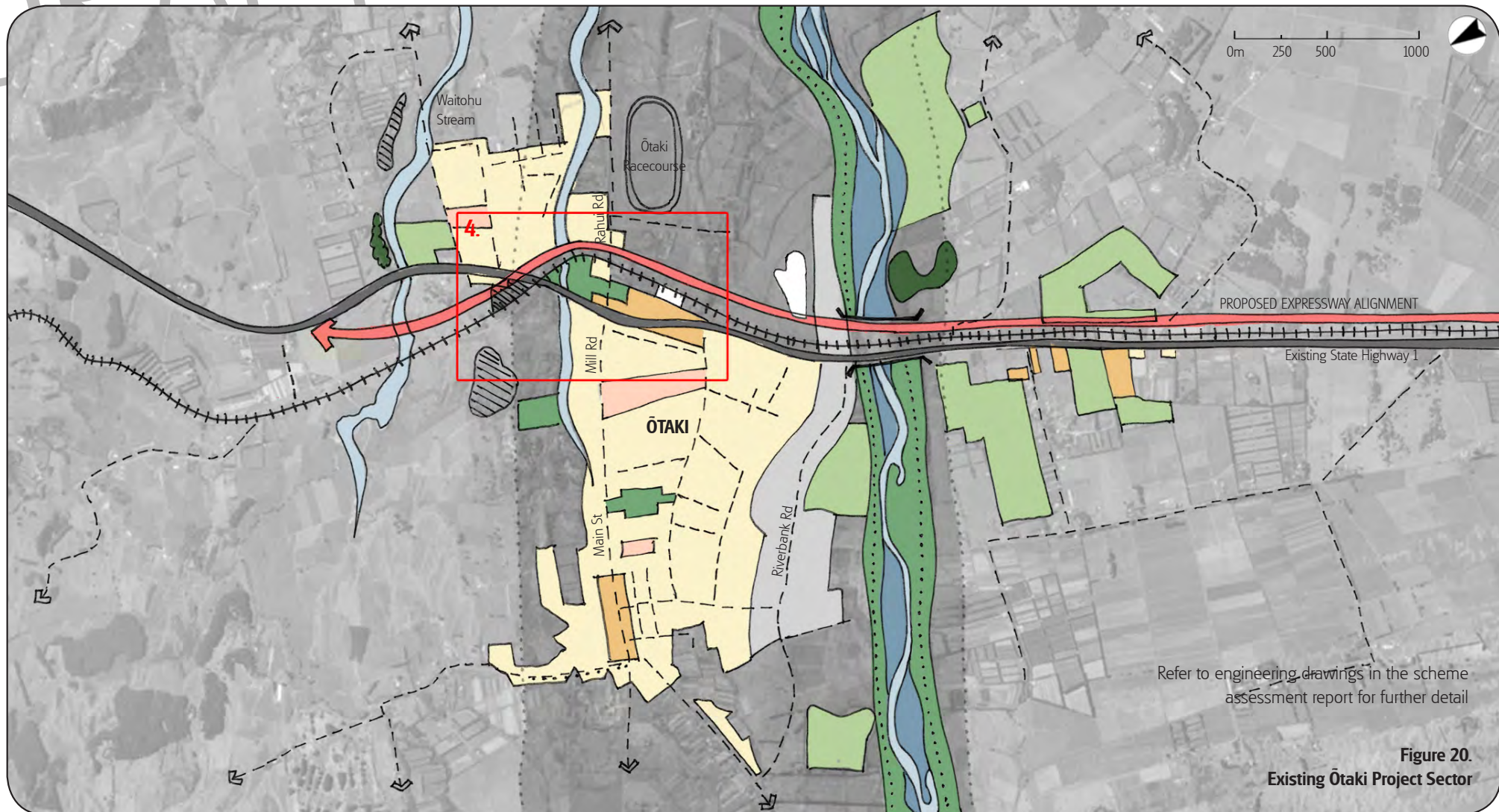


Figure 20.
Existing Ōtaki Project Sector

- existing state highway
- indicative expressway location
- railway
- local connections
- retail/commercial area
- industrial area
- residential area
- stream/waterway
- green space / recreation space
- school
- commercial horticulture
- ecological heritage area
- clusters of localised vegetation
- ōtaki river flood plain extents

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Severance and Community Connectivity

Figure 20A covers the same severance and connectivity issues as Figure 3A, but in more detail, at the local Ōtaki level.

Additional to the information provided with Figure 3A, Ōtaki requires legible, efficient routes and networks across the expressway corridor, as well as within the developed areas on either side. It is important that connectivity networks are not just focussed on vehicle movements, but also cater for pedestrians and cyclists - especially around schools and recreational areas.

It is important that significant emphasis is put on the diagonal desire line between the two main residential areas separated by the current state highway and proposed expressway, and the east-west connection along Rahui Rd/Mill Rd. There are numerous recreational facilities, schools, residences and businesses which are all accessed by this current arterial pedestrian, cycle and vehicular route - including the Main St Town Centre.

KCDC have outlined a number of plans for the future, which will need to be considered during design. For example, the Ōtaki Lake development adjacent to Stresscrete will require local access in the future, so this should be considered when setting the exact placement of the expressway (which is proposed to run along the eastern side of the Ōtaki Lake development).

Rahui Road and Mill Road are peripheral to built-up areas on both sides of the State Highway/rail corridor. Nevertheless, the two roads provide the traditional link between the east and west sides of the town. Their peripheral location has one advantage: if the east-west route becomes grade-separated, the disruptive effect of ramps and/or tunnels is displaced from the heart of the commercial district. Furthermore, the proximity of Pareomatangi Reserve, means that parts of a grade-separated link could be incorporated into the reserve's landscape.

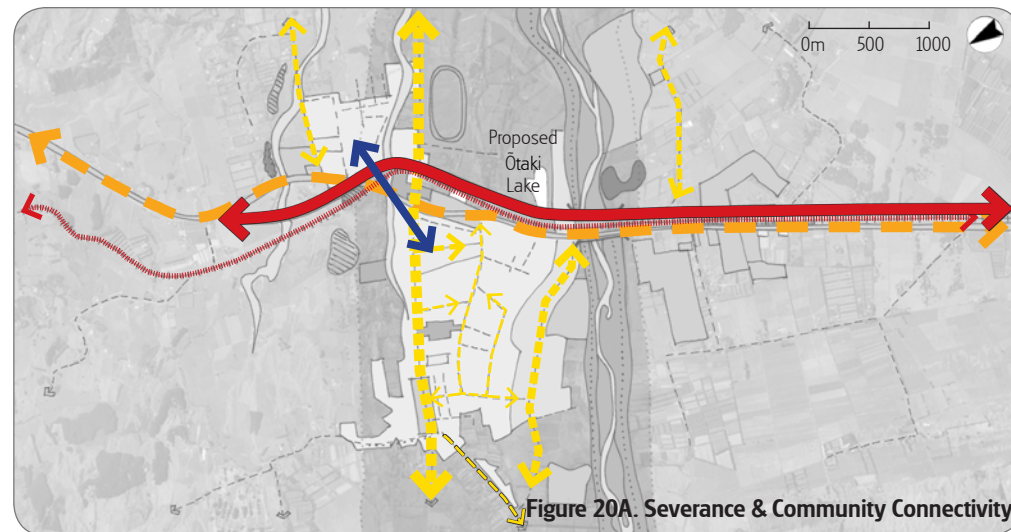


Figure 20A. Severance & Community Connectivity

- Expressway
- Local Connections
- Local Diagonal Desire Line

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Local and Regional Gateways

It is important for business viability, and for sense of place that gateways are created, acknowledging the entry into Ōtaki. Gateways, together with appropriate destination signage will encourage impulse shoppers to exit the expressway to visit the outlet shops at the Ōtaki Railway Retail Area. Gateways should be part of a series of visual transition points and informal cues along the corridor to make travellers aware of the approaching town/region and change in environment.

Views of the proposed Ōtaki Lake, and the increasing frequency of urban areas travelling south on the expressway could become part of an extended regional gateway sequence into the Kāpiti Coast for expressway users.

The gateway into Ōtaki from both sides is currently understated. Formal planting, landscape treatments, signage (and perhaps local artwork and lighting) should be designed between the approach to the off-ramps and the natural thresholds of the Waitohu Stream (for the northern gateway) and the Ōtaki River (for the southern gateway). It is important that formal gateway markers/treatment occurs well before the off-ramps so that motorists have time to make the decision to enter Ōtaki.

There are natural urban containment lines provided by the waterways of the Waitohu Stream to the north, and the Ōtaki River to the south. Open views towards these waterways/containment should be enhanced, as they are part of the gateway experience entering and exiting Ōtaki.

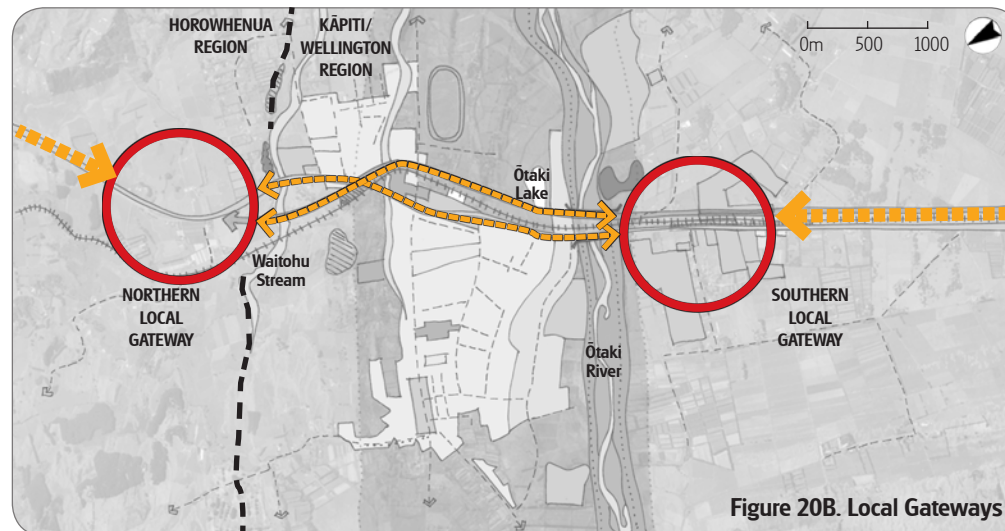


Figure 20B. Local Gateways

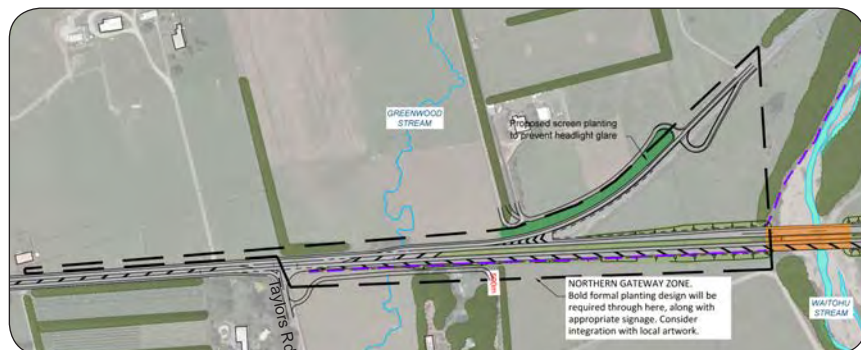


Figure 20C. Indicative Location of Northern Gateway (not to scale)

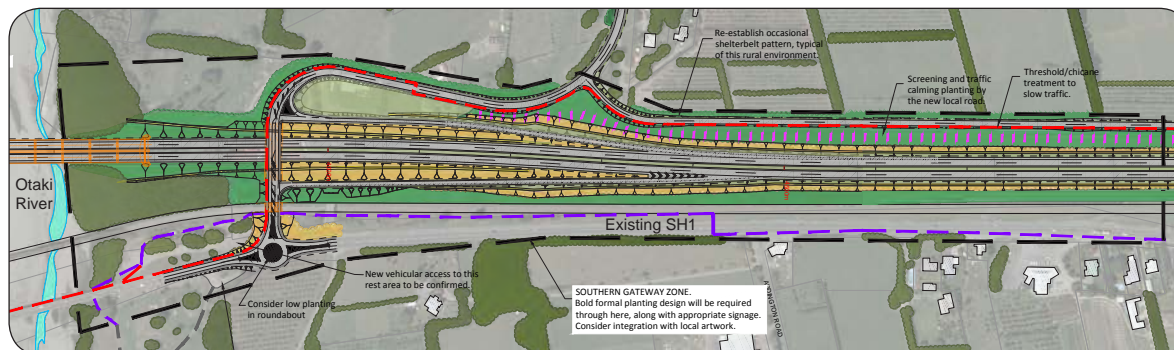


Figure 20D. Indicative Location of Southern Gateway (not to scale)

Refer to engineering drawings in the scheme assessment report for further detail around gateways.

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Potential Landlocked Sites

Ideally, during the design of the expressway, landlocked spaces should be kept to a minimum. But where these spaces occur, the opportunity arises where pockets of reserve space could be created, creating and linking a series of green corridor fragments through Ōtaki township.

There is also an opportunity to utilise what would otherwise be residual or landlocked space (just north of the river, between the rail and expressway) for KiwiRail to use for rail infrastructure purposes.

- Potential future reserve or green corridor spaces
- Potential landlocked sites
- Potential KiwiRail stabling land

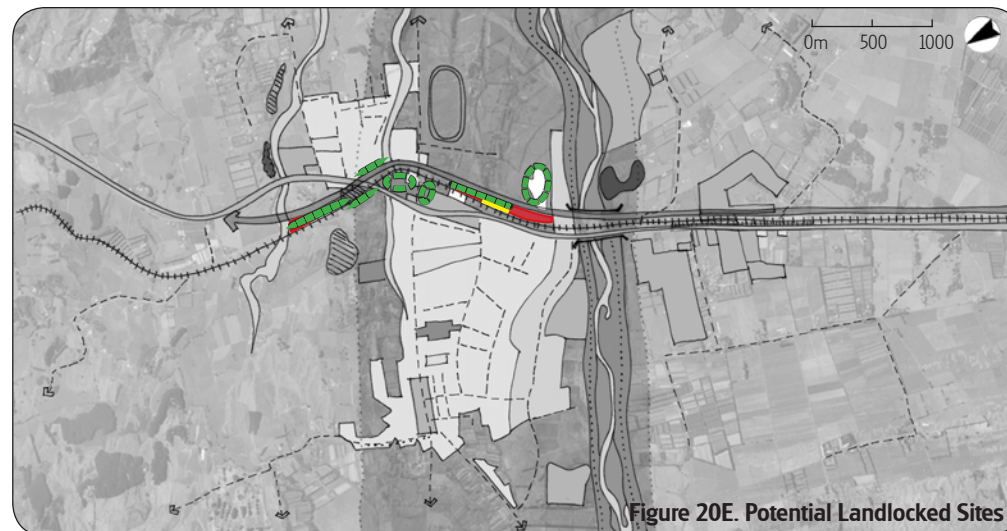


Figure 20E. Potential Landlocked Sites

Future Potential: Recreational Loop

The Ōtaki Vision document expresses a desire to enhance the local waterways, increase understanding of local culture and heritage, and improve access to recreation. A future KCDC cycle and pedestrian (and possibly bridleway in some sections) as shown in Figure 20F would create the opportunity to improve access to, and knowledge of Ōtaki's assets and heritage. This idea could also be extended to incorporate riverbank walkways along the town's southern margins.

The loop could tie into:

- existing bridleway route along Waitohu Valley Rd
- waterways of Waitohu Stream, and Mangapouri Stream
- the heritage 'Pipi Trail'
- Haruatai Park
- Pareomatangi Reserve
- Main Street Town Centre
- Ōtaki Racecourse
- Ōtaki Domain
- the historic Old Coach Rd route
- the existing walkway from Mill Rd to the Railway Station

- Potential future walkway/cycleway networks/loops
- Existing walkway

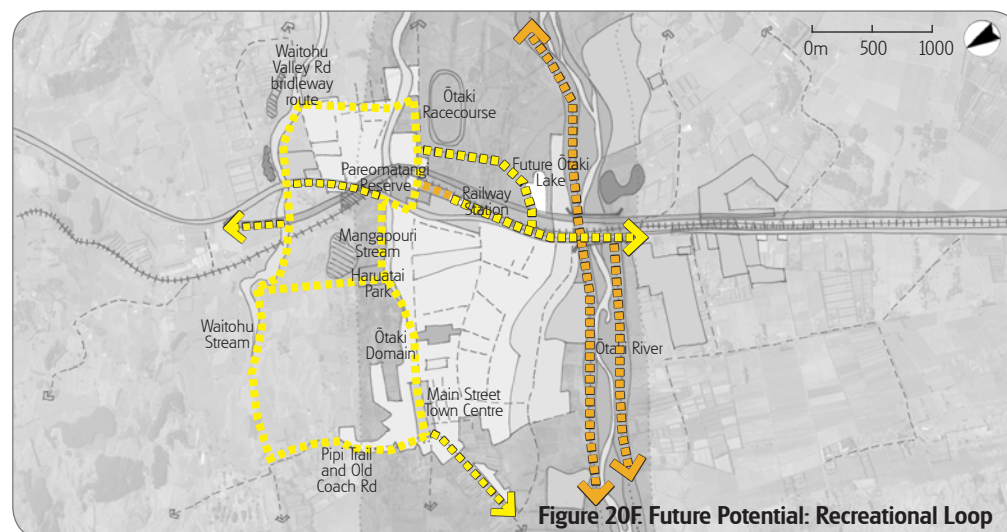


Figure 20F. Future Potential: Recreational Loop

5.4 Ōtaki Railway Retail Area

The Ōtaki Railway Retail Area raises the project's most important urban design issues. The proposed expressway skirts the retail area and passes between two built-up areas. South of Arthur Street, the North Island Main Trunk rail line provides a clear edge to the town's commercial centre. Because the expressway follows the eastern side of the railway alignment, the new road has little additional impact on urban form. North of Arthur Street, the expressway bisects Pareomatangi Reserve and impacts heavily on a block of residential development bounded by Rahui Road, County Road and the Mangapouri Stream. If the residential block is incorporated in the reserve, the enlarged open space provides a very effective buffer between the expressway and the adjacent built-up areas. In this case, the Rahui Milk Treatment facility would be the only occupied site flanking the new highway.

While this relationship is advantageous for most neighbouring properties, impacts

on the reserve are significant and must change the character of the open space. The expressway will separate one side of the park from the other. Earthworks are likely to disturb existing vegetation. Vehicle noise will affect much of the reserve, and the expressway may be visually intrusive in places, especially if the new roadway is elevated above the natural contours of the site. Trenching the expressway or containing it between earth mounds could reduce these impacts.

At the same time, the reserve will increase in area and will acquire a more cohesive shape. The open space will be a conspicuous feature on the expressway, and has the potential to become a key component of a local/regional gateway experience for southbound motorists. Finally, it should be noted that important pathways – Mill Road/Rahui Road and the Mangapouri Stream – cross the reserve in an east-west direction and therefore have reduced exposure to the expressway. On balance, the expressway's relationship to Pareomatangi Reserve is an appropriate response to Ōtaki's urban form.

Because changes to the reserve are significant, a new and comprehensive landscape design should be prepared. This design should acknowledge and respect existing planting, some of which has special value for the Ōtaki community. However, consideration should also be given to creating a strong contemporary landscape statement which is integrated with the other elements of a gateway experience. Also, there is scope to further integrate the reserve with Arthur Street, the railway station and commercial properties in the Railway Retail hub.

Aside from the reserve, the principal urban design issue at Ōtaki is severance of the community. It has already been noted (1.4 Severance and Community Connectivity) that the majority of the built-up area lies to the west of the road/rail corridor. This means that the severance issue affects a relatively small portion of the town. Nevertheless, from an urban design perspective, it is very desirable to maintain the east-west link along Rahui Road and Mill Road. The Framework acknowledges this, stating: "From a connectivity and

urban design perspective, the ideal outcome would be a vehicle, pedestrian and cycle link at Rahui Rd."

This is now achieved with the new Rahui Rd Underpass (local road bridge over expressway) which accommodates pedestrians, cyclists and two-way vehicle traffic. By utilising the historic alignment, the urban form and street pattern is maintained. This is important in overcoming the potential severance effects of the expressway and NMIT corridors. Careful consideration has been given to the design aesthetics of the structure to minimise its visual and landscape impact and tie it into the underlying movement networks.

Finally, it should be noted that the project allows Arthur Street to become a pedestrian-oriented "axis" which defines the centre of the Railway Retail Area. Although the railway station may be moved a short distance, the building will retain a strong formal relationship with Arthur Street. Between Mill Road Waerenga Road, the old State Highway

should have an obvious pedestrian orientation and a clear "town" character. Centred within this zone, the Arthur Street intersection provides an effective way-finding device for visitors and acts as hub for Ōtaki.

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Key Issues:

- Severance and Community Connectivity.
- Current and Future Land Use, especially around Pareomatangi Reserve.
- Business Sustainability.

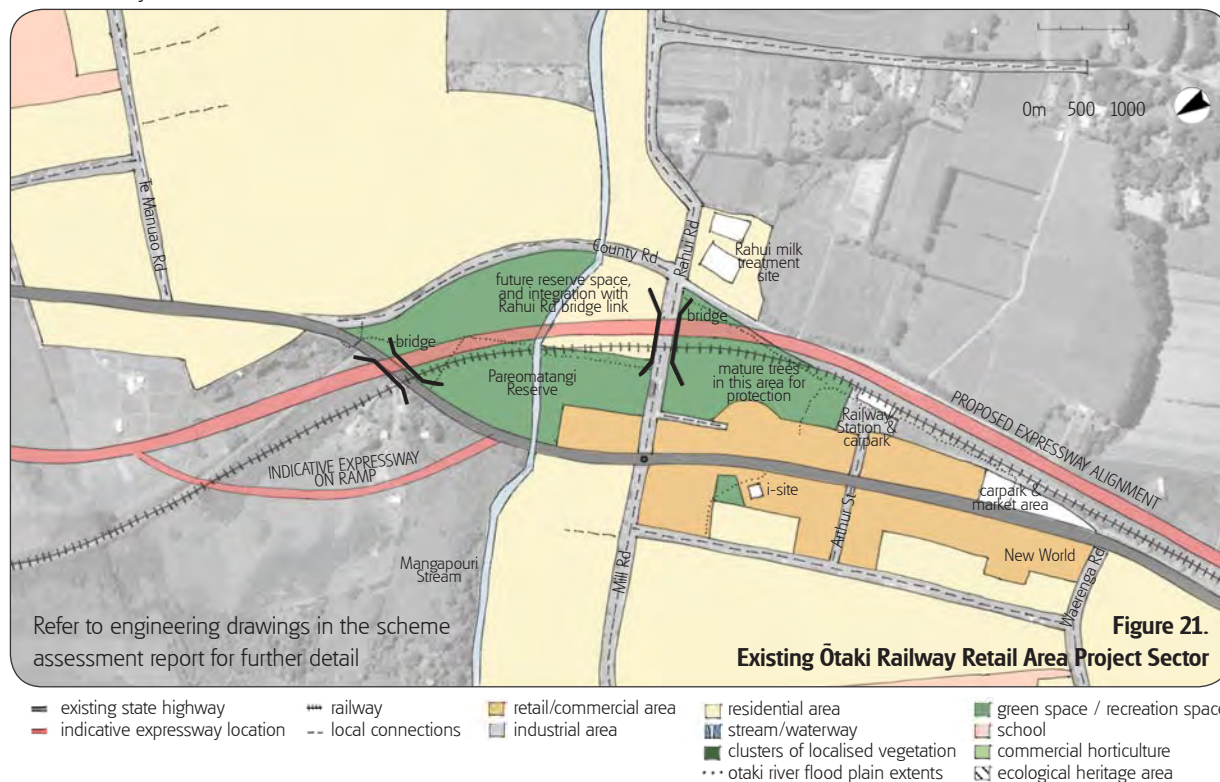
Therefore our specific objectives are:

- Allow for future double track access at the Ōtaki Railway Station.
- Maintain the railway station's proximity to the line of Arthur St.
- Recognise the opportunity to enhance Ōtaki Railway Station and integrate with the Railway Retail Area.
- If relocation is required, ensure the Railway Station re-orientation maintains as much of the existing parking area as possible, and reflects the original context.
- Integrate Pareomatangi Reserve and the Rahui Rd link.
- Integrate stormwater basins into the design.
- Mitigate impacts on Pareomatangi Reserve by adding reserve space on the County Rd side of the expressway (there is grazing land which will be affected by the expressway which could be used as new reserve space). Mitigation planting should reflect the current

Pareomatangi Reserve, and use a mixture of native and exotic plants, to provide seasonal colour, structure, and grassed areas for recreation. New vegetation should add to the aesthetic of the parkland, whilst still providing opportunities to enhance ecological values and improve biodiversity, especially around waterways.

Refer to Landscape Scheme Drawings to see how these objectives are currently being met in the landscape design. These drawings also provide more detail around interchanges and expressway alignment.

A4 versions of the drawings can be found from page 76 of the ULDF, or A3 versions in the Scheme Assessment Report.



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Severance & Community Connectivity

Additional to the issue of severance and community connectivity outlined in Figure 20A, Figure 21A shows the two dominant desire lines which connect the residential areas of Ōtaki, which are severed by the proposed expressway and railway corridors. These desire lines must be considered during the design of the expressway, as Ōtaki township will only function successfully if some form of local connectivity is provided, catering to these lines. It is important to provide safe, efficient access across the severance corridor, connecting Ōtaki. From a connectivity and urban design perspective, the ideal outcome is to maintain a vehicle, pedestrian and cycle link at Rahui Rd.

Existing pedestrian routes must also be considered in the design of the expressway. At a minimum, if the expressway and/or railway cuts through an existing local pedestrian route, a new pedestrian pathway must be provided, considering safety, efficiency and location, and the previous amenity values.

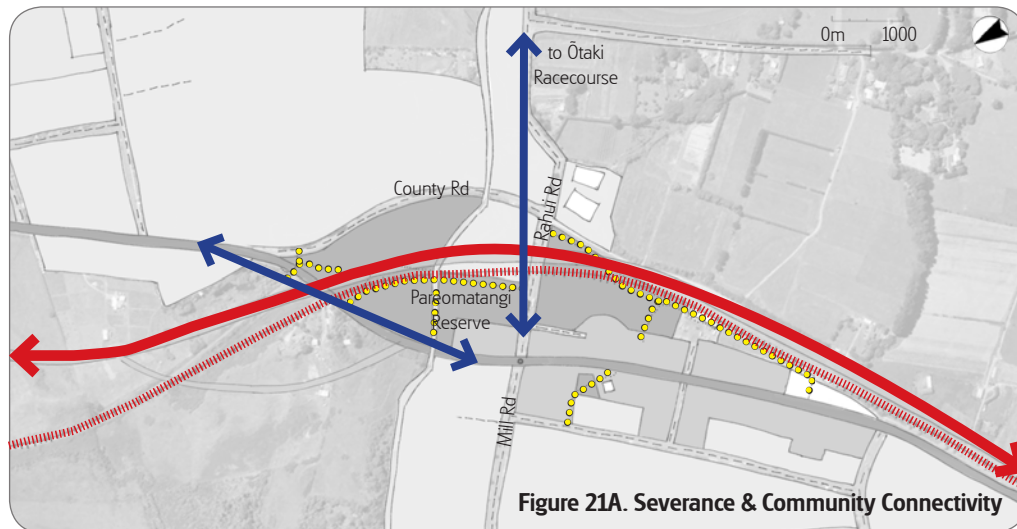


Figure 21A. Severance & Community Connectivity

- Proposed Expressway
- Proposed Rail Alignment
- Existing Pedestrian Routes
- Dominant Local Desire Lines Across Expressway

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Business Sustainability

Ōtaki Railway Retail Area has grown significantly in the last few years as a specialty outlet shopping destination. These businesses are largely reliant on regional through-traffic. In order for these businesses to survive it is important that a number of things are considered:

1. Legible, efficient access in to and out of Ōtaki.

Easy, legible routes to and from Ōtaki Railway Retail Area from the expressway are crucial to the livelihood of this area:

a. Entering Ōtaki:

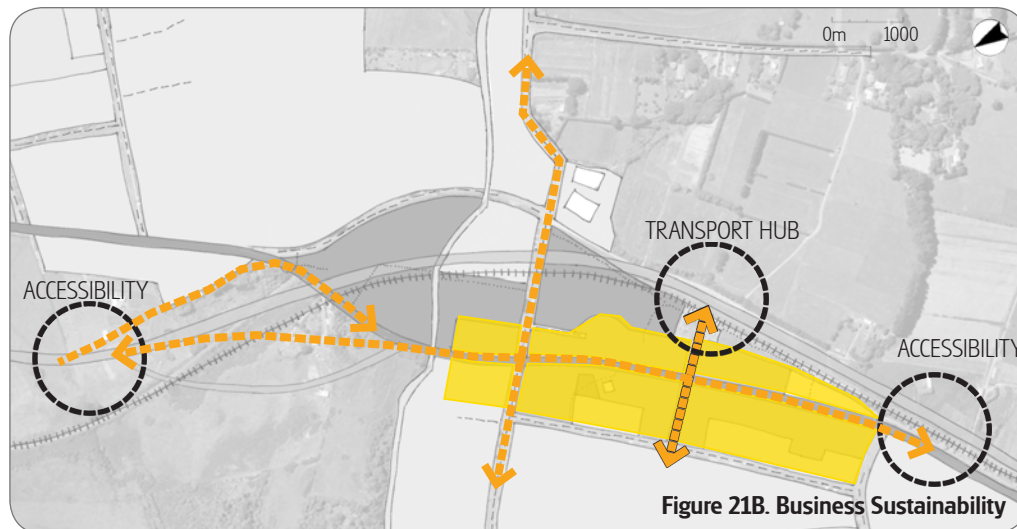
Approaching Ōtaki, it is important that there is early, easy to read signage and gateways markers, indicating that Ōtaki is approaching. There should be easy, logical exits off the expressway, which flow towards the Railway Retail Area.

b. Leaving Ōtaki:

Leaving Ōtaki should follow a clear, logical route, and be guided by signage. Access on to the expressway should be easily found by someone foreign to the area.

2. Streetscape upgrade of Ōtaki Railway Retail Area.

Currently the streetscape of Ōtaki Railway Retail Area is a state highway, and characterised as a sterile, heavily traffic congested shopping environment. With future traffic relief and opportunity for streetscape upgrade (including parking upgrades), this environment could become a pleasant, stress-free shopping destination.



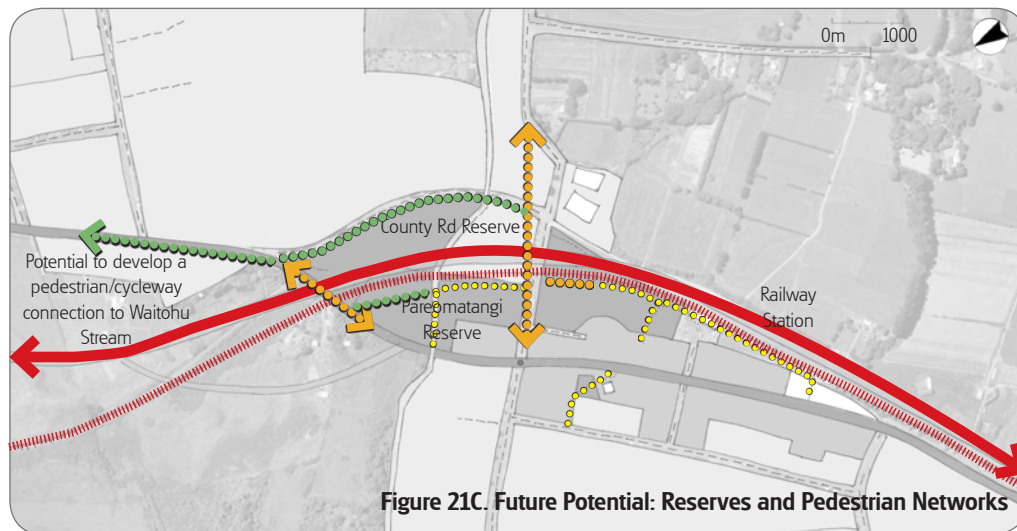
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Future Potential: Reserves and Pedestrian Networks

Additional to the future potential idea shown in Figure 20D, Figure 21C shows how pedestrian and cycle networks could tie in with new and existing reserve space:

The proposed expressway runs through what is currently a small area of residential properties, on the corner of Rahui Rd/County Rd. These properties could be transformed into new reserve space, to mitigate the area of Pareomatangi Reserve which is removed by the expressway. The expressway would run through the middle of the two reserve spaces, providing the opportunity for two different reserves. For example, County Road Reserve could be a native planting reserve, providing a buffer between the County Road residences and the expressway. Pareomatangi Reserve on the other hand could be an open space for the community to use, with a mixture of native and amenity plantings, walking and cycling links and integrated stormwater basins.

Any proposed stormwater basins in County Rd Reserve and Pareomatangi Reserve should be integrated with the reserve environment, and (as a future KCDC development) could be accessed as recreational space by pedestrian/cycle access.

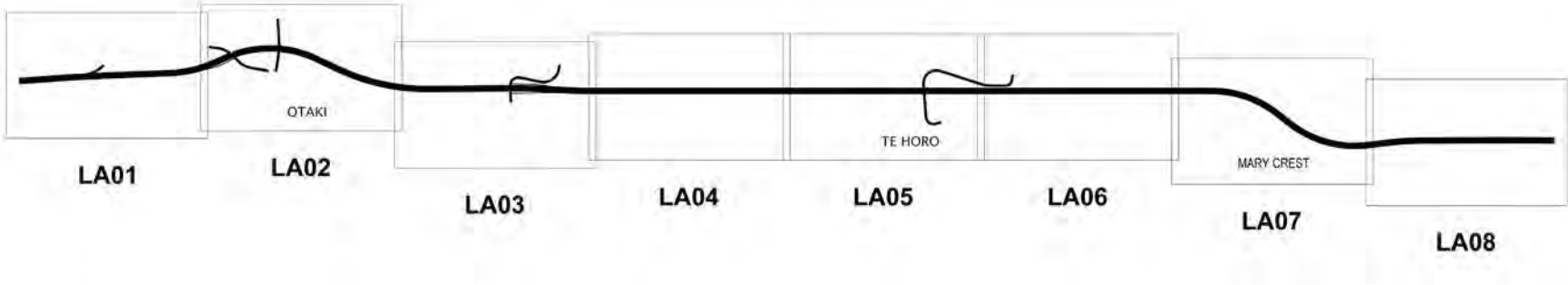


- Proposed Expressway
- Proposed Rail Alignment
- Existing Pedestrian Routes
- New/Upgraded Pedestrian/Cycle Links
- Potential New Pedestrian/Cycle Links

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Landscape Scheme Drawings

5.5 Landscape Scheme Drawings



LEGEND			
	WATERWAYS		LOCAL ACCESS WAYS
	PROPOSED STORMWATER BASINS		OPPORTUNITY FOR OFF-ROAD WALKING/CYCLE FACILITY WITH BRIDLEWAY WHERE APPROPRIATE
	EXISTING VEGETATION TO BE RETAINED		PROPOSED SHARED PATH (PART OF PEKAPEKA TO OTAKI PROJECT)
	PROPOSED NATIVE SCREENING PLANTING OF VARYING HEIGHTS		EXISTING WALKING AND/OR CYCLING PATH
	PROPOSED GRASS		PROPOSED BUNDING
	PROPOSED LOW GROWING AMENITY PLANTING		PROPOSED CROSSING OR THRESHOLD POINT
	PROPOSED VEGETATED SWALE		

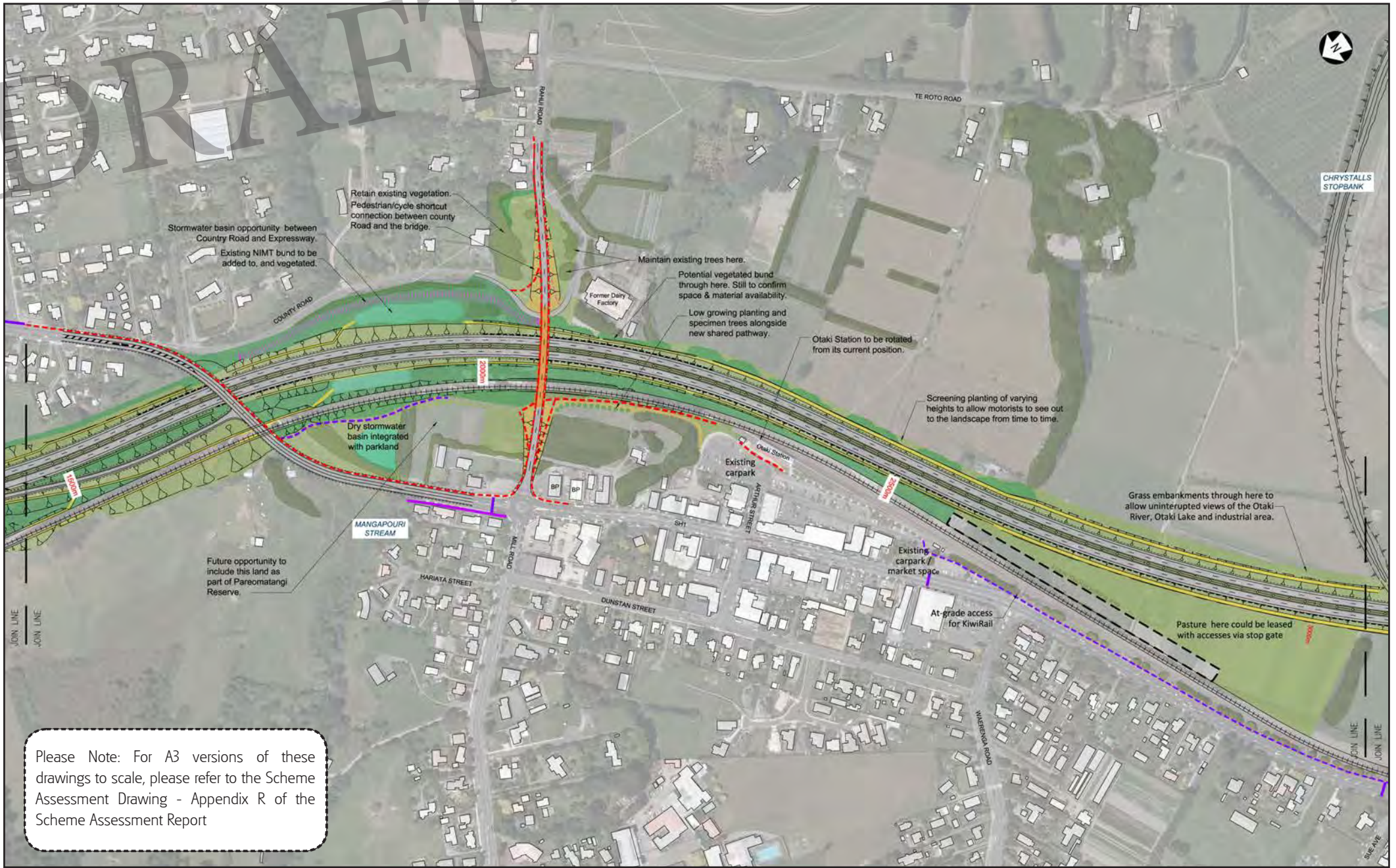
Please Note: For A3 versions of these drawings to scale, please refer to the Scheme Assessment Drawing - Appendix R of the Scheme Assessment Report.

Snapshot of Scheme Drawing LA00, Not to Scale

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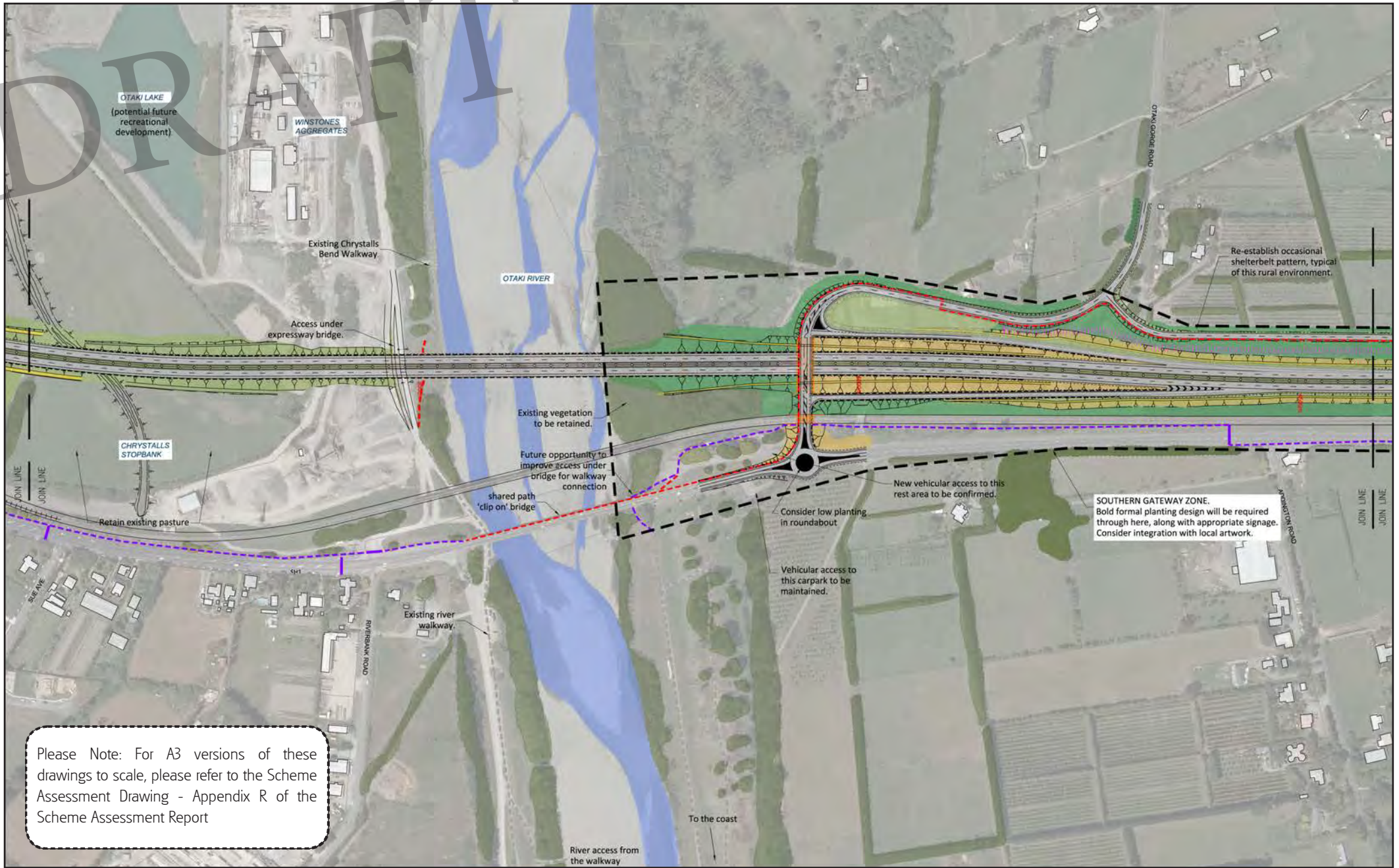


Snapshot of Scheme Drawing LA01, Not to Scale



Please Note: For A3 versions of these drawings to scale, please refer to the Scheme Assessment Drawing - Appendix R of the Scheme Assessment Report

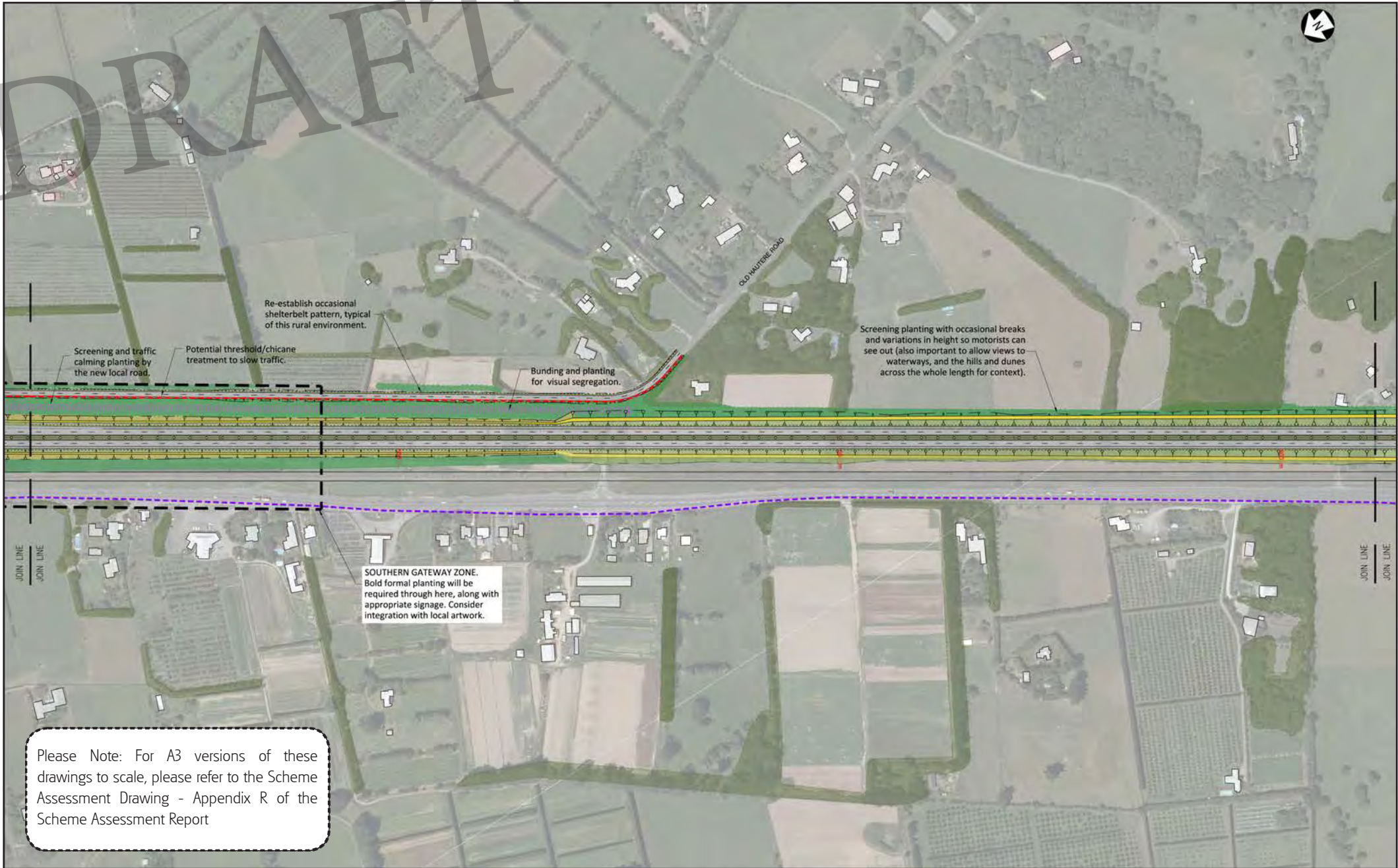
Snapshot of Scheme Drawing LA02, Not to Scale



Please Note: For A3 versions of these drawings to scale, please refer to the Scheme Assessment Drawing - Appendix R of the Scheme Assessment Report

Snapshot of Scheme Drawing LA03, Not to Scale

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Re-establish occasional shelterbelt pattern, typical of this rural environment.

Screening and traffic calming planting by the new local road.

Potential threshold/chicane treatment to slow traffic.

Bunding and planting for visual segregation.

Screening planting with occasional breaks and variations in height so motorists can see out (also important to allow views to waterways, and the hills and dunes across the whole length for context).

SOUTHERN GATEWAY ZONE. Bold formal planting will be required through here, along with appropriate signage. Consider integration with local artwork.

Please Note: For A3 versions of these drawings to scale, please refer to the Scheme Assessment Drawing - Appendix R of the Scheme Assessment Report

Snapshot of Scheme Drawing LA04, Not to Scale

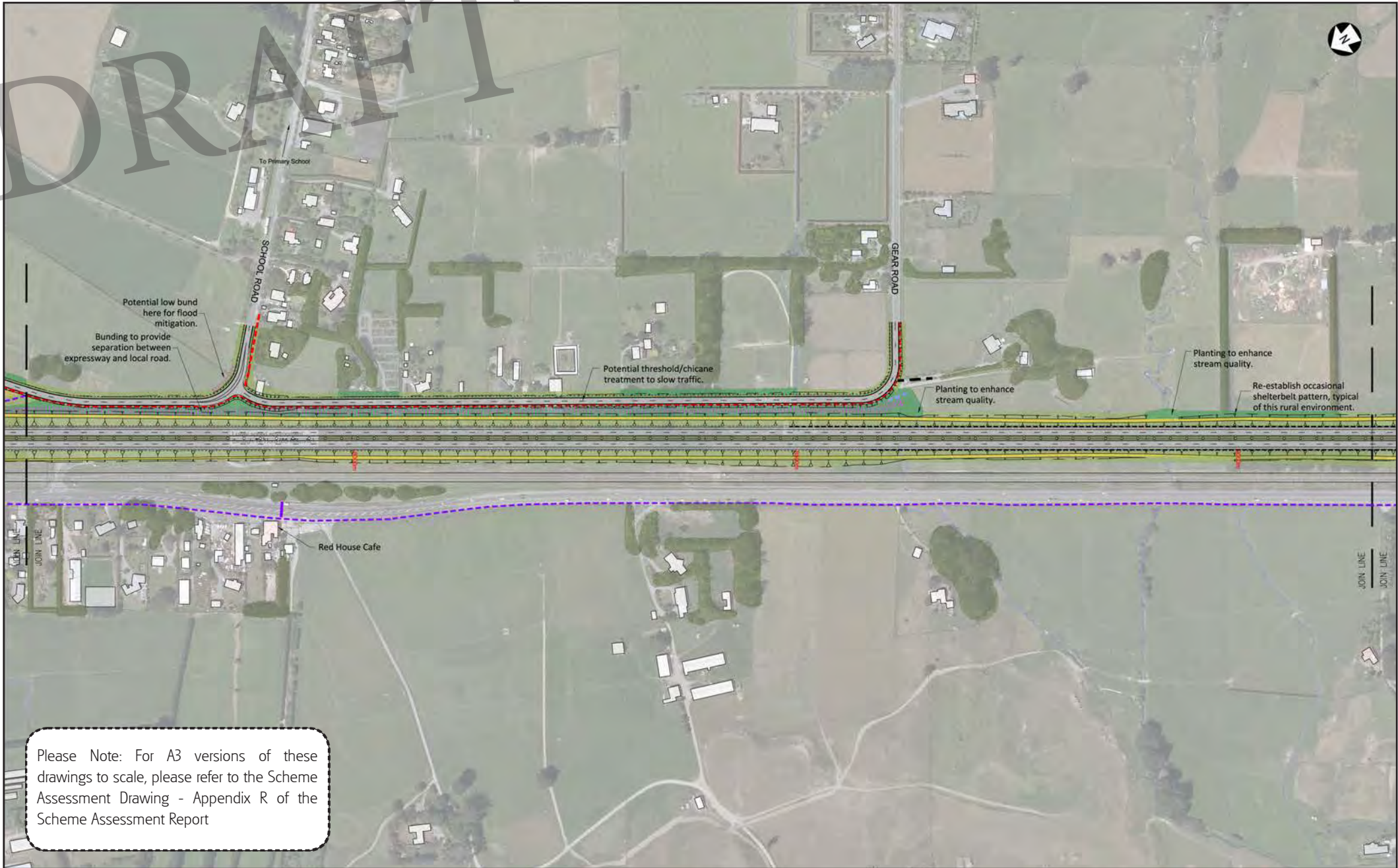
DRAFT



Please Note: For A3 versions of these drawings to scale, please refer to the Scheme Assessment Drawing - Appendix R of the Scheme Assessment Report

Snapshot of Scheme Drawing LA05, Not to Scale

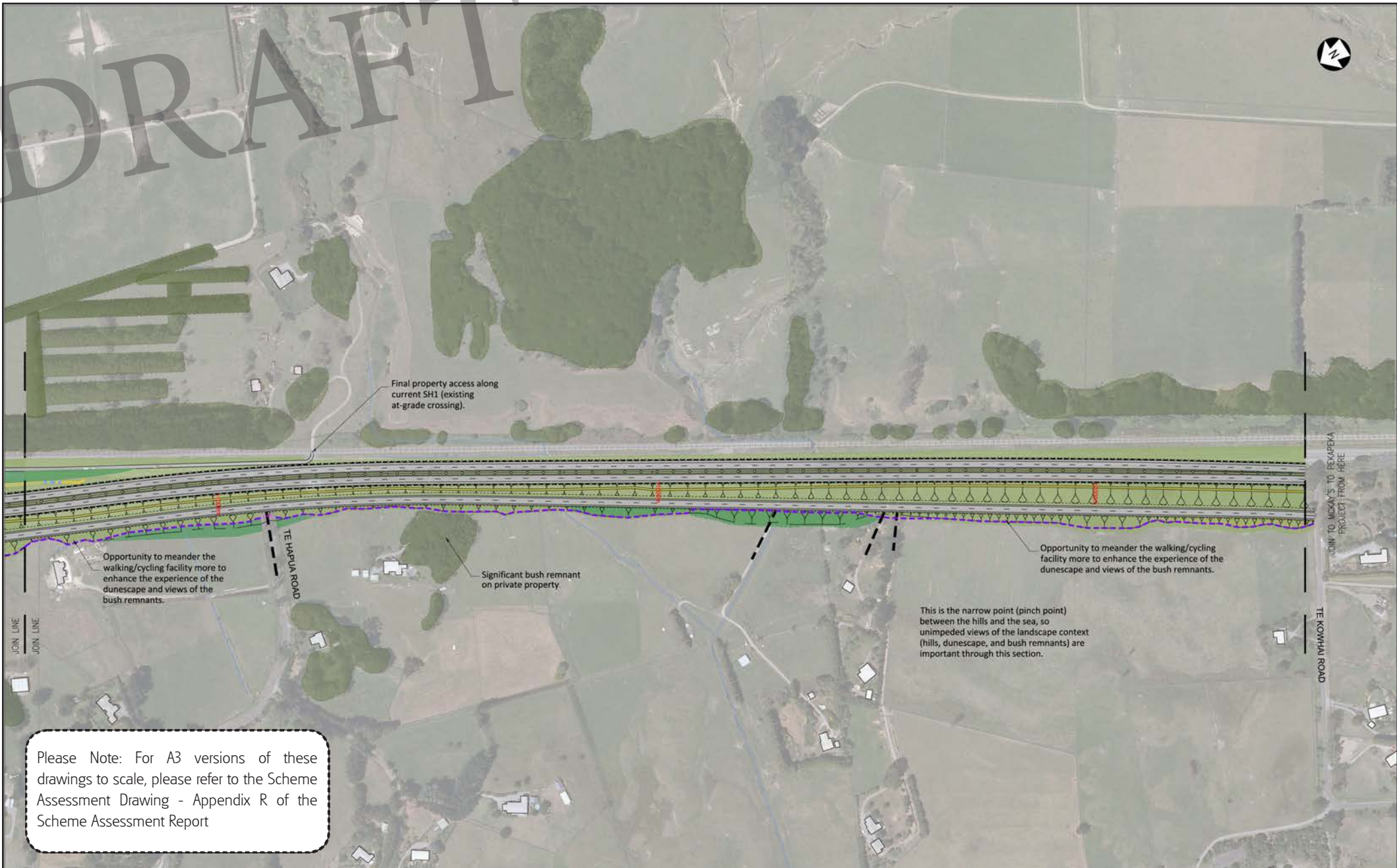
DRAFT



Please Note: For A3 versions of these drawings to scale, please refer to the Scheme Assessment Drawing - Appendix R of the Scheme Assessment Report

Snapshot of Scheme Drawing LA06, Not to Scale

DRAFT



Please Note: For A3 versions of these drawings to scale, please refer to the Scheme Assessment Drawing - Appendix R of the Scheme Assessment Report

Snapshot of Scheme Drawing LA08, Not to Scale

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- Wellington Regional Council (1993). Regional Geology Map Series, Map Sheet Kapiti (1st edition) 1:2,500
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- A Guide to Growing Native Plants in Kapiti, Boffa Miskell
- Environmental Guidelines for Rural Living: Kapiti & Horowhenua, Boffa Miskell, 2001

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- Transit NZ SH1 Kapiti Strategic Study - Contract 266PN Scoping Report July 2008.
- Transit NZ Scheme Assessment Report - North Otaki to Peka Peka Road September 2002.
- Otaki Community Board Submissions on Options for a State Highway 1 Expressway through the Kapiti Coast District.
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KCDC Documents

- Ōtaki Vision Document
- <http://www.kapiticoastlibraries.govt.nz/History>
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- <http://www.teara.govt.nz/en/1966/otaki/1>
- <http://www.wananga.com/?q=node/16>
- <http://www.nzracing.co.nz/goracing/racecourse.aspx/29>