



Peka Peka to North Otaki Expressway Project DRAFT Urban and Landscape Design Framework

**Opus International Consultants Ltd
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Contents

Section 1

Introduction

1.1 Project overview	Page 1
1.2 Purpose of the ULDF	Page 4
1.3 Methodology and structure of the ULDF	Page 4
1.4 Route description	Page 5
1.5 Project benefits	Page 9
1.6 Urban design issues	Page 12
1.7 Landscape and visual issues	Page 15

Section 2

Policy context

2.1 Policy introduction	Page 17
2.2 Planning policy	Page 17
2.3 Transport policy	Page 21

Section 3

Corridor - urban and rural context

3.1 Introduction	Page 25
3.2 Landform	Page 25
3.3 Hydrology	Page 28
3.4 Vegetation and ecology	Page 30
3.5 Land uses	Page 35
3.6 Character areas	Page 37
3.7 Tangata whenua and heritage	Page 39
3.8 Community facilities	Page 41
3.9 Movement networks	Page 43
3.10 Community consultation	Page 47

Section 4

Corridor design

4.1 Overarching principles	Page 49
4.2 Corridor-wide design principles	Page 51
4.2.1 Landscape	Page 51
4.2.2 Earthworks	Page 54
4.2.3 Structures	Page 55
4.2.4 Noise mitigation	Page 61
4.2.5 Pedestrian, cycle & bridleway links	Page 62
4.2.6 Road furniture	Page 63
4.2.7 Stormwater	Page 64

Section 5

Sector design

5.1 Peka Peka to Mary Crest	Page 67
5.2 Te Horo	Page 69
5.3 Otaki	Page 73
5.4 Otaki Railway Retail Area	Page 79

Appendix A: Landscape drawings (for consenting)

Appendix B: District Plan maps

References



Section 1. Introduction

1.1 Project overview



Figure 1.
Context of the Project

Expressway alignment

The Wellington Northern Corridor Roads of National Significance (RoNS) runs from Wellington International Airport to Levin and completing it will assist Regional and national economic growth. The Peka Peka to North Otaki Project (the Project) is one of eight sections of the Wellington Northern Corridor which has been identified by the Government as a RoNS. The location of the Project within this wider corridor is shown in Figure 1. The Peka Peka to North Otaki Project is the subject of this Urban and Landscape Design Framework (ULDF).

The Kapiti Expressway comprises three sections of the Wellington Northern Corridor – namely MacKays to Peka Peka, Peka Peka to Otaki and Otaki to Levin. The New Zealand Transport Agency (NZTA) proposes to designate land and obtain the resource consents to construct, operate and maintain the Peka Peka to North Otaki section of the Kapiti Expressway. This Project extends from Te Kowhai Road in the south to Taylors Road just north of Otaki, an approximate distance of 12.2km (Refer to Figure 2).

The Peka Peka to Otaki section of the Kapiti Expressway will provide an Expressway

with two lanes of traffic in each direction. Connections to existing local roads, new local roads and access points over the Expressway to maintain safe connectivity between the western and eastern sides of the Expressway are also proposed as part of the Project. There is an additional crossing of the Otaki River proposed as part of the Project, along with crossings of other watercourses throughout the Project length.

On completion, it is proposed that the Expressway become State Highway 1 (SH1) and that the existing SH1 between Peka Peka and Otaki will become a local arterial road, allowing for the separation of local and through traffic. In this document, the existing SH1 will be referred to as the 'local arterial,' or 'former SH1.'

SH1 Revocation

Although the SH1 Revocation is not addressed as part of this Project, some ideas and opportunities for the revocation Project will be suggested throughout this ULDF document.

NZTA Project objectives

The overall Project objectives for NZTA can be summarised within the following statement:

“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.”

Sitting above the Project objectives are a set of Wellington Northern Corridor RoNS-wide RMA objectives, and Peka Peka to North Otaki Expressway Project objectives, which are shown in Table 1 below.

The key project-specific objectives for the Peka Peka to Otaki Project are to:

- Enhance inter-regional and national economic growth and productivity;
- Enhance efficiency and journey time

reliability from, to and through the Kapiti District, Wellington’s Central Business District, key industrial and employment centres, the port, airport and hospital;

- Enhance safety of travel on SH1;
- Appropriately balance the competing functional performance requirements of inter-regional and local traffic movements, and to facilitate others to provide modal choice opportunities, to enable local facilities and amenities in the Kapiti Coast District to be efficiently accessed;
- Manage the immediate and long-term social, cultural, land use and other environmental effects of the Project on the Kapiti Coast District and its communities by so far as reasonably practicable avoiding, remedying or mitigating any adverse effects through route and alignment selection, Expressway design and conditions;
- Integrate the Expressway into the form of Kapiti Coast District by taking into account current and planned

future land use and development in route and alignment selection, Expressway design and conditions;

- Work with NZ Rail Corporation Ltd/ KiwiRail Ltd to achieve an integrated design for both the Expressway and a realigned NIMT railway; and
- To efficiently serve Otaki and its future development by providing appropriate vehicle access and signage to and from the new Expressway.

NZTA’s urban and landscape design related priorities for the Expressway include:

- Developing an integrated solution that achieves an appropriate balance between the functional performance requirements of local and State highway traffic; and
- Addressing social, land use and environmental effects of the Project in the context of the aspirations of territorial authorities.

The Project creates the opportunity to improve connections and networks and have a positive effect on the urban form

of Otaki and Te Horo. However, failure to properly consider the way in which Otaki and Te Horo have 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 the Project. Its importance is recognised by our key stakeholders and local community.

These include:

- NZTA (direct client);
- Kapiti Coast District Council;
- Greater Wellington Regional Council;
- KiwiRail;
- Local community;
- Local iwi; and
- Users of SH1 and NIMT railway corridor.

Terms

In this document, ‘the Project’ refers to:

- Construction, operation and maintenance of the main Expressway alignment;
- Realignment of part of the NIMT railway; and
- Construction and operation of associated local road connections.

In this document, when discussing the Project proposal, the existing SH1 will be referred to as ‘former SH1’ or ‘local arterial.’

GPS	Wellington Northern RoNS	Peka Peka to North Otaki
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 Wellington Northern Corridor RoNS.</p> <p>By: Achieving a State highway to Expressway standards that connects with the Mackays to Peka Peka and North Otaki to Levin sections of the Wellington Northern Corridor RoNS; and Efficiently serving the Otaki Township, its future development and the wider Otaki 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>

Table 1. NZTA's objectives for the Wellington Northern Corridor RoNS and the Peka Peka to North Otaki Project

1.2 Purpose of the ULDF

The Project's ULDF is a document prepared to demonstrate how the Peka Peka to North Otaki Project fulfils NZTA's Urban Design policy requirements (see Section 2). However, the overall purpose of the ULDF is to ensure that the urban and landscape design concepts of the Project are appropriately defined, developed and implemented.

This 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 guidelines and supports the Notice of Requirement application.

The ULDF seeks to establish a balance between RoNS network objectives, the desired future for Otaki as outlined in the Otaki Vision document (2007), and the specific urban and landscape context of the Expressway corridor.

The ULDF is not an assessment of effects of the Project to satisfy the requirements

of the Resources Management Act (1991). A separate Landscape and Visual Effects Assessment and an Urban Design Effects Assessment have been carried out for RMA purposes.

Throughout the ULDF, images have been used to assist communication of the design features of the Project. It is noted that these are typically diagrammatic or conceptual.

1.3 Methodology and structure of the ULDF

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

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 sectors within the Project extent (Peka Peka to Mary Crest, Te Horo, Otaki Township, and Otaki Railway Retail Area).

Section 2. Policy context

Outlining additional influences and considerations which affect the Project. This includes the NZ Urban Design Protocol, and the objectives outlined in the Otaki Vision document provided by KCDC.

Section 3. Corridor - urban and rural context

Analysis of the existing highway corridor, identifying built, environmental and social constraints and opportunities. This includes:

- Multidisciplinary specialist inputs;
- Information gathered from site visits;
- View analysis to ensure familiarity with the route; and
- A cohesive and integrated urban and landscape design vision for the highway corridor, and confirmation of key site parameters affecting the design development.

Section 4. Corridor design

Development of a cohesive set of urban and landscape design principles for the Expressway, which reflect the route investigations in Section 3 of this document, as well as NZTA's objectives for the Expressway and the objectives of the stakeholders.

These urban and landscape design principles have been broken into numerous elements including: landscape, earthworks, structures, noise barriers,

pedestrian, cycle and bridleway links, planting, road furniture, and 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 Kapiti Coast, approximately 70km north of Wellington. The route stretches for 12.2km from Te Kowhai Road in the south to Taylors Road in the north and bisects Otaki Township.

The Project Area comprises a mix of land uses including rural, residential, industrial, commercial and horticultural.

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

The Project traverses relatively flat terrain, crossing the Mangaone Stream, the Otaki River, the Mangapouri Stream, the Waitohu Stream and the NIMT railway line.

The SH1 currently has priority over all intersections along the route, with the exception of the roundabout at Mill Road and Rahui Road in Otaki Township. Significant traffic congestion issues are experienced at this roundabout, particularly during busy periods.

The NIMT railway and the existing SH1 creates severance effects for the east-west connectivity in Te Horo and Otaki.

In Otaki as there is only one main east-west connection (Mill Road / Rahui Road) providing access across the transport corridor.

A description of the key urban design issues along the route are summarised in Section 1.6 of this document.

Alternative routes considered

The classification of the route as a RoNS highlights the importance of the Expressway not only at a regional scale, but also at a national scale. The route has been the subject of numerous investigations and studies over many years and several consultation stages with stakeholders and the wider public have been undertaken.

Studies undertaken in 2008 and 2009 reviewed options relating to the central route and endorsed it as the preferred route. This was adopted by the NZTA board in December 2009, subject to a range of ongoing reviews and detailed investigations.

Throughout the development of the current Project, including as a result of public consultation, there have been a range of route options put forward for further consideration and assessment. The corridors that were considered in most detail are:

- **Eastern Foothills route** – this route extends from the Peka Peka interchange in the south, then follows the foothills up to 2.7km east of the existing SH1 and Otaki Township, before swinging back to join SH1 at Manakau.
- **Eastern Plains route** – which is situated between the central and eastern foothills options, joining the ‘central route’ just north of Te Horo;
- **Western route** – being generally located between the coast and the existing SH1; and
- **Central route** – that roughly follows the existing SH1/NIMT railway corridor and forms the route on which the Project is based.

East-west connectivity

The retention and enhancement of connectivity across (i.e. east–west) the north-south Expressway and rail corridors has also been a key urban design consideration throughout the Project development. Corridor severance effects are an issue with the existing SH1 and NIMT rail corridors and could be further increased with the implementation of the Expressway. Investigations were undertaken to identify where these effects currently occur, which east-west connectivity locations were critical through community desire lines.

Since 2010, a number of east-west connectivity options have been investigated including at Rahui Road, Waerenga Road, Old Hautere Road and Te Horo.

Currently Rahui Road connects to the SH1/Mill Road roundabout and crosses the NIMT railway at grade. Any new connectivity at Rahui Road would need to cross over both the Expressway and realigned NIMT railway (now running parallel to each other). A number of options were considered including:

- Not recreating a link and relying solely on the North Otaki Interchange for connectivity;
- A pedestrian only footbridge or underpass at Rahui Road; and
- A grade-separated structure allowing full vehicle and movement at Rahui Road.

The first round of public consultation feedback clearly highlighted a strong need for a full vehicle connection at Rahui Road.

Refer to the AEE Urban Design Assessment for more detail on east-west connectivity options which were considered throughout the design process, and why these options were or were not taken forward.

Terms

In this document, ‘the Project Area’ is the broad visual catchment of Expressway and encompasses that which can be seen from either SH1 as this is the consistent ‘viewpoint’ from which the Expressway has been considered.



Figure 2.
 Site extents for Peka Peka to North Otaki Expressway
 (Te Kowhai Rd to Taylors Rd)

Project sectors

Refer to Sections 3.5, 3.6 and 5 for further descriptions of the Project sectors.

Within the Project extents, the site can be divided into four main sectors: Peka Peka to Mary Crest, Te Horo, Otaki Township, and Otaki Railway Retail Area (which sits within Otaki Township along the existing SH1). Refer to Figure 3.

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.

Te Horo

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

Otaki Township

Otaki Township is the northernmost centre of three dominant settlements on

the Kapiti Coast. The urban boundaries of Otaki are the Otaki River to the south and the Waitohu Stream to the north.

The majority of Otaki 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 Road.

The area surrounding Otaki Township is predominantly rural, with the Otaki economy relying largely on farming and horticulture.

Otaki Railway Retail Area

The Otaki Railway Retail Area is located along the existing SH1 within the Project sector of Otaki Township in the form of a specialist and outlet retail strip (between Waerenga Road and the roundabout at SH1/Mill Road intersection).

The economic viability of the businesses in this area would be particularly sensitive to the form and legibility of off and on ramps to Otaki from the Expressway.

The natural centre of the Railway Retail

Area is the Arthur Street intersection which acts as a minor east-west axis perpendicular to the existing SH1.

North Island Main Trunk (NIMT) Railway

KiwiRail proposes to designate land in the Kapiti Coast District Plan for the construction, operation and maintenance of a re-aligned section of the NIMT railway through Otaki.

The realignment of the NIMT railway is to facilitate the Expressway, however at the same time the realignment addresses many safety issues with the removal of several at-grade crossings.

Current State Highway 1 (to become local arterial)

As part of the Project, a section of the current SH1 at Mary Crest is required to be relocated. In effect, a new section will be built in the western side of the Expressway, connecting to the existing SH1 south of the Project.

As stated, the Expressway allows for the

existing SH1 between Peka Peka and North Otaki to become a local arterial road that is safe and efficient for use by the local community. The local arterial users will be separated from State highway traffic that is passing through.

With appropriate linkages and crossings to enable connectivity between either side of the Expressway, the local arterial road will provide a functional route for local traffic and will form part of an integrated network.

Although this Project includes linkages to the local arterial (and other local roads), and the construction of a new section of local arterial road to replace that built over by the Expressway, any redevelopment of the former SH1 itself does not form part of this Project. Revocation of this road will be undertaken in the future and any required approvals sought at that time.

Although the Project does not preclude the construction of parallel walking and cycling facilities along the local arterial road, they are not part of this Project.

These will be addressed through the SH1 Revocation process, whereby the section

of local arterial road no longer required as State highway is transferred to Kapiti Coast District Council (KCDC). Final decisions on the form of the local arterial and any re-development of this are not yet made, however high level principals have been agreed between NZTA and KCDC. These principals will be used, in conjunction with KCDC, to refine the re-development requirements for the local arterial.

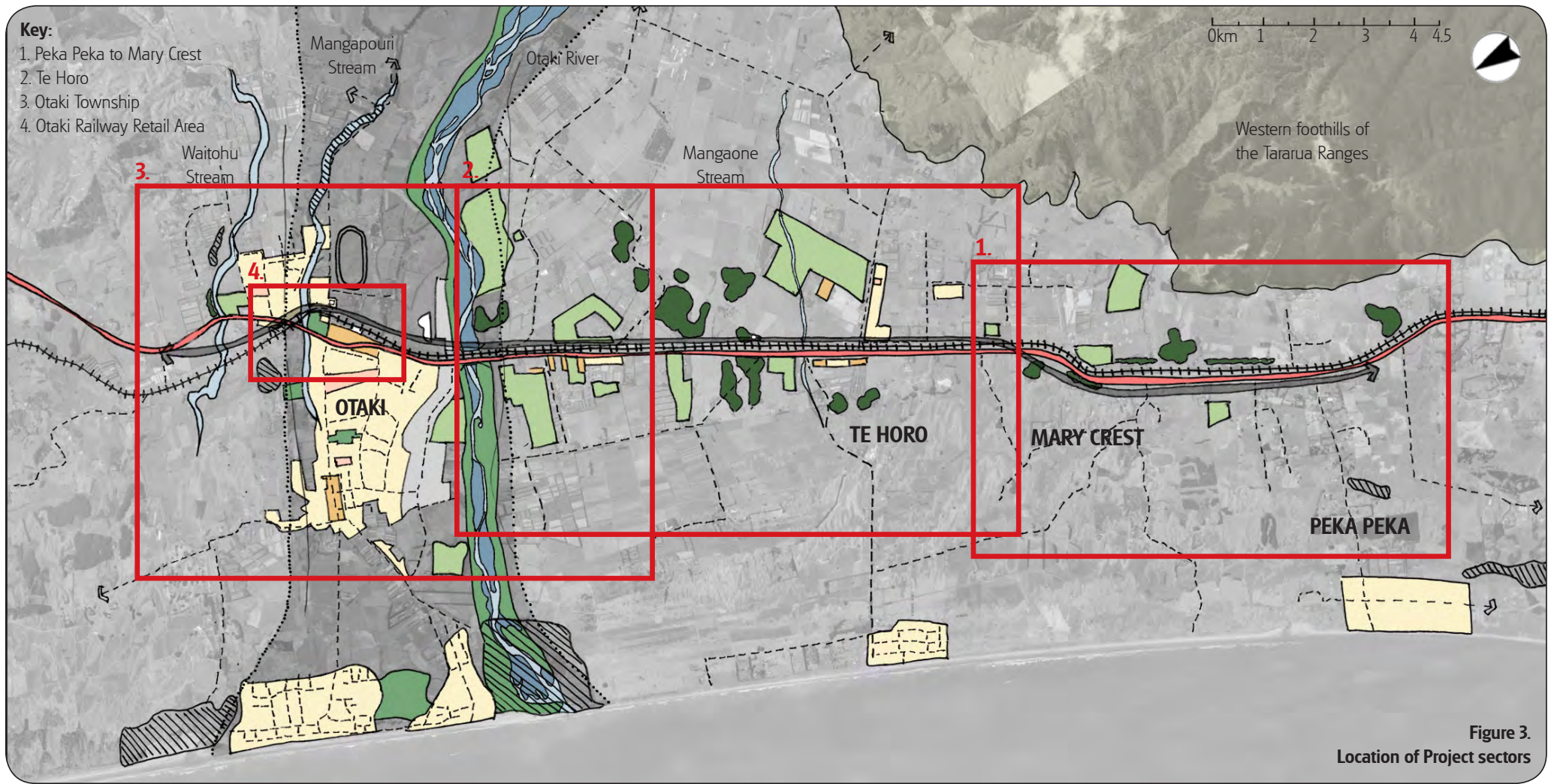


Figure 3.
Location of Project sectors

- Indicative Expressway location
- Existing SH1
- ⋯ NIMT railway
- Local connections
- Retail/commercial area
- Residential area
- Industrial area
- Stream/waterway
- Green space / recreation space
- Commercial horticulture
- Ecological heritage area
- Clusters of localised vegetation
- ⋯ Otaki River flood plain extents
- School

1.5 Project benefits

Need for the Project

The importance of improvement of the State highway network throughout the Kapiti District has been identified by a number of studies. There are a number of issues that the District faces including:

- Access, congestion and reliability;
- Safety;
- Population growth;
- Route security;
- Freight movement; and
- Amenity and social effects, including walking and cycling.

The focus of the State highway network is on moving people and freight between and within the main centres of New Zealand as safely and efficiently as possible. The local network and community objectives and needs are also important in considering the need for the Project given the function that SH1 currently provides. The Project therefore is required to achieve an integrated network that also facilitates local trips and modal choice.

Access, congestion and reliability

As it stands, the existing SH1 through the Kapiti Coast is a key transportation link to and from Wellington City.

The main problem with the existing SH1 through the Project Area is the severe congestion caused at peak periods, especially at weekends and over public holidays, and in particular through Otaki.

The State highway provides for both local and through traffic and includes uses for commuting, business and recreational purposes. The combined servicing of both local and through traffic further exacerbates congestion issues. Adding to this problem, there will be increased pressures placed on this network as population numbers increase.

Implementation of the Project provides an opportunity for traffic congestion relief and the separation of regional and local traffic by providing an effective local road alternative and an integrated network.

The lack of a parallel local road in the current State highway network between Peka Peka and North Otaki has effects on reliability. Any obstruction to the traffic flows has effects on both local and

through traffic as there is no suitable alternative crossing of the Otaki River.

The provision of an Expressway with a speed limit of 100kmph (and with limited access along its length) provides a means through which reliability in journey times can be obtained. It will also minimise congestion particularly in Otaki Township and Te Horo. This in turn will improve local accessibility for communities using the local road network.

Road safety

The existing form of SH1 throughout this area incorporates a high number of local roads accessing the State highway. This creates friction along the highway, slowing traffic flow and increasing the risk of crashes occurring and therefore has implications for safety. As a result, the existing SH1 has seen a high number of crashes.

Arterial roads that are not separated by a median, have a history of accidents occurring, especially where the high traffic volumes using the road mean getting on and off the State highway can be dangerous.

The proposed Expressway provides

opportunity to reduce community severance and improve safety through the provision of safe grade-separated connections through which local and regional traffic are divided and traffic (including significant through traffic) in urban areas is reduced. All of these aspects are considered to result in improved safety outcomes.

Population growth

The population of the Wellington Region is expected to increase by approximately 65,000 people over the next 20 years, with a key growth area being along the Wellington Northern Corridor. The Expressway is needed to provide capacity to meet the growing needs that will be placed on the Northern Corridor.

The Kapiti Coast District is experiencing high growth and is one of the fastest growing Districts in the Wellington Region and lower North Island. In just five years the population grew nearly 10%, from approximately 46,200 at the 2006 census, to an estimated 49,400 at 30 June 2010.

There are areas of planned development in the Otaki area which, if progressed, would place even greater demand on the use of SH1 as a commuter route.

Otaki Vision (Refer Section 2.2)

The Otaki Vision document is an outcome of the KCDC Long Term Council Community Plan, also known as 'Choosing Futures'. Section 5 of the Otaki Vision document focuses on managing growth for local benefit. It seeks an increased focus on the existing Otaki urban areas for future population and employment growth, provided that it happens in a way that:

- Takes a sustainable development approach;
- Respects the character of the town;
- Consolidates development within existing zoned residential areas;
- Makes efficient use of towns services;
- Encourages sustainability through grey water and rain water systems, and pollution minimisation; and
- Clearly creates work opportunities for the community.

The Otaki Vision proposes that there is no new urban development at Te Horo Beach and the previously proposed Te Horo future urban growth area is removed, in preference to a focus on Otaki. Appropriate consideration of interchange locations for the Expressway was important in supporting these goals.

Route security

In the event of a serious accident or emergency on SH1, there are limited alternative routes which can be utilised and the existing Otaki River Bridge is the only road bridge across the Otaki River. In the event of a serious earthquake or flooding resulting in the Otaki River Bridge being unusable, the detour length for vehicles is significant. In this case, motorists would have to travel via SH2 through the Wairarapa.

Freight implications

One of the goals of the New Zealand Transport Strategy 2008 is that of environmental sustainability, which envisages increases in both the proportion of freight by both shipping and rail. However, even with such goals it is expected that road-based freight movement is expected to grow significantly in the coming years, both as through traffic and within the Kapiti Coast.

The Project will help achieve journey reliability which relates to both operating costs and time in transit throughout the area. Speed limits in place in both Otaki and Te Horo induce limitations on the efficiency of travel times throughout the area, particularly during peak times. This is

of particular relevance and importance for the freight industry as the operating cost for trucks increases with any stoppage.

Amenity and social effects, including walking and cycling

The SH1 currently fulfils a range of functions within the Project Area, which are in many cases competing in nature. The SH1 is the main highway link between Wellington and Auckland and it carries a high volume of through traffic and many trucks. However, within the Project Area it is also the only link connecting each of the communities and therefore also plays an important role providing local access.

Within Otaki there are a variety of shops and cafes located along SH1 with on-street parking and pedestrian crossing facilities. The high turnover rate of the on-street parking, turning movements (to/from intersections and accesses), and high pedestrian crossing demand in Otaki results in significant delays to through traffic. The high volume of through traffic, and in particular trucks, also contributes to poor amenity for pedestrians and people shopping in Otaki Railway Retail Area.

Between Peka Peka and North Otaki there are currently very few facilities for non-motorised users (pedestrians and cyclists)

along SH1. The lack of facilities, combined with truck and traffic volumes and high vehicle speeds, makes travelling along the existing SH1 undesirable for most non-motorised road users. Additionally, the distance between most destinations are too great for walking or cycling to be a viable mode of transport for many people. However, experienced road cyclists are observed riding along SH1, particularly on weekends.

General benefits of the Project

The completion of the Project will assist in both Regional and national economic growth and have a number of other key benefits including:

- Safety improvements through the separation of local traffic from State highway traffic, and improved road standards as well as the removal of most level crossings of the railway;
- Economic development, through improvements in efficiency for freight and reduced travel times;
- Reduced and more reliable travel times for traffic passing through the area, improving congestion issues;

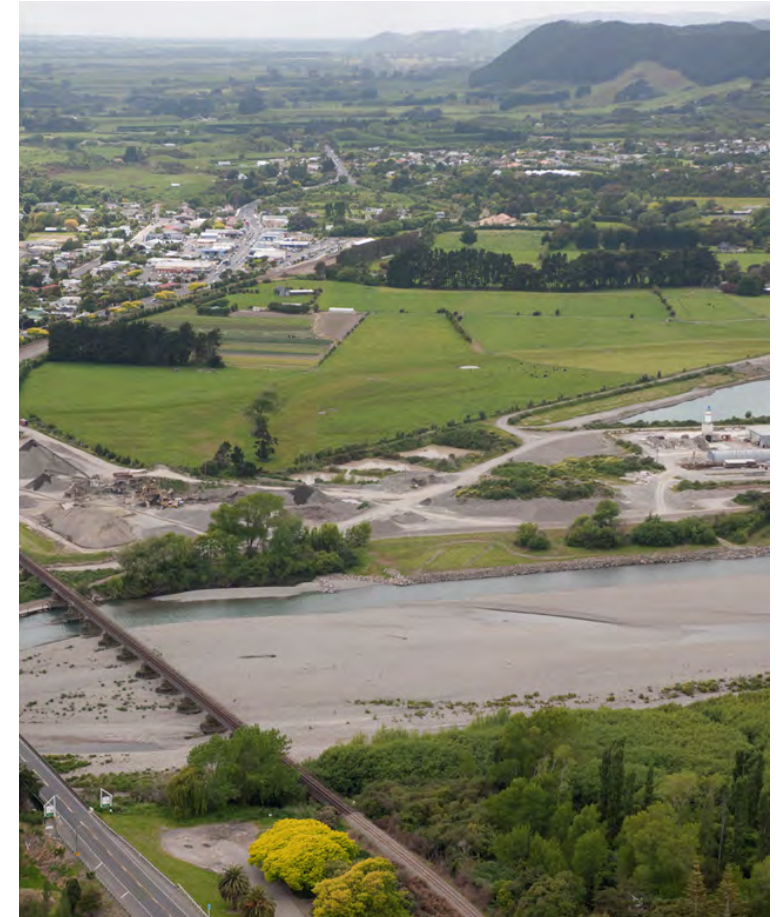


Figure 4. The existing entrance into Otaki from the south (bottom left), via the SH1 Otaki River bridge which is the only road bridge across the Otaki River. This raises potential issues for route security of the existing SH1.

- Reduced severance of communities throughout the Peka Peka to North Otaki stretch of SH1, through the provision of the existing SH1 as a 'local arterial road' with grade separated connections across the transport corridor;
- Increasing access to Wellington's key facilities such as the port, international airport, hospital and CBD; and
- Meeting long term transportation requirements placed on the area as a result of growth.

Through providing an alternative route for local traffic (via the former SH1), the Project may deliver a range of other benefits, including:

- Transport function – retaining the former SH1 as a local arterial road for the local connectivity.
- Route security – retaining the former SH1 means that there are two possible routes across Otaki River.
- Safety - ensuring safety for all users, including enhanced walking and cycling opportunities and safety

along the local road corridor with the significant reduction in through traffic;

- Economic viability - encouraging economic development in Otaki as a social, employment, retail and transport centre through the provision of appropriately placed interchanges to enhance access and improve connections to and from Otaki; and
- Strategy - achieving consistency with the Council's strategies and planning rules and supporting the Otaki Vision.

Landscape and urban design benefits

There are a number of landscape and urban design benefits and opportunities which come out of this Project:

1. Pare-o-Matangi Reserve will change significantly as a result of the Project. This provides potential opportunities in that:
 - A) By extending the reserve southwards in a reconfigured shape,

it be can be developed to provide separation between the Expressway and Otaki Township / residential areas;

B) The open space allows the Rahui Road Underpass (local road over Expressway) structure to be treated as a landscape element with longer ramps and a high-quality pedestrian environment both over and underneath the structure;

C) An enlarged Pare-o-Matangi Reserve has potential to become a landscaped experience for motorists entering or leaving Otaki Railway Retail Area.

2. At Otaki, the greater part of the settled area (and most potential for growth) is located west of the transport corridor. The Expressway corridor has less intrusive effect than if it was between Otaki Town and Otaki Beach communities, as the Project widens the existing severance corridor rather than introducing another.
3. The Otaki River and the new Expressway bridge could potentially provide a memorable and dramatic

gateway experience for motorists entering or leaving south Otaki.

4. Over most of its route, the Expressway follows the existing SH1/ NIMT railway corridor. This means the effects of the transport corridors is localised and is largely restricted to areas which are already in close proximity to through-traffic.
5. Driver experience of the landscape from the Expressway will be a noticeable improvement over using the existing SH1. This will add to the dynamic experience of arriving in, passing through, and leaving the Kapiti Coast and Wellington Region.

6. The proposed planting as part of the Project will provide the benefit bringing together fragments of space along the Project length. These can be interpreted as green fingers, building on existing bush remnants and providing biodiversity and ecological benefits.
7. Many of the urban design benefits of the Project will be realised as improved environments for local motorists, pedestrians, and businesses within urban areas as

part of the SH1 Revocation Project. The existing SH1 (which will become a new local arterial road) provides opportunities for:

- A) Streetscape enhancement, including reduced road width, enhanced pedestrian experience, integrated car parking and streetscape of the Otaki Railway Retail Area (making it a more attractive, pedestrian orientated precinct to live, work and shop);
- B) Enhanced connectivity and amenity value of Regional walkways, cycleways and bridleways.

1.6 Urban design issues

The main urban design issues affecting the Project sectors include:

Severance and community connectivity

The Project alignment, in combination with the NIMT railway and existing SH1 create a strong severance corridor, affecting east-west connectivity along the full extent of the Project Area.

Severance and community connectivity were two of the main concerns expressed during the 2009 Submissions¹ process. The Project could potentially exacerbate the east-west severance created by the existing SH1 and NIMT railway corridor. Important east-west connections across these corridors are shown in Figure 5A - 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 NIMT railway within a single transport corridor minimises the effects of the Project. 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 urban area, effective connectivity can be expected to improve, owing to the change in status of the former SH1 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 new local arterial road will provide an efficient (convenient for local residents, and catering for multi-modal use) local north-south arterial connection, and connections to the west of the local arterial. Connections across the Expressway and NIMT railway corridor to the east of the Expressway are where the main connectivity challenges have been.

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

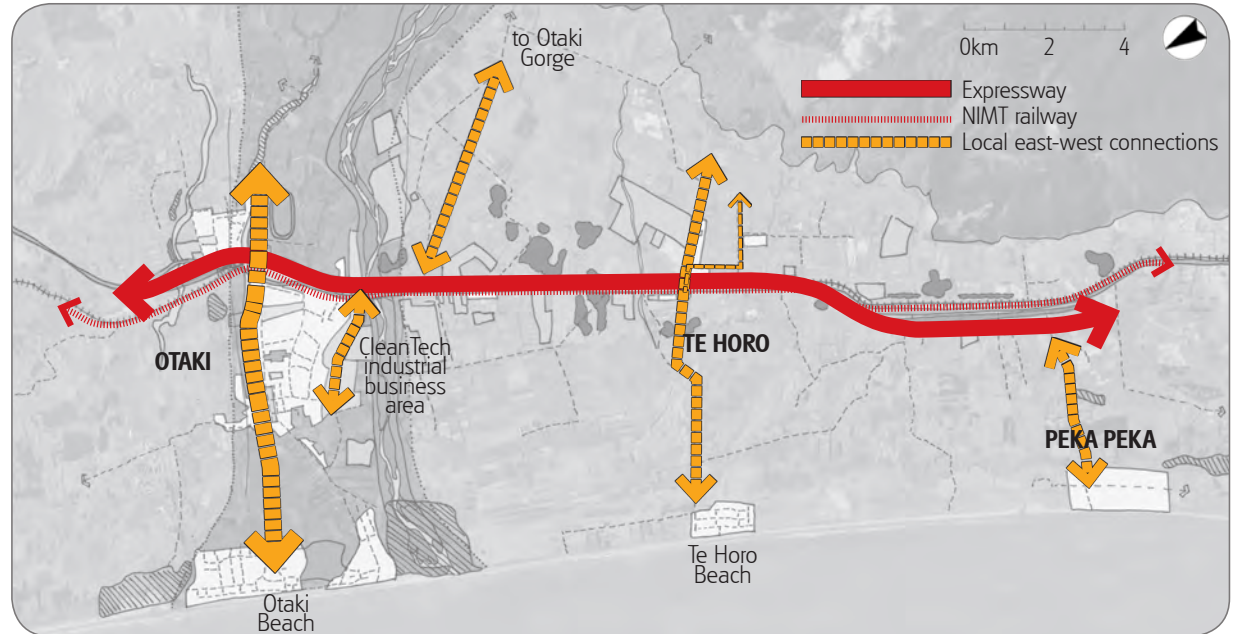


Figure 5A. Severance and community connectivity

Current and future land use

It is important to consider how KCDC envisages Otaki and the surrounding communities developing in the future. The design, form and location of connections and Expressway interchanges will affect future development, so it is important that KCDC's vision is understood during the design process.

The Otaki Vision document expresses a desire for further development to continue at Otaki (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. KCDC also has plans for a 'Clean Technology' business park² to be developed (around Riverbank Road in Otaki) to serve a Regional purpose (shown in yellow in Figure 3B).

The Otaki River currently provides a natural containment line for development to the south of Otaki, so this natural containment line is emphasised with the location of the proposed South Otaki Interchange (refer to Section 5.3). If the interchange had been proposed significantly further south of the river, the natural urban containment of the river would be depowered.

An interchange has not been planned at Te Horo, due to KCDC's desire to discourage further urban development there.

As illustrated in Figure 5C, 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 of Otaki Township, provides improved containment points. For example, with half diamond interchanges placed along the Expressway where the containment lines (the waterways) are already shown at Otaki in Figure 5B, then development will be encouraged within the existing Otaki area, fulfilling an objective in the Otaki Vision document.

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 Otaki, as well as develop new employment opportunities for local people (as outlined in the Otaki Vision document).

- Key:**
- Future growth +
 - Residential and commercial areas [Orange square]
 - Industrial / CleanTech areas [Yellow square]
 - Indicative half-diamond interchange [Zigzag line]
 - Natural containment lines (waterways) [Blue line]

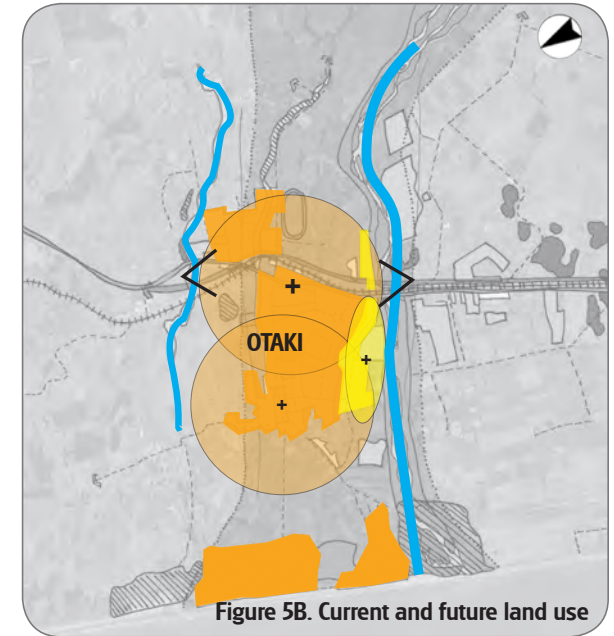


Figure 5B. Current and future land use

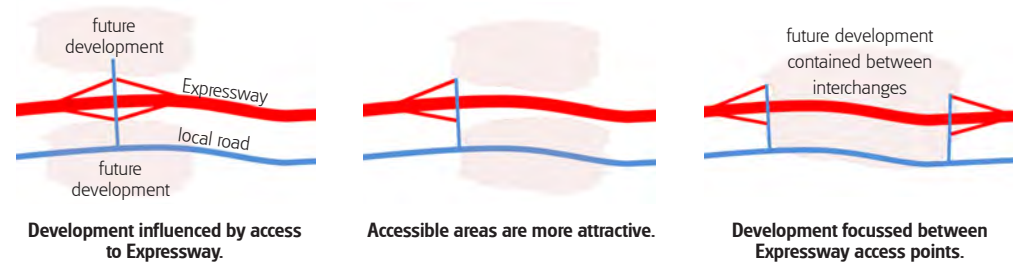


Figure 5C. Effect of interchanges on development

Recreational access

KCDC puts great emphasis on access to recreational facilities. It is important the Expressway design maintains and enhances connections to water bodies (including Otaki River and the coast), and open spaces (such as Pare-o-Matangi Reserve).

Recreational access is a driving factor within the Otaki Vision document, and is tied in with severance and community connectivity. The east-west connections shown in Figure 5A are not only important for community connectivity, but also for providing access to recreational areas such as the Otaki Gorge, Otaki River and Otaki Beach.

The Otaki Vision document outlines the desire to maintain the existing riverside walkways (shown dotted in yellow in Figure 5D), and enhance the access to these walkways from Riverbank Road.

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.

Business sustainability

The Project will divert Regional through-traffic away from the business areas of Te Horo and Otaki. 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.

Gateways (local and Regional)

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

Potential landlocked sites

Landlocked sites created by the Project need to be considered - how will these spaces be treated once the Expressway is built? How will these spaces be used or maintained?

Figures 5A to 5D explain some of the site wide issues in more detail.

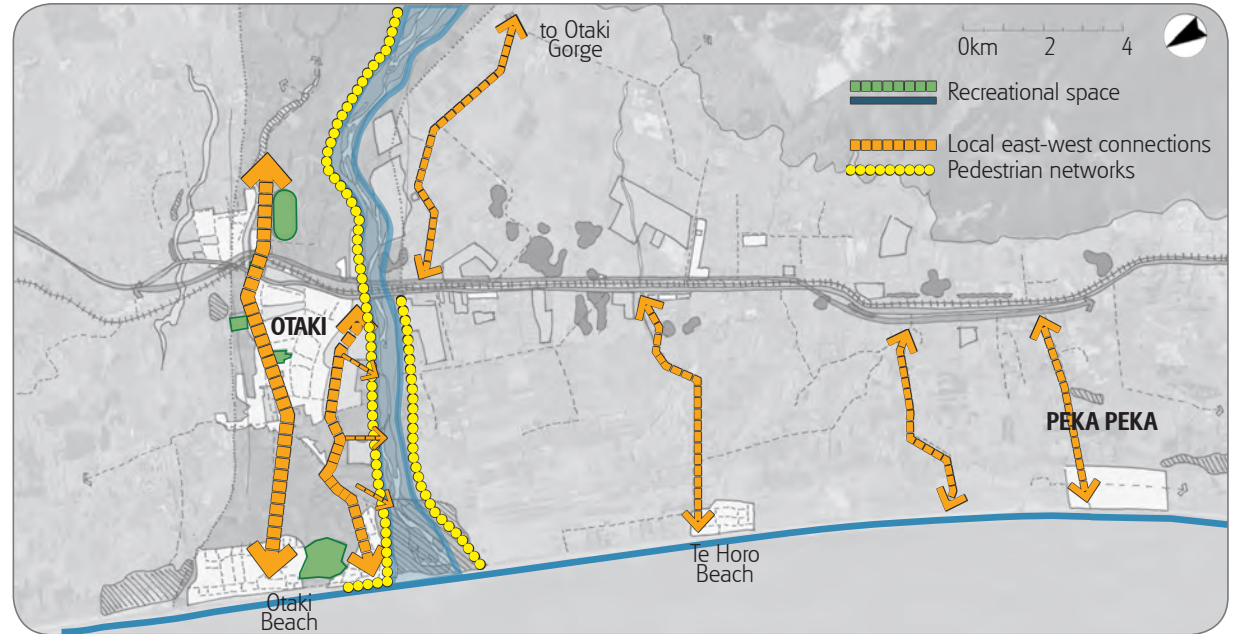


Figure 5D. Recreational access

1.7 Landscape and visual issues

As outlined in the Landscape and Visual Assessment³ for the Project, the potential landscape and visual effects of the Project include:

- Physical effects of the Expressway construction on existing landforms, landcover, landuses and watercourses;
- Effects of the Project on landscape character and values associated with the landscape;
- Visual effects on views from the Waitohu 'plateau' and the Otaki Railway Retail Area of Otaki township, from Te Horo township, from local roads and other public places, from nearby dwellings and private property and from walking tracks on the banks of the Otaki River;
- Effects on the Otaki River and various remnant stands of native bush east of the NIMT railway on the Hautere Plains that identified in the Kapiti Coast District Plan as Outstanding Landscape Areas;
- Cumulative effects of the Project in

conjunction with existing road and rail corridors in the Project Area and in particular with the existing 'river crossing' section of the Otaki River; and

- Temporary landscape and visual effects during construction.

In sections 4 and 5 of the ULDF, there are key principles to support the mitigation recommended by the Landscape and Visual Assessment.

3. Peka Peka to North Otaki Expressway Landscape and Visual Assessment, Draft #4, October 2012



Section 2. Policy context

2.1 Policy introduction

The design of the Project has been informed by a wide range of policy documents. A number of the key documents are summarised in this Section.

2.2 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 must be balanced with the engineered form of the Expressway to ensure a vibrant and sustainable built form emerges:

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.

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.

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 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.

Creativity

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

Collaboration

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

Custodianship

Reduces environmental effects 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.

Kapiti Coast District Plan (1999)

Land use is managed under the Kapiti Coast District Plan. See Appendix B.

The Project's Statutory Assessment notes with respect to KCDC District Plan and outstanding landscapes that the Landscape objective is:

Objective C.10.1: That the District's outstanding landscapes are identified and protected from adverse environmental effects of subdivision, use and development.

The four related policies include:

Policy 1: Ensure new buildings, structures, services and earthworks within outstanding landscapes are located so that they will not be visually dominant (e.g. below the dominant ridgeline where practicable).

Policy 2: Encourage landowners to design and clad their buildings to blend in with the rural landscape.

Policy 3: Ensure no dune or landform modification takes place within outstanding landscapes of the open space, rural and residential zones, except to the minimum necessary for roading, access, provision of services, building site and farming purposes.

Policy 4: Ensure the following outstanding landscapes are protected from inappropriate subdivision, use and development through controls on subdivision and land uses.

· The foredune and consolidated

sand dunes.

- The foothills of the Tararua Ranges including Pukehou hill.*
- The wavecut escarpments behind Paraparaumu and Paekakariki.*
- Kapiti Island and associated Islands.*
- The river landscapes of the Otaki and Waikanae Rivers.*

The one 'outstanding landscape' (OLA) potentially affected by the Project is the landscape of the Otaki River. However, the identification applies to the upper reaches of the river and not the section that the Expressway bridge crosses. However, and notwithstanding that the section of the Otaki River at the point of the bridge crossing is not within the outstanding landscape area, the design approach has been to locate and design the structure so that it sits as low as practicable in the landscape thus reducing its visual impact.

It is understood the district's OLAs were defined at the time of the writing of the first generation District Plan for Kapiti Coast, though no reference is made in the District Plan to any district-wide landscape study that provided criteria against which the OLAs or features of the district might be defined. No identified 'outstanding natural feature' (ONF) is affected by the Project.

As part of KCDC's current Plan Review process, the district's landscape was recently assessed and no ONFs or 'outstanding natural landscapes' were identified in the Expressway's designation corridor. The current district-wide landscape study has, however, defined the Otaki River within the area of the Project as a 'significant amenity landscape'. The 'Te Hapua sea cliff' north of Peka Peka Road is a geological feature that has been identified as a 'significant amenity feature', but this feature is to the east of the NIMT railway at the south end of the Project and well beyond any landscape influence the Project may have.

As it stands, the District Plan is operative and remains a relevant reference point.

Otaki Local Outcomes: Greater Otaki Vision (2007)

The KCDC Otaki 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 Otaki should develop and shape in the years to come.

A summary of the Otaki Vision Objectives is as follows:

Otaki Railway Retail Area

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

Main Street Town Centre

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

Industrial area: Riverbank Road

- Develop Riverbank Road 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;
- Ensure existing businesses are supported to remain while still attracting new businesses; and
- Utilise the proximity of the highway and the NIMT railway network.

Transport networks

- Develop Otaki 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 Trail⁴), 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.

Growth for local benefit

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

Beaches and 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 Otaki beaches.

Fresh water (including Otaki 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 Otaki 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.

Heritage and character elements

- Promote the heritage of Otaki 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 Otaki area are protected; and
- Protect remaining native bush and coastal areas.

4. The Pipi Trail highlights significant sites and tells the history of Otaki. This heritage trail covers 13 historic sites of significance and interest such as Tainui Marae, several schools and churches including Rangiatea Church which was built in 1851, making it one of the oldest in New Zealand.



Response to Otaki Vision objectives

In responding to the Greater Otaki 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 Otaki as a safer, more connected and sustainable community is 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 SH1 as a local arterial (as part of the revocation process) to provide a safer, more memorable experience that expresses the character and heritage of Otaki Township and the 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.

Wellington Regional Strategy (2007)

The nine local authorities in the Wellington Region developed the Wellington Regional Strategy (WRS) in 2007. The WRS is a non-statutory document with a principal aim of making the Region internationally competitive, in terms of being a Region with great lifestyle and job opportunities, supported by a strong economy. The WRS addresses issues such as transport, housing, urban design and open spaces.

The strategy notes that secure and reliable transport connections to the rest of New Zealand is important for Regional economic development.

The WRS summarises the objectives for the Kapiti Coast as:

- Better and more reliable access to Wellington;
- Managing growth sustainably;
- Strengthening the Kapiti centres;
- Investment in key public infrastructure such as roads; and
- Providing housing choice for diversity.

Streetscape Strategy and Guideline (2008)

The Streetscape Strategy and Guideline sets out KCDC's 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 local connections to 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.'*

In particular, the contents of this Strategy will need to be considered in the development of the existing SH1 as a local arterial as part of the SH1 Revocation process.

Development Management Strategy (2007)

This document outlines KCDC's strategy for the management of development and growth on the Kapiti 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 Otaki 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 Otaki; and*
- *Protects valued character.'*

Environmental Guidelines for Rural Living: Kapiti and Horowhenua (2001)

This KCDC 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;
- Planting and planning shelterbelts;
- Choosing a building site;
- Sewage system options; and
- Dealing with pasture and driveway runoff.

The Otaki River Environmental Strategy (1999)

The GWRC have a long term vision for Otaki River as *'a greenbelt, providing a corridor of particular landscape, ecological and recreational value that connects the coast and inland hills. Creating an ecological corridor for the distribution of birds, fish, invertebrates and plants with continuous habitat. The greenbelt will also provide excellent public access points which will improve recreational opportunities.'*

The Otaki River Environmental Strategy was developed to help co-ordinate the activities of the different agencies, community groups and landowners involved in protecting and improving the river environment. It is a key document which provides recommendations on the development of the Otaki River environment including advice on planting techniques, recommended plant species, public access, and weed, stock and pest management.

A key vehicle for the implementation of the Strategy is the Friends of the Otaki River group (FOTOR) who work with GWRC to implement the Strategy through various environmental enhancement projects.

2.3 Transport policy

Land Transport Management Act (2008)

This Act requires NZTA to exhibit a sense of social and environmental responsibility in meeting the statutory objective of operating a State highway network that contributes to an integrated safe, responsive and sustainable transport system.

NZTA Urban and Landscape Design Frameworks - Highways and Network Operations Guideline (2009)

This guideline sets out the requirements, purpose and content of Urban and Landscape Design Frameworks.

NZTA Urban Design Policy (2007)

"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 which apply to all State highway Projects:

1. Appropriate urban design needs to be determined on a case-by-case basis for State highway improvement activities. Each activity is different and should not be assumed to be a precedent for the next.
2. Urban design elements need to

be incorporated into the activity at the outset. This will help ensure the Project design addresses urban design in an efficient and cost effective manner.

3. Urban design will not represent an extravagant use of public funds. Urban design initiatives should not attempt to 'disguise' a road, rather they should enhance its integration with the surrounding environment.
4. Early collaboration with local stakeholders will occur to promote alignment between urban design initiatives of NZTA and the views of affected communities.
5. Co-funding of urban design initiatives with local stakeholders will always be considered. Where a local community desires a higher level of urban design than NZTA provides, NZTA will seek the cost of the higher level outcomes from local stakeholders.
6. Urban design will be consistent with the operational requirements of state highways, while recognising the needs of motorists, pedestrians,

cyclists and surrounding communities. State highway categorisation has a key role to play.

7. All components of urban design will be considered when incorporating urban design into state highway activities. Urban design can contribute to:
 - Assisting economic development;
 - Improving safety and personal security for all state highway users;
 - Improving access and mobility for motorists, pedestrians, cyclists and passenger transport;
 - Protecting and promoting public health through the state highway being appropriately integrated with an interconnected road network; and
 - Environmental sustainability through appropriate use of materials and influencing surrounding land use development.

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

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

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 Otaki 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 Otaki town in a way that recognises the need for economic stability.'

Wellington Regional Land Transport Strategy 2010-2040

The current Wellington Regional Land Transport Strategy (RLTS) is a statutory document prepared under the Land Transport Management Act 2003. The RLTS is the strategic transport document that guides the development of the Wellington Region's land transport system and sets the framework and vision for the provision and management of movement and transport throughout the Region. Its vision is to:

'Deliver an integrated land transport network that supports the Region's people and prosperity in a way that is economically, environmentally and socially sustainable.'

The RLTS sets out key issues and pressures. These being:

- Access to goods and services, employment and amenities;
- Regional road safety, particularly for cyclists;

- Severe traffic congestion, particularly at peak times;
- East-west connections between key transport corridors and Regional centres;
- Reliability of the transport network;
- Transport related greenhouse gas emissions;
- Public transport capacity and mode share;
- Economic and population growth of the Region; and
- Social functioning of the Wellington Region.

To achieve this, the objectives set out in the RLTS are to:

- Assist economic and Regional development;
- Assist safety and personal security;
- Improve access, mobility and reliability;

- Protect and promote public health;
- Ensure environmental sustainability; and
- Ensure that the Regional Land Transport Programme is affordable for the Regional community.

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.

The Wellington Regional Land Transport Programme (GWRC 2012-2015)

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 is required to assess that the programme the requirements of Section 14 of the Land Transport Management Act 2003. These requirements of most relevance to the ULDF include how the RLTP contributes to:

- An affordable, integrated, safe, responsive, and sustainable land transport system;
- Economic development;
- Safety and personal security;

- Improving access and mobility;
- Public health; and
- Environmental sustainability.

The Peka Peka to North Otaki Expressway Project is included in the RLTP as a committed activity (that it has funding approved, but is not yet completed).

Cycleways, Walkways and Bridleways Strategy (KCDC, 2004)

The purpose of the Strategy is to set a clear strategic vision for cycling, walking and horse-riding on the Kapiti 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 Otaki, this includes:

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

The Strategy identifies a number of issues for cyclists, pedestrians and horse-riders in Kapiti noting that a major disincentive to cycling is the perception of danger from motor vehicles. 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.

This Strategy will be important to consider in the development cycleways, walkways and/or bridleways along, to and from the former SH1 (as part of the SH1 Revocation process).

Regional Cycling Plan (GWRC, 2008)

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. The 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 Peka Peka to Otaki 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.



Section 3. Corridor - urban and rural context

3.1 Introduction

This section of the ULDF describes the existing context of the area as it relates to the Expressway. In some instances the descriptions are at a regional scale, and in others it is more site specific.

The aspects which are covered in this section are:

- Landform
- Hydrology
- Vegetation and ecology
- Land uses
- Character areas
- Heritage and tangata whenua
- Community facilities
- Movement networks

3.2 Landform

Topography

- The Project travels between the western foothills of the Tararua Ranges (to the east of the Project, and which reach up to 510m above sea level), and the coast which is 3-4km to the west.
- The Project traverses varying topography and environments (residential, commercial, rural, horticultural, and recreation areas).
- Between Peka Peka Road and Te Hapua Road, the Project traverses lower lying areas, with the rising Te Hapua escarpment to the east of the SH1, and rolling dunes of pastoral land to the west. The organically shaped topography of the sand dunes should be considered during

the Project design process. These undulating sand dunes provide variation in what can be viewed from the existing SH1, and dictate which plant species grow there.

North of Te Hapua Road, the topography of the corridor generally flattens out, dropping down to cross the Otaki River and floodplain at Otaki.

The majority of Otaki Township is flat (within the Otaki Floodplain), with the exception of a localised sand dune south of Waitohu Stream, and the properties in the Waitohu Valley Road and Te Manuao Road area sitting on an old river terrace which is higher than the rest of Otaki (locally this is known as the Waitohu Plateau).

Geology

The landform of the Project Area is defined by a number of strong natural features including the coastal edge, the coastal plain, the western foothills of the Tararua Ranges, and the local rivers and streams.

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

The floodplain around the Otaki 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 New Zealand. There are several faults within the vicinity of the Project including the Ohariu Fault, the northern Ohariu Fault, the Gibbs Fault, the Otaki Forks Fault, and the Wellington Fault. Therefore resilience and route security is a design consideration for the Project.

Design implications

Refer to Section 4.2 to see the ULDF response to the existing landform in relation to the Project.

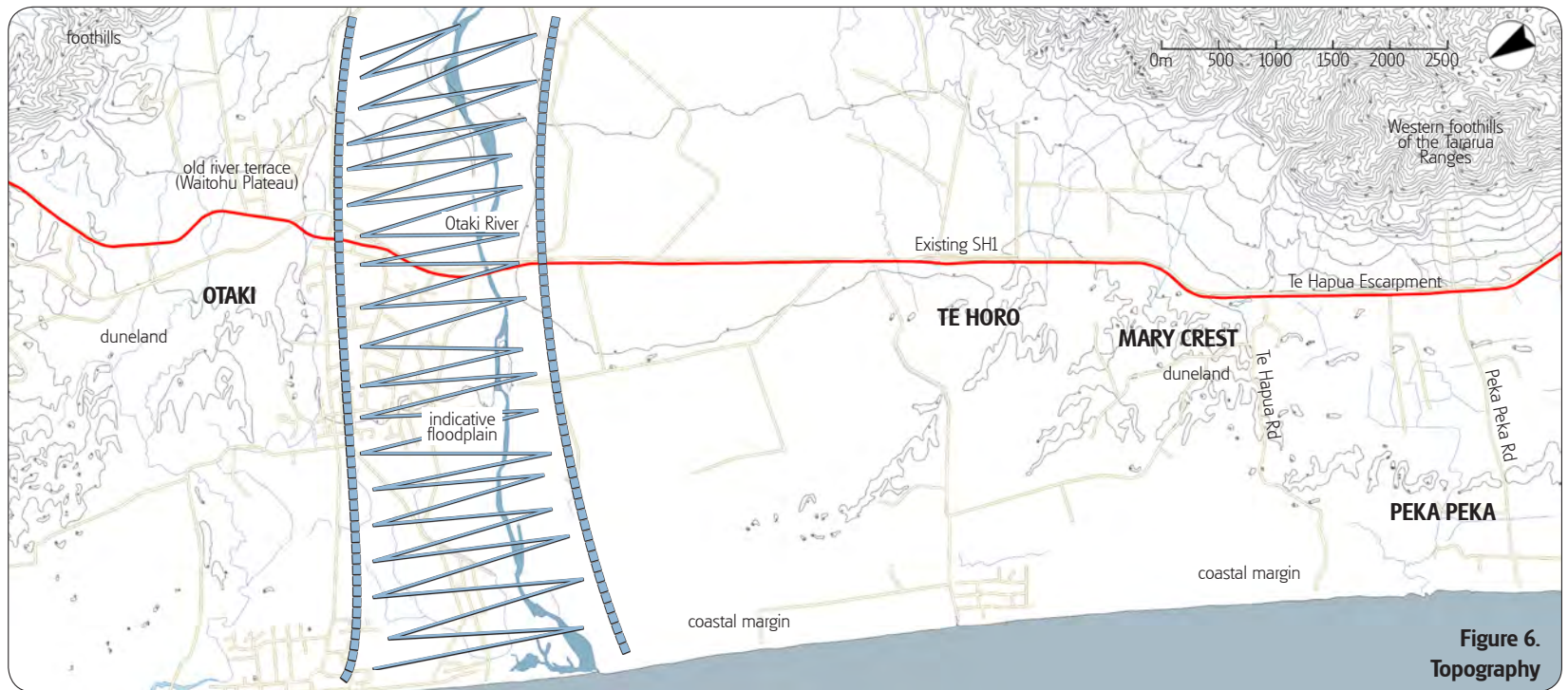
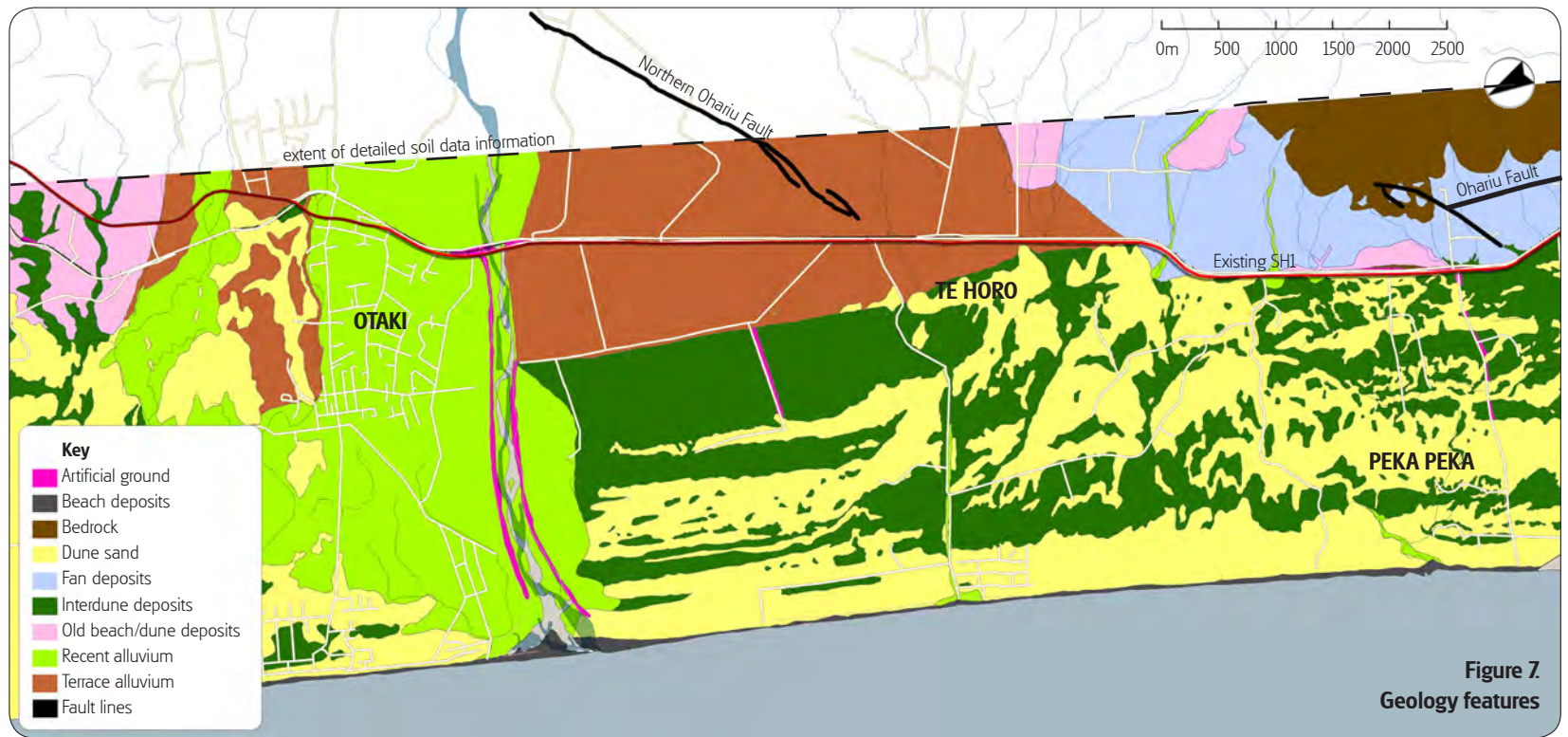


Figure 6.
Topography

Reference: Base Map information taken from QuickMap V73.146



Reference: Greater Wellington Regional Council, Received 2006

3.3 Hydrology

General

- The existing SH1 route crosses the Otaki Coastal Plain, which includes a range of small, medium and large waterways that pose a flood risk. The Project will cross these same waterways.

Four of the more significant waterways are the Mangaone Stream, the Otaki River, the Mangapouri Stream, and the Waitohu Stream.

Mangaone Stream

- The Mangaone Stream is located at Te Horo, and the existing flood hazard associated with the stream affects mainly rural lifestyle properties and rural land.
- The stream and its associated overflow channels drains a nearly flat alluvial fan so small changes in topography or to the drainage network could divert flooding elsewhere.
- The existing SH1 regularly floods at Te Horo, affecting route security.

Otaki River

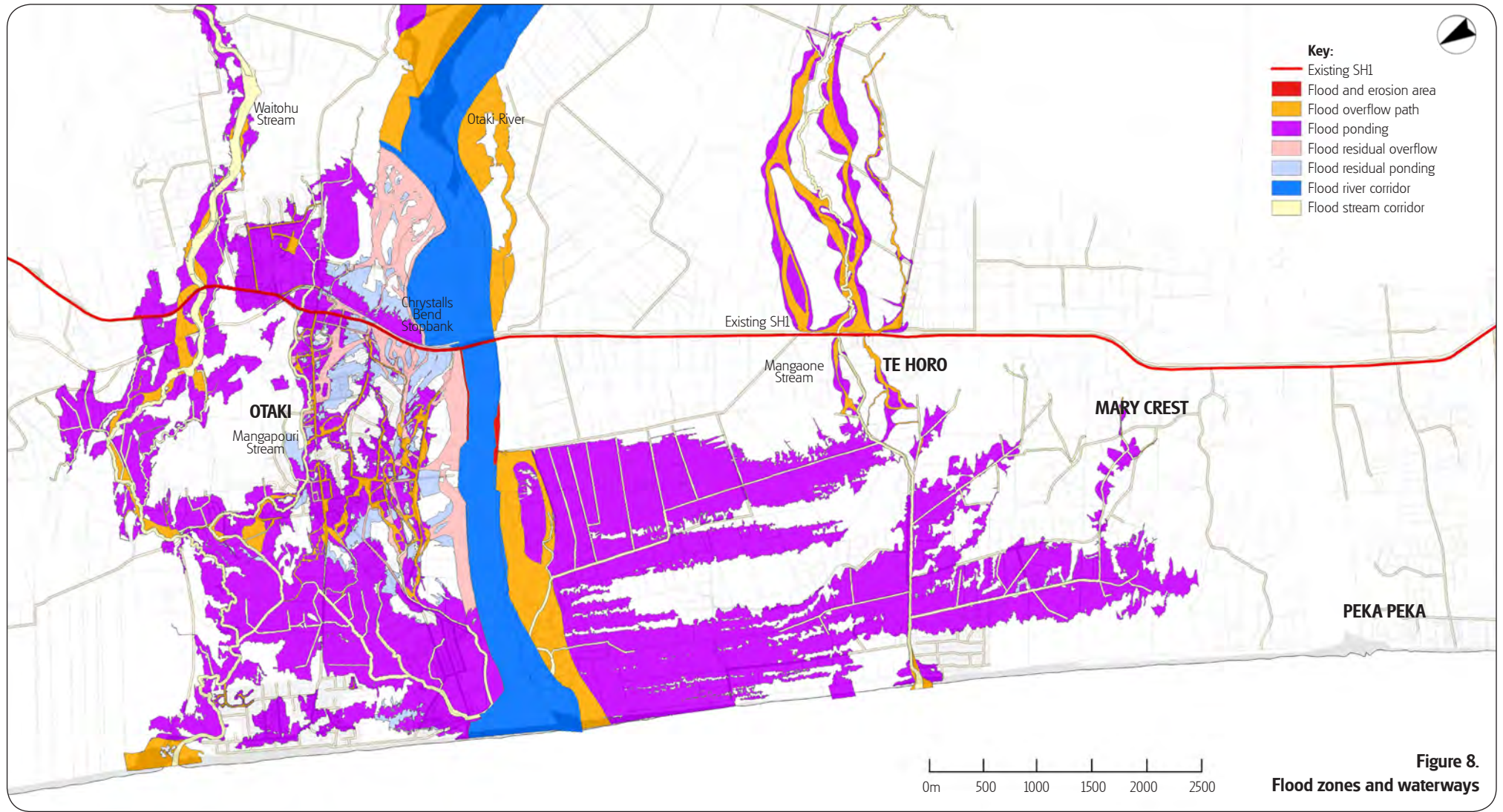
- The Otaki River is the largest waterway in the Project Area, located on the southern side of Otaki, acting as a natural containment line for development.
- The properties along the Otaki River banks are of a recreational, industrial or rural nature.
- There is currently only one vehicle bridge and one railway bridge crossing the Otaki River. In terms of route security this poses a significant threat.
- The Chrystals Bend stopbank (shown in Figure 8) along the north bank of the Otaki River provides protection against floods to Otaki Township. The stopbank ties into the existing NIMT railway embankment and bridge abutments.

Mangapouri Stream

- This waterway is located just north of Rahui Road and runs through the Pare-o-Matangi Reserve.
- This waterway is hydrologically complex as it incorporates a culvert throttle and an upstream flood storage basin to protect downstream properties during flood events.

Waitohu Stream

- The Waitohu Stream and its surrounding flood plain is located at the north end of the Project Area, and acts as a natural urban containment line for Otaki. The majority of properties affected by this waterway and its flood zone are rural properties.
- The Waitohu Stream is very active geomorphologically downstream of the SH1 bridge and is not contained within a stable course.
- The local water table is high and the ground surrounding Waitohu Stream is very swampy.



Reference: Kapiti Coast District Council, Received 2010

3.4 Vegetation and ecology

Refer to Figure 10 - the areas of significant vegetation mentioned above are keyed as 'Significant Ecological Site,' and 'Other Potentially Significant Areas of Vegetation.'

Terrestrial ecology and vegetation

As a generalisation, intensive agriculture has resulted in an open landscape with scattered mature exotic trees and numerous shelterbelts and hedges with bands of willow common to the river and stream banks.

Indigenous vegetation is largely confined to a few small remnants. These scattered stands of native vegetation are more common and distinctive in the Otaki Gorge Road/Old Hautere Road/Te Horo area.

The Project passes through the edges of a number of stands of native mature trees along the alignment, and also through a wetland located to the north of Otaki. Many of these sites are of District significance (Cottles Bush for example).

Two areas of remnant forest have also been identified near Mary Crest. These are not identified as KCDC Heritage Sites however survey of these remnants has

determined them to have significant ecological value.

Plants and ecological zones

'A Guide to Growing Native Plants in Kapiti' outlines two distinct ecological zones in the Project Area: 'Duneland' and 'Lowland Terrace' zones for terrestrial ecology - refer to Figure 12.

The document describes that 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 and 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* is well established 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, kanuka and kohekohe are the dominant native species in this zone.

Wetlands

Although the presence of numerous wetlands in the Project Area is indicated on topographic maps, much of the wetland in the Kapiti District (and the Project Area) has now been converted into farmland.

The wetlands that remain in the Project Area have been modified by human activity to varying extents.

The Railway Wetland at North Otaki will be directly affected by the Project, but the Expressway alignment has been shifted to avoid the remnant bush and wetland at Mary Crest due to its ecological significance.

Pest animals

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

Pest plants

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.

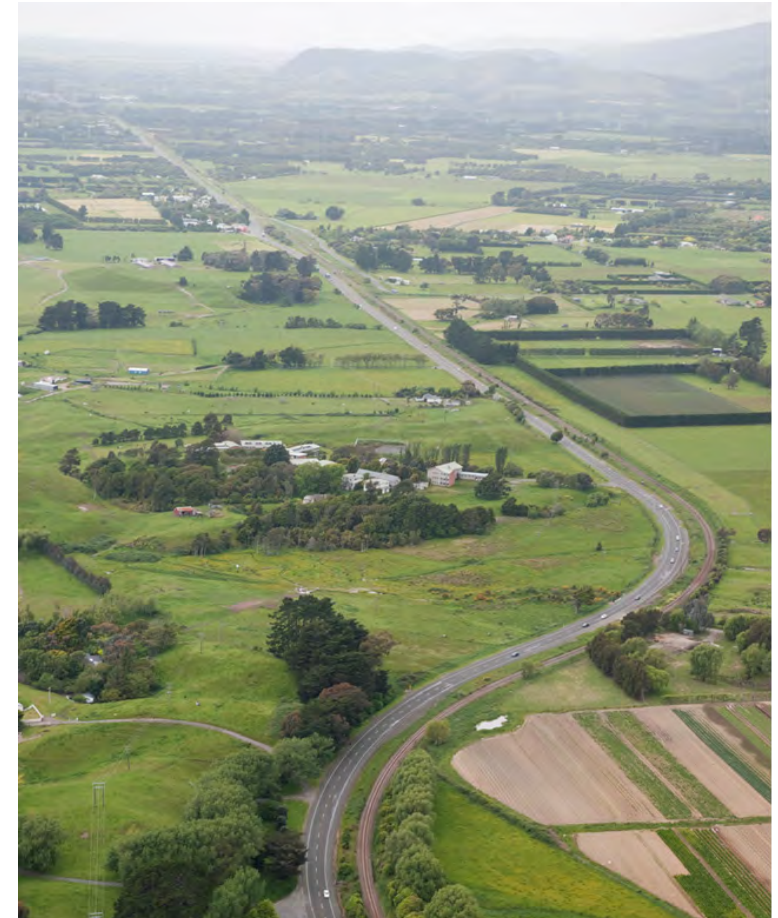


Figure 9. The existing environment through Mary Crest and Te Horo. The Expressway alignment has been re-configured to avoid the bush remnants at Mary Crest.

Design implications

Habitat creation, protection, and/or enhancement will be required to mitigate losses of mature native trees and wetland habitat.

Pare-o-Matangi Reserve is an important local feature, which has been a community Project over a number of years. The Project will run through the eastern half of this reserve, affecting its current form and vegetation. It is important to recognise this reserve as an area of significance to the local community, and mitigate effects accordingly.

The Project is likely to have negative effects on features of local ecological significance. For example, Cottles Bush and bush to the south of Old Hautere Road.

The initial design of the Expressway and local arterial alignment at Mary Crest has been re-configured to avoid the two remnant bush/wetland areas to the west of the Project.

Principles to avoid or mitigate terrestrial ecology effects

1. The Project footprint has been altered in places to minimise loss of indigenous habitats. This should be an ongoing consideration as the Project develops.
2. Specific habitat creation and/ or protection and enhancement should be undertaken to compensate for habitat lost to the Project footprint.
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.



Figure 10. The existing environment looking north towards Otaki along the Te Horo 'Straight.' Shelterbelts are a regular pattern across the rural landscape.

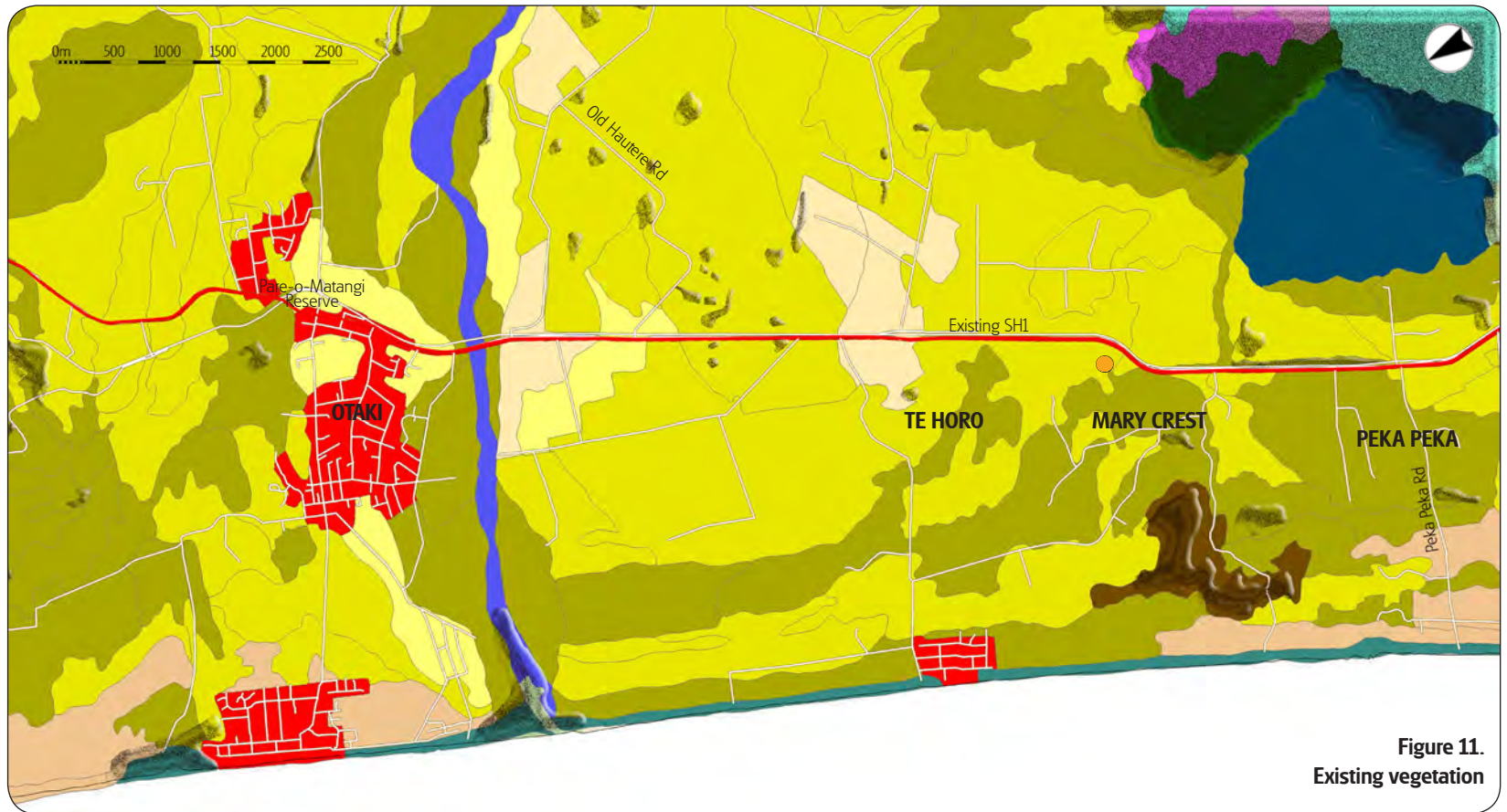
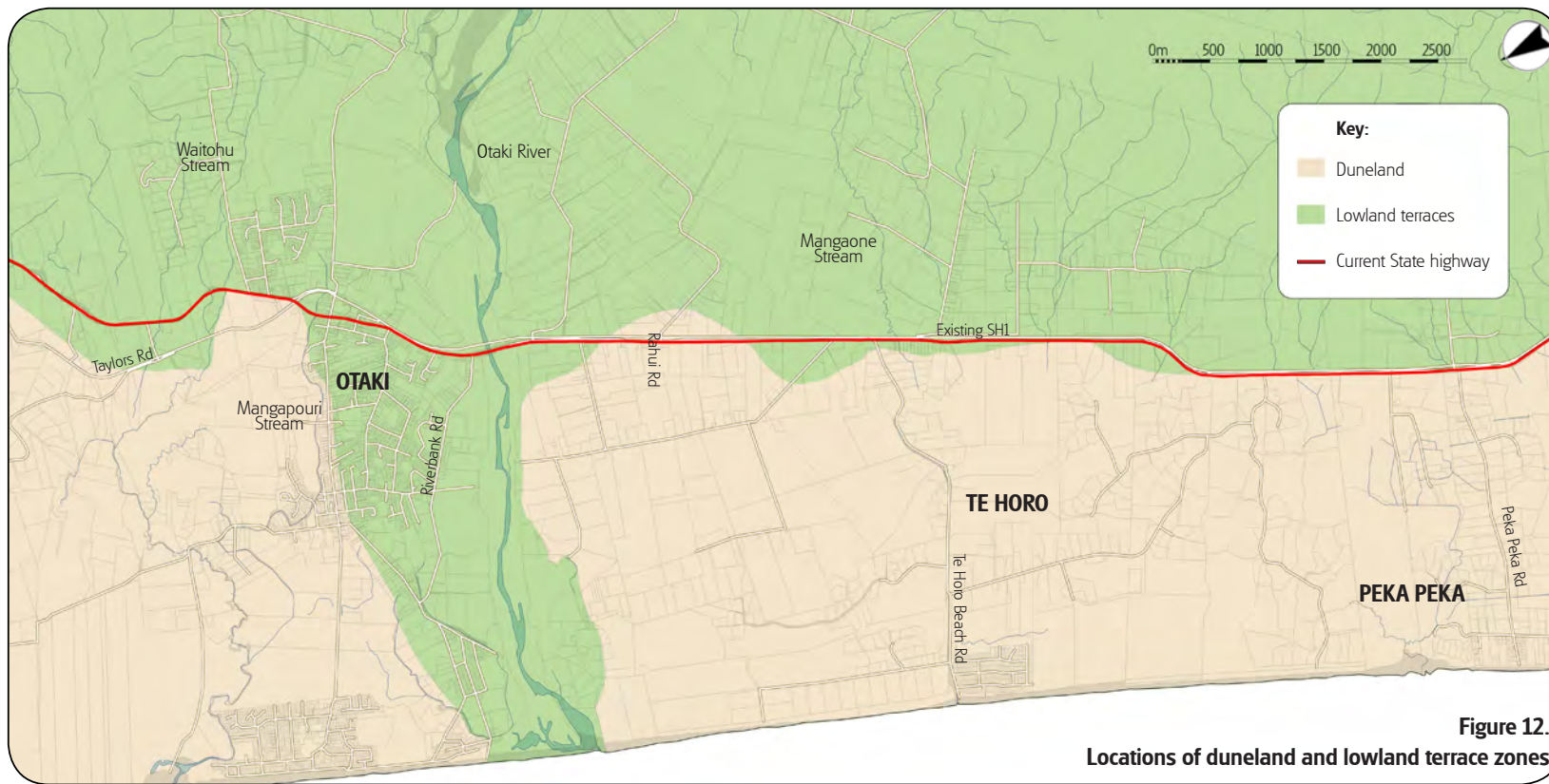


Figure 11.
Existing vegetation

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

- | | | | |
|-----------------------------|----------------------------------|------------------------------------------|----------------------------|
| Swamp vegetation | Hardwood forest | Grassland saine dune vegetation | Remnant bush at Mary Crest |
| 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 | |



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

Aquatic ecology

Many of the smaller watercourses have no riparian vegetation. Where riparian vegetation is present, it is typically dominated by willow.

GWRC Regional Freshwater Plan (RFP) identifies the Mangaone Stream, Otaki River and Waitohu Stream as watercourses with nationally threatened indigenous fish in the catchment, including Brown Mudfish, Shortjawed Kokopu, Banded Kokopu, Giant Kokopu, and Koaro. Parts of the Otaki 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 Project crosses waterways.

The Mangaone and Waitohu Streams have flourishing native bush cover along the upper reaches in the Tararua Forest, providing clean stream flows 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 Otaki and Te Horo Townships. This increases

levels of phosphorus, nitrate, ammonia, sediment and faecal bacteria causing weeds and algae to grow.

Native plants have been established adjacent to the Mangapouri Stream through the Pare-o-Matangi Reserve, but due to habitat degradation, there are few invertebrate and fish species present.

The Otaki River provides healthy habitat for native fish and invertebrates. However a lot of the small streams which run into the Otaki River do not. GWRC has put emphasis on improving these streams.

Native vegetation is being planted by GWRC and Friends of the Otaki River as streams banks are enhanced, following the Otaki River Environmental Strategy.

Typical existing riparian planting for streamsides in the area include willows, pine, native grasses, and exotic shrubs.

Design implications

Unless properly designed, construction of the Project 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 or mitigate aquatic ecology effects

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. Where practicable, encourage Expressway surface run-off to flow off the Expressway via an appropriate treatment train. Planting native vegetation along Expressway margins will help mitigate effects.

Refer to Section 4.2 to see the ULDF response to the existing vegetation and ecology in relation to the Project.

3.5 Land uses

Current

- The majority of the Project Area (Peka Peka to North Otaki) is currently zoned as rural.
- There are two zoned retail/commercial areas within Otaki Township: the Railway Retail Area, and Main Street Town Centre. The Main Street Town Centre serves the local Otaki community, while the Railway Retail Area serves both local and regional visitors.
- Many of Te Horo's community facilities (including Te Horo School) are located on the east side of the existing SH1, while the main residential area is on the west side. Therefore, connectivity across the existing SH1 is important for the functionality of the settlement.

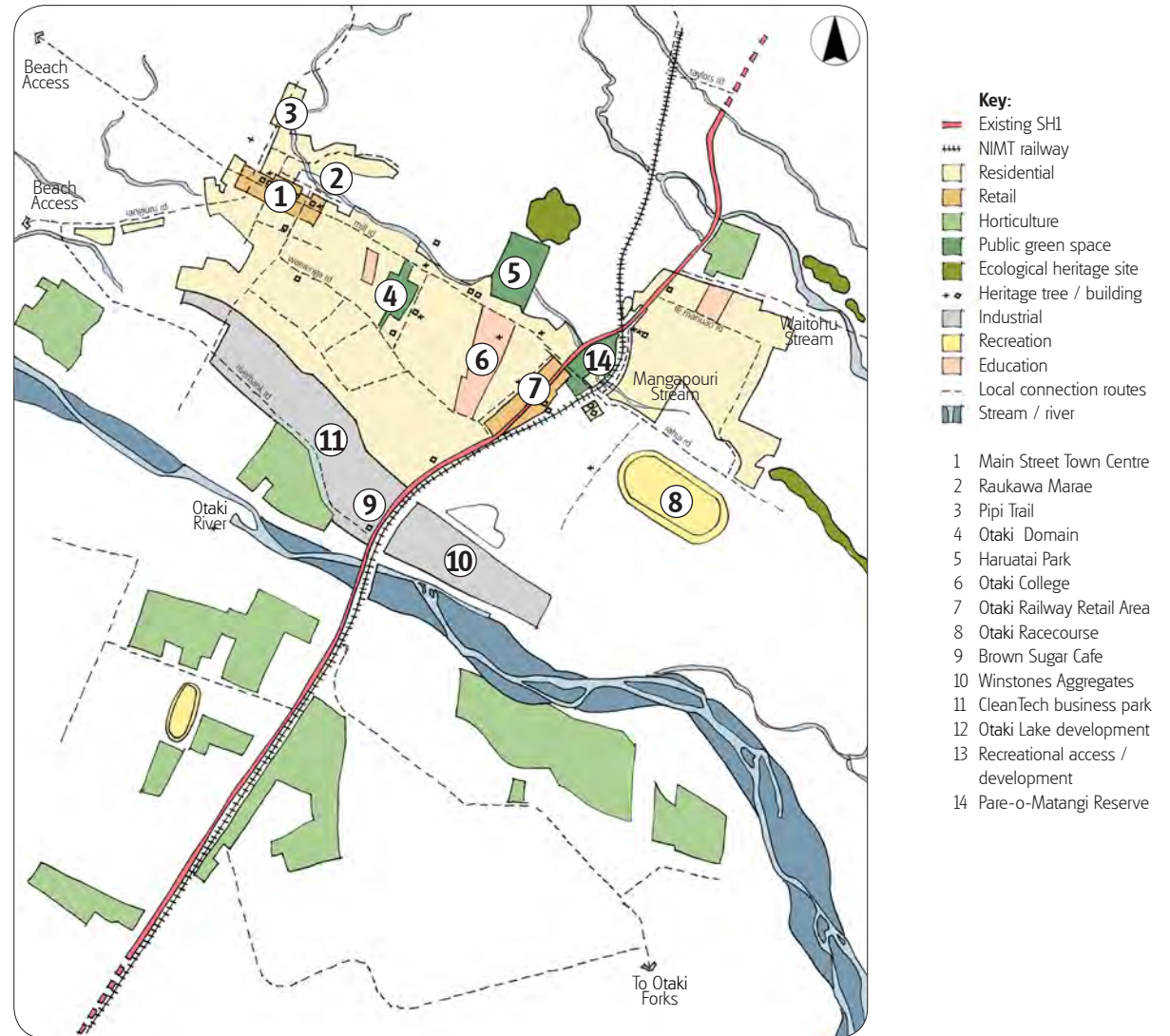


Figure 13. Current Otaki land use

Future

- Within the Project Area, KCDC has expressed desire for future industrial and residential growth to be based around Otaki.
- Development of the existing industrial zone along Riverbank Road 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 a proposed Otaki Lake Development, which includes the development of a lake and amenities to the north of Winstones Aggregates on the northern bank of the Otaki River. The Project alignment runs along the western side of the Otaki Lake area so consideration will need to be given to how local access to the area would be achieved.

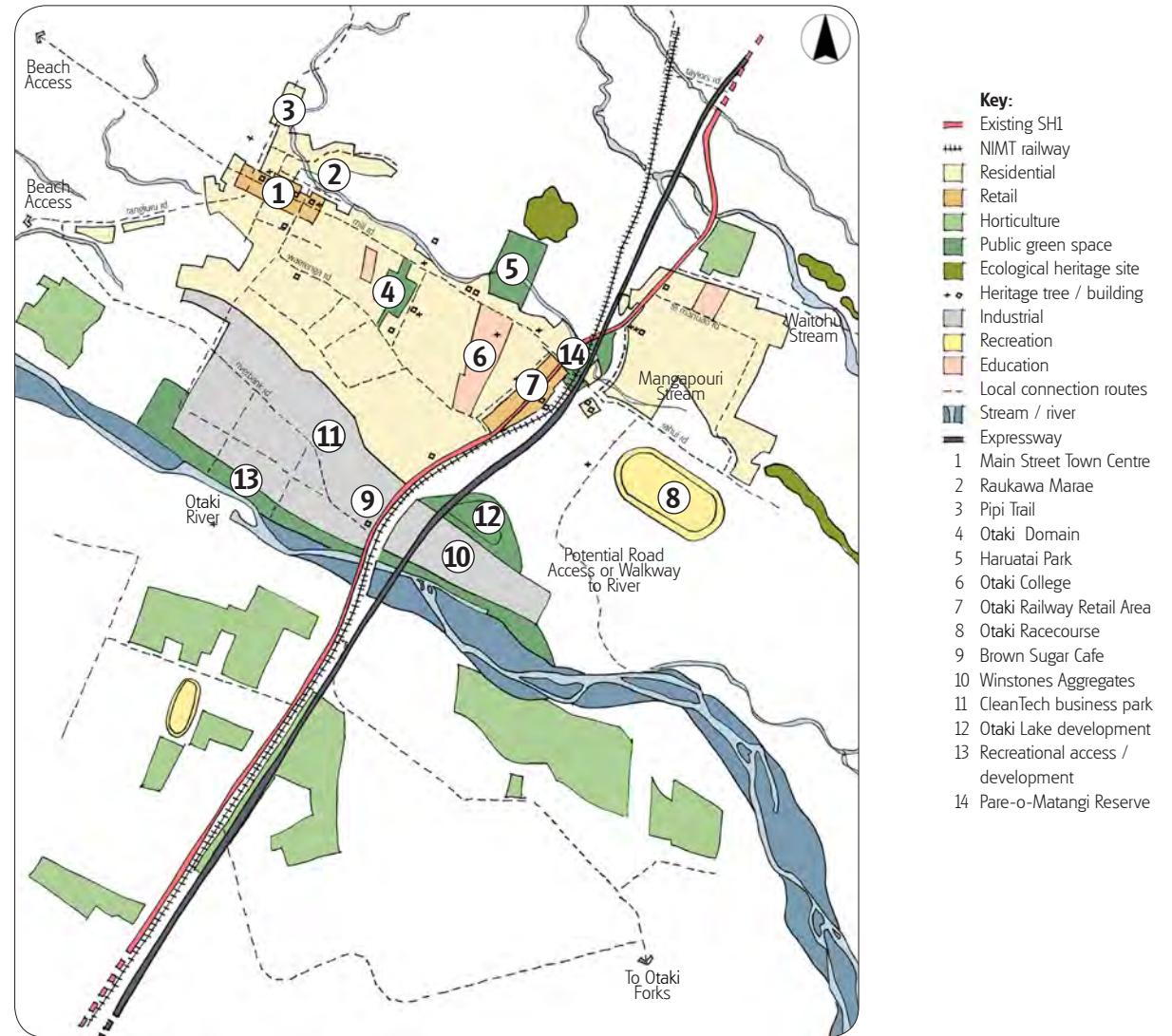


Figure 14. Otaki Vision land use, plus Project

3.6 Character areas

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

Refer to Figure 15A.

Rural

The majority of the Expressway corridor passes through rural land as outlined in Figure 15A, with the resultant rural character being dominant from Peka Peka to Otaki River (the Hautere Plains), and then from Waitohu Stream to Taylors Road.

The former marine terrace escarpment immediately east of the SH1/Peka Peka Road intersection contained the southern end of the Project 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 existing SH1 and NIMT railway, the land flattens out to a localised area of broad plain that drains towards the Otaki 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 and kanuka in the area.

A small area of rural landuse is visible east of the existing SH1 and NIMT railway within the Otaki River floodplain and then the rural aspect becomes obvious again from the river terrace to the north of Rahui Road. 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' from their immediate rural surroundings.

Residential

Within the Expressway corridor the main areas of residential character are confined to the Otaki Township area with a section of residential ribbon development on the west side of the existing SH1 just north of Otaki River and on both sides of the existing SH1 immediately north of the northern river terrace and the local railway overbridge.

Many of the dwellings whose sections front onto the existing SH1 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 Project Area are focussed on Otaki, being the immediate southern bank of the Otaki River and Pare-o-Matangi Reserve, and an 'island' of land between Rahui Road and the Otaki Railway Station.

Industrial

Currently industrial landuse within the Project corridor is confined to the immediate area of the northern bank of the Otaki 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 existing SH1 as the bridge structure obscures the view.

Commercial / retail

Predominantly retail landuse forms the focus of the Otaki Railway Retail Area (described in Section 5.4). The visual diversity and retail outlet business activity within this area is one of the most memorable aspects when travelling through this section of the existing SH1.

While the amenity in this area is currently degraded by traffic congestion (which will be reduced as a result of the Project), it is a focus and vibrant part of the local community.

Transportation

A subsidiary landuse, but common to the whole of the Project 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 Project corridor traverses 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 Project 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 planted noise bunds rather than noise walls (should specific 'built' noise mitigation be required).

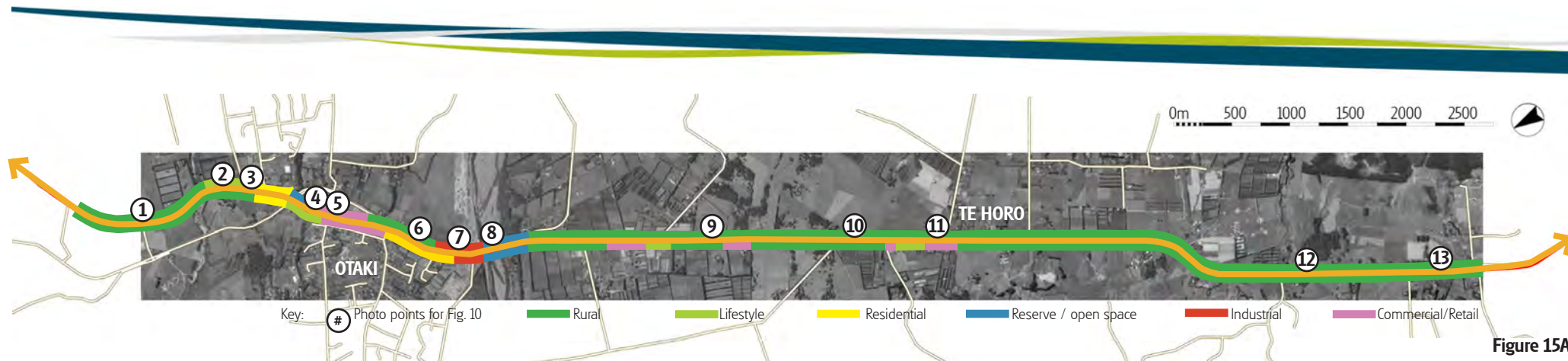


Figure 15A.
Urban and landscape character areas



1. Taylors Road

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



2. Northern Regional gateway

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



3. West Otaki residential

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



4. Rahui Road roundabout

SH1 traffic is often congested at this roundabout. Pare-o-Matangi Reserve is to the east.



5. Otaki Railway Retail Area

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 Otaki River. Eastern foothills visible again, indicating end of urban area.



8. Otaki River/gateway exit

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



9. Rural / light commercial

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



10. North Te Horo

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



11. Te Horo Beach Road

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 Road

Rural properties border both sides of the SH1, with the Tararua foothills still visible. At the southern extent of the project the Te Hapua escarpment rises to the east of the SH1.

Figure 15B.
Current State highway travel experience

3.7 Tangata whenua and heritage



The Kapiti Coast has a rich history - both Maori and European. It is important to understand the diverse cultural heritage of Otaki, 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 and celebrate the area and the community. Input by the Project team's archaeologists and heritage specialists in hand with iwi liaison is an integral part of the design process for the Project.

The tangata whenua of the District are Te Āti Awa ki Whakarongotai, Ngati Raukawa ki te Tonga, Ngati Toa Rangatira, and their whanau and hapu. Ngati Raukawa ki te Tonga are the predominant iwi of the Project Area.

The Nga Hapu-o-Otaki Cultural Impact Assessment (CIA) has been prepared for the Project to identify the specific cultural values that may be affected, and to ensure appropriate measures to avoid, remedy or mitigate any adverse effects are identified. Refer to the CIA or the specialist Archaeological and Built Heritage reports for the AEE for more information.

The CIA has notes that the sand dunes at North Otaki are of cultural significance, as well as Te Horo Pa, and the area has been identified as potentially containing

archaeological evidence.

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 Kapiti Coast, utilising the areas marine, coastal, wetland and forest resources.

1822 to 1824- Te Rauparaha joined Ngati Toa iwi from Kawhia to Kapiti.

1825 to 1828- Te Rauparaha and his allies (Ngati Raukawa and Te Āti Awa) migrated to Horowhenua and south of the Otaki 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 Otaki from 1839, and taught the Maori to cultivate wheat.

1840- Maori 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 Maori of the Region.

1851- Rangiatea Church built in 1851 by

hundreds of Maori under the leadership of Te Rauparaha.

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

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

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

1886- Railway was established between Wellington and Longburn. Otaki Maori Racing Club established - This is the only Maori racing club in New Zealand.

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 Otaki.

1930- All Saints Anglican Church was built.

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

1980s- Commerce and industry grew at Otaki

1981- Te Wananga o Raukawa, the Maori University of Otaki was established.

1989- Kapiti 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 (New Zealand's oldest surviving Maori 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 Otaki.

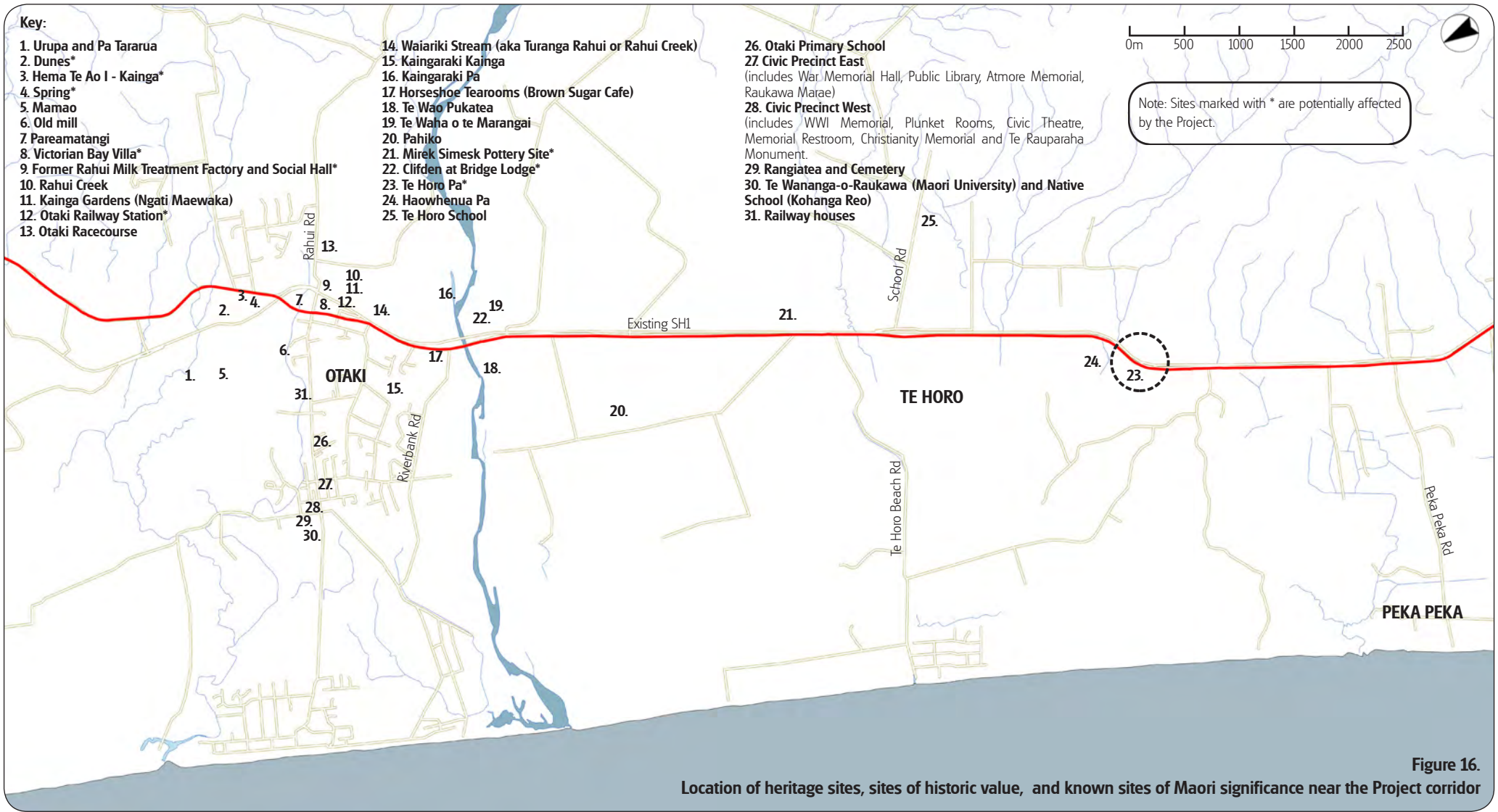


Figure 16.
Location of heritage sites, sites of historic value, and known sites of Maori significance near the Project corridor

Reference: Base Map information taken from QuickMap V73.146

3.8 Community facilities

Town Centres

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

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.

Churches

- The majority of churches are located along Mill Road and Main Street, which indicates that they will be affected by the Project unless the strong east-west connection along Mill Road and Rahui Road 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 existing SH1 on the Te Manuao Road corner.

Sports facilities

Otaki Racecourse (located along Rahui Road) 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, *'largely because of its ideal location in the central lower North Island and excellent training facilities.'*⁵

Reserves

- Pare-o-Matangi Reserve does not hold reserve status under the Reserves Act, but is a green space of importance to the community. The CIA notes the reserve is also of importance to iwi as there was historically a Hauhau community living there and because a Ngati Maiotaki chief named the land.
- Pare-o-Matangi Reserve will change significantly as a result of the Project. This provides opportunity: Firstly, if the reserve is extended, it can be developed to provide a buffer between the Expressway and Otaki. Also, the open space allows any underpass on Rahui Road 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.

Education

- Education facilities are well represented in the Otaki area, with 8 primary/secondary schools that fall within close proximity to the Project route: Te Horo Primary, Otaki College, Otaki School, Waitohu Primary, Otaki Health Camp School, St Peter Chanel School, Te Kura-a-Iwi o Whakatapuranga Rua Mano, and Te Kura Kaupapa Maori o Te Rito.
- The wider effects associated with accessibility, connectivity and safety may affect (or benefit) the schools within the Project Area and need to be considered.
- The east-west connection along Rahui Road and 'the ramp' (the existing SH1 bridge which provides access between east and west Otaki) is important for students to travel between school and residential areas.
- The schools located closest to the alignment and most likely to be affected are Otaki College, Waitohu Primary, Te Horo Primary, and Otaki 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 Project could create severance effects for the current connections between residences and schools.

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

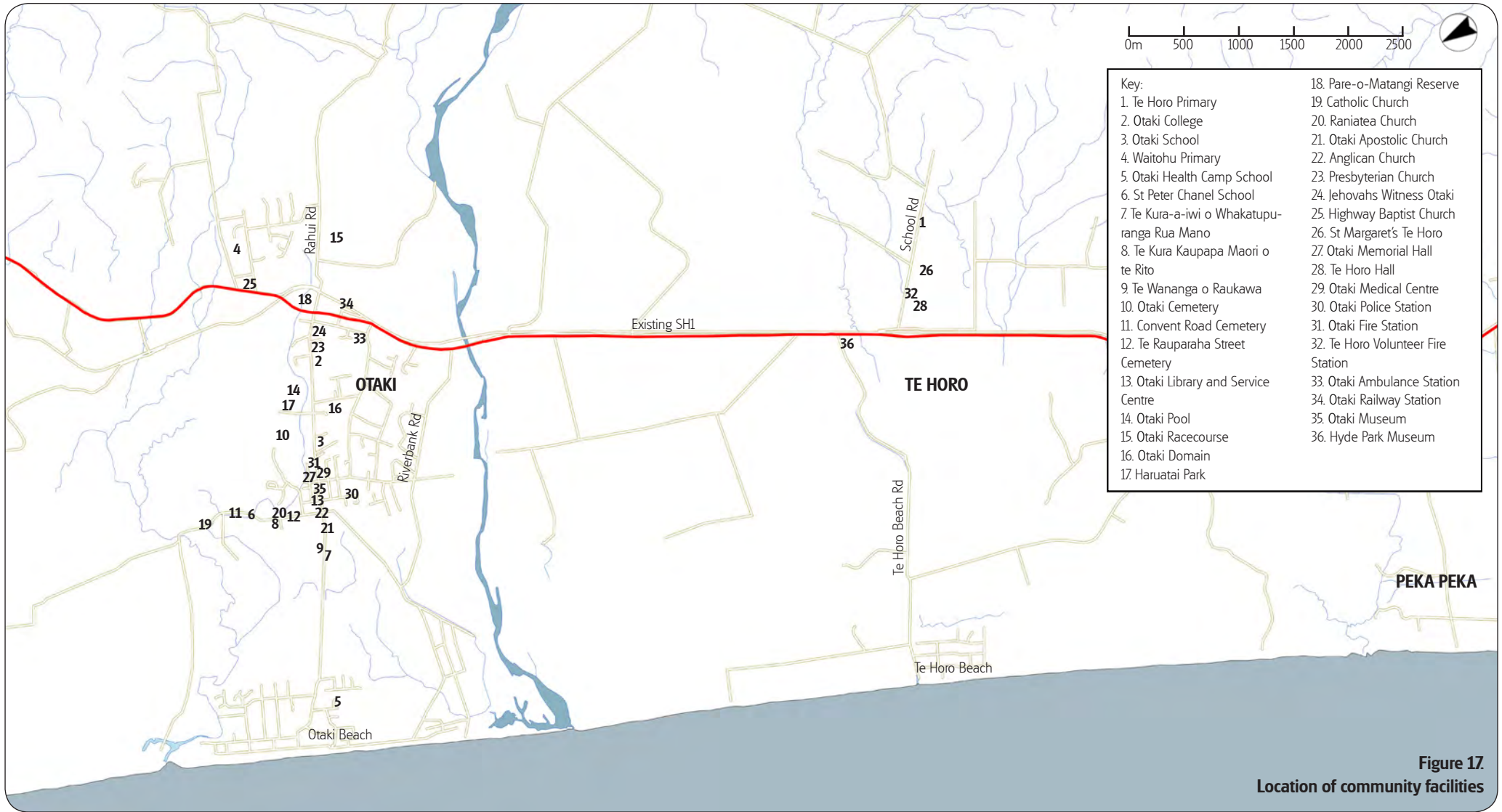
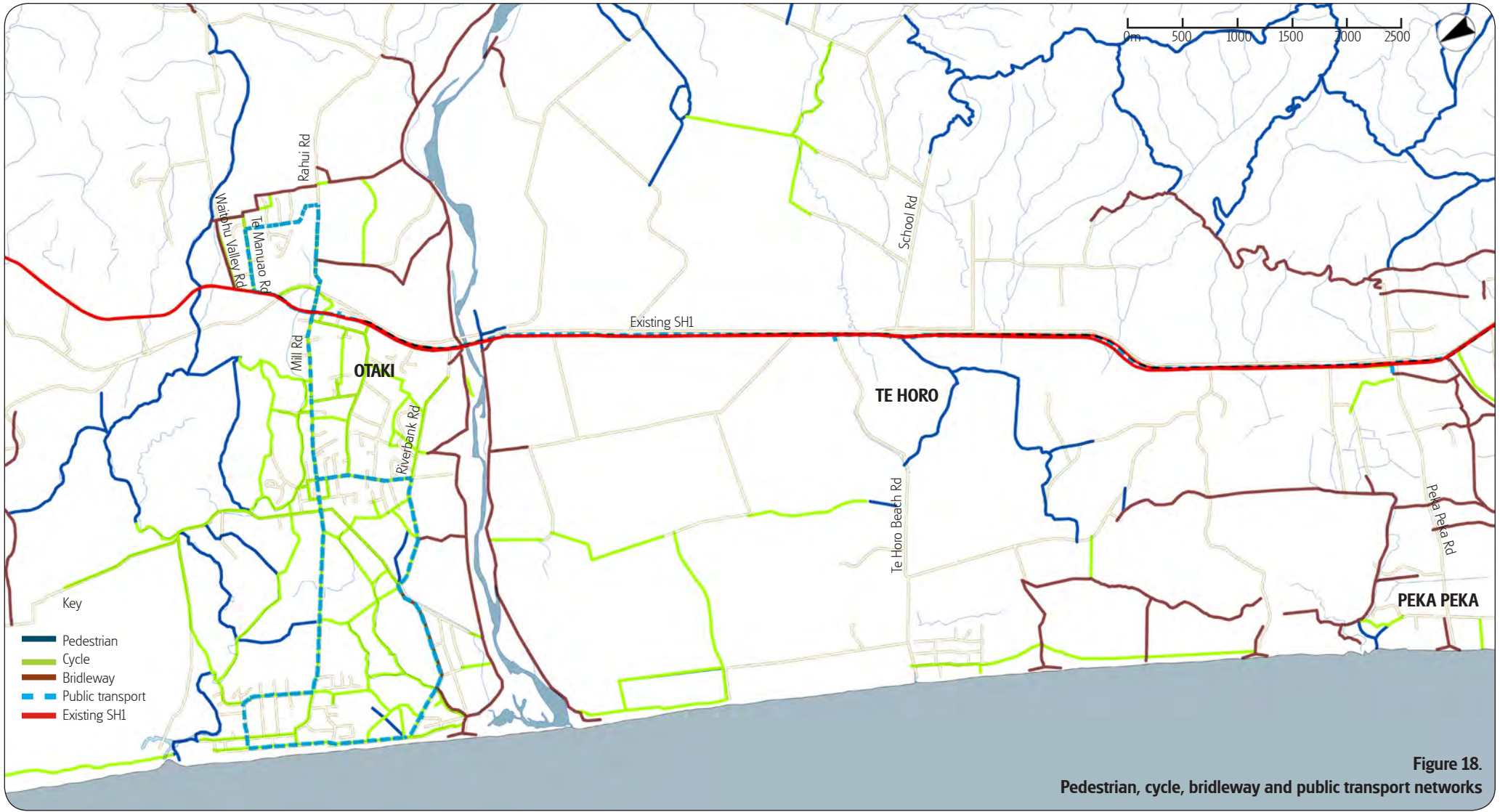


Figure 17.
Location of community facilities

Reference: Base Map information taken from QuickMap V73.146

3.9 Movement networks

- Currently the existing SH1 and NIMT railway corridor creates severance effects for pedestrians, cyclists and horse riders - particularly in Otaki and Te Horo. This severance corridor could increase with the creation of the Project. However, with careful consideration of the needs and movements of these users, decreased severance and improved community outcomes will result.
- In Otaki, there is a strong diagonal desire line between Mill Road and Te Manuao Road (the Waitohu Plateau). Therefore this movement network between the two residential areas should be maintained.
- Mill Road and Rahui Road 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 Road and Rahui Road 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 SH1, the railway station, Otaki Beach and locations to the south.
- In Te Horo, most community facilities are located to the east of the existing SH1, 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 Project and the NIMT railway corridor.
- The main bridleway routes run along the recreational paths parallel to the Otaki River and southeast towards the river from Waitohu Valley Road.
- Design and alteration to movement networks should 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 Project Area, distances are generally too great for walking to be a viable mode of transport. However, cycling is still feasible, especially for experienced cyclists. The provision of a safe route for cyclists along the length of the Project Area in addition to connections across the Project needs to be considered in the design of the Project.
- Allowance for future double tracking of the NIMT railway corridor along the length of the Project is a key criteria.
- It is also important to maintain accessibility to the railway station at Otaki.



Reference: Kapiti Coast District Council, Received 2004

3.10 Community consultation

Introduction

Consultation for an Expressway through the Project Area has occurred over an extended period of time with previous consultation occurring in 2001 and 2009.

The current consultation process began in February 2011 with the final consultation period beginning in June 2012. Throughout this process there has been input from and consultation with key stakeholders, affected land owners and the general public.

A range of methods for consultation were utilised. This included direct one-on-one meetings, engagement with specific stakeholders, workshops, letters, newsletters, brochures and open days.

Engagement with iwi, regulatory authorities and several key stakeholders has been on-going since 2010 when the current phase of the Project commenced.

The consultation and methods adopted were developed to provide targeted and effective engagement with iwi and consultation with stakeholders and the public.

A consultation strategy was developed to assist in the progressing of the investigation and design development of the Expressway proposal.

Previous of consultations

As stated previously, an alternative to the existing SH1 has been a topic of discussion and investigation for some time. Several key consultation events are now briefly outlined below.

1998 consultation

A study of the area between Himatangi and Waikanae was undertaken in 1998 and consultation for that Project occurred. The two routes for the current Project Area that arose out of the 1998 investigations and reporting, and on which consultation was undertaken were a coastal route and a central route.

2001 consultation

The objective of the 2001 consultation was to focus on specific Project development and effects on the environment and properties.

The consultation process included a presentation to the Otaki Community Board, general distribution of two Project

newsletters and a public open day in Otaki.

2002 consultation

The 2002 consultation process was undertaken to focus on the Otaki – Te Horo Expressway preferred route. This followed on from the 2001 consultation on alternative options.

The purpose of the 2002 consultation was to provide widespread public knowledge of the preferred route for the Otaki – Te Horo Expressway and a range of opportunities for potentially affected landowners and interested people to meet with the then Transit representatives to discuss the Project and its effects.

Current phase of consultation

2009 consultation

As part of investigations into improvements into this section of SH1, it was announced on 20 August 2009 that the NZTA would be consulting on four-lane Expressway options from MacKays Crossing to Peka Peka and from Peka Peka to Otaki. These two sections formed the Kapiti Expressway.

The NZTA's objectives for consulting on

the Expressway proposal were to:

- Inform affected communities, key stakeholders, iwi and the general public about the proposal;
- Provide an opportunity for these parties to give feedback to the NZTA on the Expressway proposal;
- Provide the NZTA Board with an understanding of the views of the affected community, key stakeholders, iwi and general public regarding the proposal; and
- Provide a method of community, stakeholder and general public engagement on the preferred route for a four-lane Expressway from Peka Peka to North Otaki, which meets the requirements of the LTMA.

The consultation included sending brochures to over 26,500 postal addresses in the Kapiti Coast District, open days and meetings with stakeholders. These included potentially affected property owners and key stakeholders such as KCDC and local iwi.

A total of 1,720 submissions were received on the section of the Expressway proposed for Peka Peka to North Otaki.

The 2009 consultation can be considered

as the beginning of the current phase of consultation as feedback formed the basis for locations of interchanges and cross corridor connections for the scoping process leading up to the 2011 consultation.

Feedback from the 2009 consultation highlighted substantial support for an Expressway throughout the District, however there were concerns about the affect that it may have on local communities and directly affected people.

2011 Consultation

The focus of this consultation was to gain feedback, obtain information and get assistance in refining the form, function and location of interchanges and connections. This specifically related to:

- Alignment options around Te Horo and Mary Crest;
- The location of interchanges north and south of Otaki; and
- Cross corridor connections located at Rahui Road, Old Hautere Road and Te Horo.

Directly affected landowners were encouraged to attend the open days, and were met on site on an as-required basis.

The outcomes from the 2011 consultation were communicated to the community through a newsletter in September 2011.

2012 Consultation

The Expressway location and form were confirmed in January 2012 following the Scheme Assessment Report Addendum and communicated to the community through a newsletter soon after that.

The refinements to the design and the preliminary mitigation measures that had been developed to mitigate environmental effects were then taken back to the general public and key stakeholders in June 2012.

Feedback was received from key stakeholders, iwi and the local community. This feedback was used to finalise the mitigation measures for the Project and to ensure all matters that are required to be considered through the design, are in fact considered.

Leading up to the 2012 consultation, each of the directly affected landowners were written to advising of the consultation on mitigation. Where there had been a change in the land area affected by the Project, the directly affected landowners

were met with individually.

Where there was a need for mitigation on a property as a result of the Project, these landowners were also met with individually to discuss the need for the mitigation and what the options for mitigation were.

Parties consulted

The following parties have been consulted as part of the proposed Expressway development process.

- Directly affected landowners;
- Wider community;
- Greater Wellington Regional Council;
- Kapiti Coast District Council;
- Otaki Community Board;
- KiwiRail;
- Raukawa;
- Nga Hapu o Otaki;
- Muaupoko;
- Various transport industry organisations;
- Various statutory agencies;
- Community, business and interest groups including Friends of the Otaki River and Keep Otaki Beautiful; and
- Emergency services.

Communication with the public

The methods of communication were generally the same for both the 2011 and 2012 consultation periods. The community was consulted with by sending out information brochures and holding two public open days for each of the 2011 and 2012 consultation phases. The brochures also provided links to a website and an 0800 number where further information could be gained.

Summary of 2011 feedback

The main themes that were submitted on during the 2011 consultation included general support or opposition, design, local accessibility or connectivity, property, construction issues and environmental effects. Some of these are elaborated on below, but all have been considered in the design process.

General support or opposition

Many submitters highlighted the need for an Expressway through the Project Area citing the congestion issues that they experience. Some stated that the Expressway needed to get under construction as soon as possible. Many

reiterated the transport benefits and District/Regional importance of the Project.

Alternatively, concern was raised by submitters concerning the affect that the Project would have on the communities, particularly severance of Te Horo settlement and Otaki Township. Many also highlighted the affect that the Expressway would have on their property and that it will remove a lot of homes.

Construction issues

A number of submissions commented on a range of construction issues. The common themes were timing and staging ('get on with it please!'), cost and commercial viability.

Summary of 2012 feedback

There were a total of 36 submissions received during the 2012 consultation period. The main issues that were raised in submissions included:

- Flooding;
- Geotechnical;
- Stormwater;
- Railway issues;
- Noise;

- Landscape;
- Emergency services;
- Heritage and culture; and
- Property access.

Among the issues raised, a number of attendees were concerned about potential visual and noise effects to their properties. Residents were also concerned that there was a lack of noise mitigation measures in the design and that they had not had enough prior detail on the potential effect of the alignment on their properties.

Residents in the area raised concerns about access to the Expressway, particularly in the Te Horo area. Residents immediately adjacent to the proposed alignment raised concerns about access to their properties once the Expressway was operational.

Each of the comments and feedback topics raised were passed to the Project team to ensure that the final mitigation developed reflected these comments where possible.

Landscape and urban design

Key urban design and landscape themes raised during the 2012 consultation include issues relating to bunding, planting, screening and design development of the Project.

Public feedback

Requests for bunding and planting to screen views of the Expressway were noted from a number of residents. In particular, several Old Hautere Road residents stated that they wanted planted bunding to extend 300-500m southward of the end of Old Hautere Road to improve screening of the Expressway, and reduce noise effects. This feedback was considered by the Project team and as a result the proposed bunding for the Project has now been extended.

Another common concern from property owners was that shelterbelts and fencing would be lost as a result of the Expressway. It is expected that Project mitigation will include replacement of shelterbelts and fencing where appropriate.

Feedback from KCDC

The submission from KCDC also highlighted a number of points related to landscape and urban design, which

includes the following:

- KCDC has expressed an interest in the design development of the bridges along the Project length.
- KCDC has emphasised their desire for bunding and embankments to reflect the natural landform of the area (such as dunes or river terraces).
- KCDC has asked that planting along the edges of the Expressway is undertaken in a way that reflects the context of the various areas and environments along the Expressway. For instance, in the Te Horo area, the planting of totara could increase the coherence of the existing totara stands. Again, the intention of the planting design development would be to reflect the local vegetation patterns and biodiversity of the area.
- KCDC has expressed in their submission that appropriate 'like for like' landscape mitigation is undertaken for the loss of land (and its associated amenity) within Pare-o-Matangi Reserve. KCDC would like directly affected trees in Pare-o-Matangi Reserve to be transplanted where possible, and that landscape and planting development of offset

land to be started as early as possible.

As a key stakeholder, for the Project, KCDC will be involved at key stages during the design development. Their above comments about bunding and planting, and the treatment of Pare-o-Matangi Reserve have been considered and are acknowledged within the design principles outlined in Sections 4 and 5 of this ULDF.



Figure 18B. A public consultation open day in Otaki in 2011.



Section 4. Corridor design

4.1 Overarching principles

DESIGN ISSUES	DESIGN OBJECTIVES
Local connectivity	
The existing Kapiti communities are severed in places by the NIMT railway line and/or existing SH1. The proposed Expressway could potentially exacerbate this.	Link the communities of the Kapiti Coast at a regional and local scale. Ensure appropriate and efficient east-west connectivity is provided across the Project, local arterial (former SH1) and NIMT railway corridors. Ensure that existing and future multi-modal networks are not precluded.
Design continuity with the overall RoNS	
The Project route is approximately 12.2km long and passes through various character types. Other Wellington Northern Corridor RoNS projects will tie into the 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 Expressway elements in liaison with other RoNS project teams to provide Expressway users with a unified and integrated route that responds to its context (rural, lifestyle, urban). Expressway elements contributing to design consistency include cut and fill batters, bridges, culverts, retaining walls, side and median protection, landscape treatments, noise barriers, road furniture and 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 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 new local arterial road (former SH1), Expressway, NIMT railway (and sometimes a local road too) running parallel for parts of the Project length, the footprint is likely to be quite dominant.	Ensure the Project footprint size is kept to the minimum practicable.
Business sustainability on the local arterial (former SH1)	
Businesses along the proposed local arterial are likely to change in a natural process of "succession". As through traffic is removed and the quality of the environment improves, retail activity 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 activity evolving along the strip of land between the local arterial and the Expressway. In this location, sites are conspicuous to motorists on the Expressway and accessible via the new local arterial road. However, this risk is substantially reduced by placing Expressway off-ramps well before the Township.	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 and out of Otaki. Ensure that access to the local arterial businesses at Te Horo and Old Hautere Rd is also a legible, efficient and pleasant experience once the former SH1 becomes a local arterial route. Where practicable, specify materials in the Expressway design which can be sourced locally (for example, aggregates), to support local economy.

DESIGN ISSUES	DESIGN OBJECTIVES
Local arterial road (former SH1) treatment	
Community engagement involving local businesses, iwi and community support is crucial.	Ensure the transition of the existing SH1 to a local arterial road is successful in terms of improving community connectivity, and being a pleasant local environment.
Project route character	
Route character is one of several 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 an Expressway alignment that retains and provides views of key features (e.g landform, waterways, historic sites, etc) along the Project. 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 Project 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 NIMT railway, local arterial, and in some places an additional local connection, creates some residual, landlocked or '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 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.	Continue to 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.	Continue to 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 and planting

General objectives

- Maintain and enhance the natural landform patterns where practicable.
- Establish the Expressway as an attractive environment, integrated with the wider landscape.
- 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 Project and/or existing SH1 include:
 - Foothills of the Tararua Ranges
 - Otaki River
 - Sand dune topography
 - Otaki Township
 - Otaki Railway Retail Area
 - Otaki Lake development
 - Otaki 'Clean Tech' area
 - Mary Crest bush remnants
 - Te Hapua sea cliff escarpment between Te Kowhai Rd and Te Hapua Road
- Create a landscape that contributes to improving ecological value and biodiversity within the designation

and in the surrounding environment. This would also utilise a series of green fragments or 'fingers' along the Project length (refer to Section 5.4 of this document).

- Ensure the experience of travelling through different character areas is maintained both along the Expressway and the local arterial (existing SH1). It is important that road users experience transitions between rural and urban areas for way-finding purposes, and for variety along the journey.

- Where practicable, treat Expressway surface run-off via an appropriate treatment process such as swales and/or planting with native vegetation along road margins. This will treat the run-off before it drains to streams or enters the ground water.

- Where appropriate, establish screen planting and re-establish affected shelterbelt patterns to reduce the visual effect of the Expressway and traffic within the wider landscape.

- Mitigate ecological effects 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.

- Create a self sustaining, low maintenance landscape.

- Create a safe user environment by ensuring that the landscape treatment does not impede the efficient use of cycleway, walkway, and/or bridleway footpaths.

- Median widths should be consistent with the wider Wellington Northern

Corridor RoNS where practicable. Within a 6m median, low height and low maintenance planted medians are preferred to grass, due to the maintenance requirements for mowing grass and subsequent lane closures to do so.

Local arterial road objectives

- The SH1 Revocation Project should identify opportunities to convert the existing SH1 into an attractive local road environment, conducive to local traffic, as well as pedestrian and cyclist activity.

Gateway objectives

- Gateway treatments should be located along the Expressway before the approach to off-ramps which provide access to Otaki from the north and south. Informing Expressway users of access points to Otaki 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 (Otaki River to the south and Waitohu Stream to the north) 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 and 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" as stand-alone elements.

- Any signs and commissioned artwork should be considered as a complimentary part of the gateway experience and draw on the Otaki Vision and sense of place.

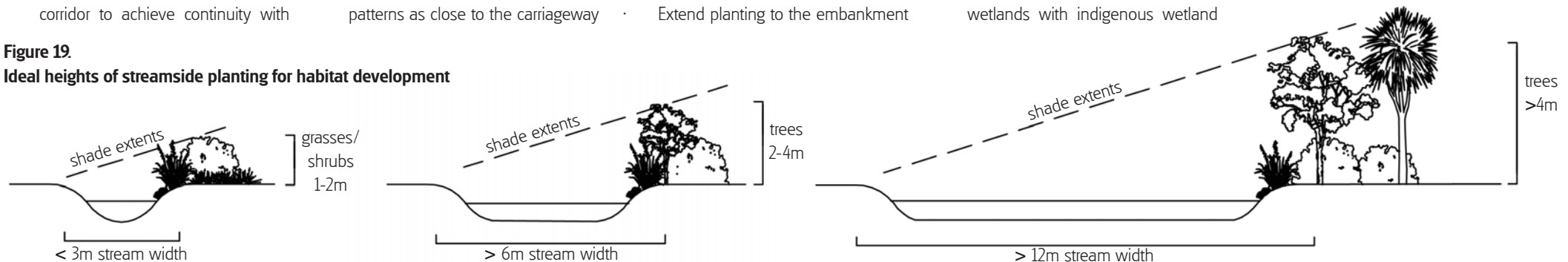
- Formal, bold planting design shall be integrated with signage at entry/exit thresholds to Otaki. Consider integration of sculptural or cultural elements influenced by local artists in these formal planted gateways.

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 Project 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 Kapiti Ecological District.
- Ensure that underlying landscape patterns continue on both sides of the Project 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.
- Planting will provide all year round visual interest, maintain ecological corridors along the Project and will also be located to frame key views towards the western foothills of the Tararua Ranges, and gateways.
- Design planting to reflect the character of specific aspects and locations along the Expressway as follows:
 - **Planting on riparian margins**
 - Where waterways are crossed by the Project and riparian margins can be fenced from stock, riparian margins should be planted with native riparian plants 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, provide habitat and restore vitality to the waterways.
 - Encourage multifunctional riparian planting, with the aim to provide 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 Kapiti Coast.
 - Use riparian and margin species indigenous to the area. Appropriate plant species are listed at www.gw.govt.nz/ecological-zones-of-the-wellington-Region.
 - Where practicable, follow Figure 19 as a guide for streamside planting for habitat development.
 - When selecting species for planting adjacent to the Otaki River, refer to the Otaki River Environmental Strategy (1999), and consider how proposed planting will tie in to any adjacent planting Friends of the Otaki River (FOTOR) has undertaken in the area.

Figure 19.
Ideal heights of streamside planting for habitat development



Screen/buffer areas

- Where appropriate, place screen planting to mitigate the visual effects that the Project will have on the travelling public and residential properties, while contributing to the visual qualities of the Project corridor.
- The retention of existing planting will be considered to retain screening for various properties adjoining the Project.

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.

Urban and recreation areas

- Planting design for areas that will become KCDC's maintenance responsibility such as along the existing SH1 and in Otaki 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 Otaki 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.
- As discussed with Keep Otaki Beautiful and KCDC, consider early planting, particularly in the proposed reconfigured Pare-o-Matangi Reserve. This would allow some new vegetation to establish prior to the removal of the eastern side of the realigned NIMT railway and Expressway.
- Involve Keep Otaki Beautiful and KCDC in the plant species selection for the reconfigured Pare-o-Matangi Reserve.



Figure 20. The Otaki Railway Retail Area and Otaki Railway Station (bottom left of the picture), and the Waitohu Plateau and Pare-o-Matangi Reserve (centre of the picture).

4.2.2 Earthworks

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

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

- 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 and sides 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

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.

- 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 near streams or ephemeral watercourses.

- Locate spoil disposal on areas of pasture or adjacent to proposed embankments (to enable embankment slopes to be flatter and merge with the surrounding terrain), 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 bunding or screening.
- Locations for spoil disposal will be identified as the design progresses.

Soil and construction activities

The construction activities associated with highway development may affect 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:

- Aim to limit construction activities to the footprint of the works (including the contractors yard and stockpile areas) to minimise unnecessary damage to soil structure.
- Use topsoil harvested from site to cover exposed subsoils after construction is completed.

4.2.3 Structures

Bridges

Where bridges are visible from surrounding communities, or the highway, the following general objectives apply:

1. To develop a set of design consistencies for bridges according to type (who experiences the structures) and hierarchy.
2. To make a positive contribution to the surrounding environment and communities.
3. To ensure new bridges complement their context with an appropriate form, scale, design and quality, and consider the relationship to existing bridges (road and rail).
4. To ensure all users are considered and catered for. All local road bridges should cater for pedestrian and cyclist access.
5. To consider the design quality of the bridge: amenity, aesthetics, of the experience, safety, accessibility, and landscape design.
6. To make a positive contribution to highway users and the driving experience.
7. To consider the opportunities for consistency of bridge elements across the Wellington Northern Corridor RoNS.
8. To ensure the bridge location and geometry fits in well with the wider movement network, making a positive contribution to the urban form.



Figure 21. Existing view of the SH1 and NIMT railway bridges from Chrystalls Bend Walkway



Figure 22. Visualisation looking towards the proposed Otaki River Expressway bridge and South Otaki Interchange from Chrystalls Bend Walkway

Additional to the general objectives outlined on the previous page, the following principles apply to the design of bridges:

Accessibility (pedestrian and cycle)

- 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 practicable, create new connections to existing pedestrian and cycle networks or desire lines. For example, a pedestrian and cycle connection to Pare-o-Matangi Reserve from the proposed new 'ramp' bridge.

Barriers

- Ensure that barriers are fully visible, with clean, uninterrupted, continuous lines.
- Ensure that barriers extend well past abutments to transition the bridge into the landscape.

- Enhance the barrier surfaces through use of colour, form, and materials informed by the local topography, history, land use and ecology.

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 Otaki River.
 - Ensure that colour is not a dominant feature in rural settings.
- ### Form and scale
- Consider the 'family' of bridges when designing the form of the bridges. Refer to 'Experience' over the page.
 - 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.

- 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.

Landscape development

- Where suitable, plant the bridge area, and any sloped abutments to provide integration into the surrounding landscape, and reduce the visual effect of ramps and barriers.

- Consider the natural topography - could it be an advantage to the bridge design?
- Where practicable, plant or grass the embankments on bridge approaches with slopes 1h:2v or flatter.

Consider viewshafts of the local landscape features (e.g. the Tararua Ranges, the dunescape, and Otaki River) from the bridge.

Maintenance

- Select durable materials and finishes, and 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.
- Ensure lighting design at interchange bridges (quantity, location and type) creates a safe environment

for pedestrians, and prevents vandalism. Pedestrians and motorists often have quite different lighting needs. Sometimes, separate installations are required for each user group.

- Consider CPTED principles when designing bridges and planting layouts. Natural surveillance should be encouraged - can pedestrians be seen while using the bridge?

Services

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

Experience

The bridge design to date has been developed with careful consideration of consistency, user experience and value. As the Project progresses, it will be important to continue to consider the visual experience for the various user types both on and under the bridge. Design consistencies are desirable for structures 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.

Tables 4, 5 and 6 explain the design consistencies based on those who are experiencing the bridge.

User	Expressway underpasses - Expressway user under local vehicular 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 appear consistent in their 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 visual outcomes.
Design priority	Highest
Bridges	<ul style="list-style-type: none"> · Bridge 2 · Bridge 4: Rahui Road Underpass · Bridge 6 · Bridge 8: Te Horo Underpass

Table 4. User experience for Expressway underpasses

User	River bridges - local user under Expressway bridge
Considerations	<ul style="list-style-type: none"> · There are two river bridges, 1 and 5 (crossing the Waitohu Stream and Otaki River). These bridges will be mostly visible to recreational users passing under the structures. This is more of a factor at the Otaki River, at present there is no intention for there to be recreational access under the Waitohu Bridge. · Due to the location of the new local arterial road and rail bridges the Expressway bridge will have only limited visibility from local roads. · The intention is to ensure a clean, simple design that provides open views for users on the Expressway. · Split bridges providing light between.
Design priority	Moderate
Bridges	<ul style="list-style-type: none"> · Bridge 1: Waitohu Stream Bridge · Bridge 5: Otaki River Bridge

Table 5. User experience for River bridges

User	Rail bridges - train user or property access under Expressway bridge
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 property access serving a number of properties. · Other than by rail users, bridges 3 and 7 are relatively hidden from view 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 can 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 has been given to open up end sections of the structure to provide a more open and naturally lit experience.
Design priority	Low
Bridges	<ul style="list-style-type: none"> · Bridge 3 · Bridge 7 · Bridge 9: Mary Crest Rail Bridge

Table 6. User experience for Rail bridges



Figure 23. Existing view looking towards Rahui Road and County Road from the SH1 'ramp' bridge



Figure 24. Visualisation looking at the proposed Expressway and Rahui Road Underpass with the proposed Kennedy wetland to the left, and reconfigured Pare-o-Matangi Reserve to the right

Retaining walls

There are no retaining walls currently proposed as part of the Project (other than those associated with bridge abutments).

Culverts

Where culverts are to be used, and are visible to road users and/or members of the community, the following design principles apply:

Headwalls

- Minimise effects on streams and watercourses by designing shorter culvert lengths, and providing energy dissipation where practicable.
- Where practicable, for visual consistency (as well as ease of maintenance and construction), design similar headwall solutions along the length of the Project. Currently there is an exception at the Kumutoto culvert where a drop structure will be required to carry water under the road.

Fish passage

- Provide fish passage in all perennial and intermittent streams that connect tributary networks in the Tararua foothills with the coastal zone.

- Set culverts at shallow gradients.
- Install culverts below the natural bed of streams to enable natural material to build up on the base of the culvert.
- Insert natural durable rock or artificial baffles within base of culverts to assist build up of natural material and to provide fish passage during normal flows.
- Construct rock ladders below downstream portal as part of energy dissipation and to aid fish access in to the culvert during low flows. Downstream culvert inlets should be constructed below the downstream minimum water level to avoid perched culverts.

4.2.4 Noise Mitigation

Note

Currently the noise mitigation recommended by the Project's noise specialist is to use OGPA (low noise) road surface at key locations along the route. It is expected that walls and bunds will not be required for noise mitigation, although landscape bunding (for visual screening or separation) and structural bunding (for flood protection) will have some benefits to noise levels.

General objectives

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

Alignment

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

Location

- Consider the effect on flood zones if creating bunds.
- If noise bunds are required, avoid locating the bunds where they will obstruct significant views (outlined in Section 4.2.1), both towards and from the road.

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 should be used in preference to noise walls.
- If there is any excess fill from the Project, consider using it in the creation of earth bunds.

Landscape development

- Ensure landscape treatment of earth noise bunds is integrated with the surrounding landform and character, and to provide an attractive interface to nearby properties and paths.

4.2.5 Pedestrian, cycle and bridleway Links

Note

- The recreational pedestrian and cycle corridor proposed (as well as the work required to change the existing SH1 environment to a local arterial road) shall be part of the separate SH1 Revocation Project. However, the design of the recreational walkway/cycleway should aim to integrate the principles listed in this ULDF.
- Proposed bridges at Te Horo, Rahui Road, and Otaki Gorge Road will allow pedestrians and cyclists to cross. The principles relevant to these bridges are covered in Section 4.2.3 of this ULDF.

The transition of the existing SH1 to a local arterial road provides the opportunity for a safe, pleasant pedestrian and cycle corridor along the alignment. It also provides the opportunity to enhance connections with the existing bridleway network. The location of the potential recreational corridor is indicatively shown on the Landscape Plans (and Figure 25 below) and could tie in to existing recreational paths such as Chrystalls Bend Walkway along the Otaki River, existing bridleway networks (such as towards Otaki Forks,) and Pare-o-Matangi Reserve.

The design of pedestrian, cycle and bridleway links should consider 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 this recreational corridor opportunity:

- Shared paths are for use by pedestrians and low speed recreational cyclists. Path gradients will be consistent with NZ accessibility standards where possible.
- Safety, coherence, convenience, directness (desire lines), comfort and attractiveness must be considered in all path designs.
- The preferred gradient for shared cycle and pedestrian paths is a mean of 5%, 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 open space and pedestrian / cycle networks.
- Where the route traverses steep land, a smooth gradual gradient change with regular landings for resting should be provided.
- Intersection design must take into account safe, easy crossing for pedestrians, cyclist and where appropriate, horses.

Shared paths should be 2.5m minimum width to allow cyclists to safely pass pedestrians and other cyclists.

- 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.
- Consider viewpoint opportunities at Otaki River, Waitohu Stream, and locations where the Tararua Ranges and other key landscape features are visible.
- Shared lanes must have an even and continuous sealed surface.



Figure 25. Typical cross section north of Te Horo

4.2.6 Road furniture

Road furniture needs to be incorporated into the Project in a clear and legible way along the Project route, which meets current standards.

Expressway principles

The road furniture specified will be designed to meet current standards. Provision for safe maintenance access should also be considered as part of the design process.

Where appropriate and practicable, lighting, sign gantries and signage, guard rails, fences, wire rope barriers and median barriers should be designed as part of a coherent suite of Expressway furniture, consistent with that specified for other Wellington Region RoNS Projects, in particular the other Wellington Northern Corridor RoNS.

There may be some site specific traits which need to be treated differently (e.g. to avoid negative effects 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 (roads)

Where side barriers are required, where practicable the following principles should be followed:

- 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 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.
- Refer to Section 4.2.3 for design principles for bridge barriers.

Lighting columns

- Locate lighting at interchanges only (and where required for safety, legibility or threshold treatment), and in accordance with RoNS guide.
- Lighting poles should be located on outer edges, not in the median.
- To avoid visual clutter, use consistent heights within each group of light standards (i.e. Expressway and ramps as one group, and local roads as another group).

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.
- If appropriate, design gantry to be integrated with the signage.

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 planting at gateways should be established with KCDC. Any public art should be from local artists, and enforce the cultural identity of the area.

Local arterial principles

Given the SH1 Revocation is not part of the Project, the following principles are simply suggested considerations:

- Consider cohesive streetscape elements such as benches, rubbish bins, wayfinding signs, and paving design, particularly through Otaki Township. This would 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.
- Consider continuity in themes, materials, texture and forms. 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. It is also important that the street furniture palette is consistent with the theme and art strategy.

- Consider a public art strategy. This should be consistent with the proposed theme (to be progressed by KCDC).
- Refer to KCDC guideline documents. The road furniture design should consider the KCDC 'Streetscape Strategy and Guideline' document.
- Consider the local road experience and local identity.
- Create a pleasant environment to entice repeat visitors to the Railway Retail Area.

4.2.7 Stormwater

For culvert design principals, refer to 4.2.3.

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.
5. Choose plant species indigenous to the Kapiti Coast, and that are suitable to the hydrological characteristics of the wetland, basin or swale, and clear weeds and exotic species.

Wetlands and stormwater basins

- Where appropriate, optimise natural character, ecological, landscape and 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.
- Where stock is present in wetland areas, it will be essential to fence the

areas to exclude stock. Otherwise the investment and effort in creating and/or protecting the wetlands will be lost. Fencing to exclude stock from the Mary Crest bush remnants is recommended.

· Seek to integrate proposed treatment wetlands with natural stream environments to connect them visually and ecologically, if not hydrologically.

The existing Railway Wetland and Kennedy Wetland will be linked with a pipe. This pipe will maintain the existing wet conditions in the wetland. The water that flows out of the Railway Wetland will flow into the Kennedy Wetland. Low flows

(from groundwater seeping into the existing wetland) will keep the Kennedy Wetland wet most of the time, which will support a wetland plant community. The Kennedy Wetland will be formed behind the existing railway bund and this will provide flood storage volume to make up for the volume lost from the Railway Wetland (see Figure 26 below).

· Consider the design of the proposed wetland and basin at Mary Crest, so they may tie in to a recreational and 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.
- Re-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.
- Where practicable, use kerb and channel only at bridges, intersections and in locations where space is constrained.



Figure 26. View of the existing land adjacent to the County Road railway bund. This bund will be retained and planted once the railway alignment is shifted. The open horse paddocks will become Kennedy Wetland and Expressway.



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Section 5. Sector Design

5.1 Peka Peka to Mary Crest

Refer to Landscape Drawings for more detail around interchanges and Project alignment. A4 versions of the drawings can be found appended at the end of the ULDF, or A3 versions in the AEE Report.

Peka Peka to Mary Crest is a section of the Project that predominantly has a rural character, with the occasional lifestyle property evident. Between Peka Peka Road and Te Hapua Road, the landscape has visible remnant sand dune characteristics and a prominent escarpment rising to the east of the NIMT railway. The natural topography and rural character should be considered during

the design process of the Project.

This sector has clusters of localised vegetation (including kahikatea, tawa, totara and nikau) near Mary Crest.

Refer to Figure 27 for a diagram of the Peka Peka to Mary Crest Project sector.

Key issues:

- Severance and community connectivity - this is the only sector within the Project, which includes the design of a section of 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.

Specific objectives:

- Create good quality local connections. Consider the possibility of the proposed new local arterial following the natural topography, to minimise effects on the landscape and achieve a visual buffer between the local road and the Expressway.
- Where practicable, protect the sand

dune character and quality of the rural environment, or mimic and reflect the landform and sand dune characteristics through the design and shaping of earthworks.

Protect native vegetation clusters where possible, by minimising the Expressway footprint, and mitigate if vegetation is removed. Mitigation could include connecting remaining clusters to form one large stand of vegetation, or expanding on a remaining cluster, to form a more sustainable, diverse plantation and habitat.

At the bend of Mary Crest, there is mature vegetation amongst low

rounded dunes. This is an important landscape feature of this sector, so if possible, there should not be any structures which will impede on these views, or compete with the rolling topography of the area.

Retain significant bush remnants where possible. It is important to note that the Expressway alignment has been reconfigured through Mary Crest to avoid significant bush remnants.

The interchange at Peka Peka shown indicatively below will be determined as part of the Mackay's to Peka Peka Project



Figure 27. Peka Peka to Mary Crest Project sector
Refer to engineering drawings in the AEE report for further detail



Figure 28. Existing site looking south along the existing SH1 at Mary Crest



Figure 29. Visualisation looking south along the local arterial at Mary Crest
Refer to Figure 27 for viewpoint location

5.2 Te Horo

Te Horo is a small rural community located near the southern end of the Project Area.

The urban form is a simple linear development, with the main community functions (church, community hall, primary school, rural fire station, tennis club, etc) structured along School Road to the east. Along the western side of the existing SH1 is a mix of market garden stalls, Red House Cafe and residential properties.

The School Road functions to the east and the market gardens (and Red House cafe) to the west are at right angles to each other and severed by the existing SH1 and NIMT railway rail corridor. Gear Road to the south offers local access and is currently linked to School Road parallel to SH1.

There is also Te Horo Beach settlement on the coast, which is accessed off the existing SH1 via Te Horo Beach Road, but also accessible via the Peka Peka turn-off.

In urban design terms there is an opportunity with the Project (including the extended School Road) to create better community connectivity for Te Horo across the transport corridors and ease the existing severance issues.

Key issues:

- Severance and community connectivity - Access between School Road, (main community facilities), SH1 businesses and properties, and Te Horo Beach (a residential area of Te Horo).
- Business viability.
- Potential landlocked sites.
- Native vegetation clusters - there are clusters of vegetation which are likely to be affected by the Expressway.
- Current and future land use.

Specific objectives:

- 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 dismounted (this keeps barrier heights reduced to the 1.4m required for cycle paths).
- Protect native vegetation clusters where possible, (e.g. those adjacent to Te Waka Road), 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 (particularly any new exposed edges of remnant bush), to form a more sustainable, diverse plantation and habitat.

Protect the sand dune character and quality of the rural environment

If practicable, ensure the Te Horo Underpass (see Figure 32) is not a statement structure and respects the rural character.

Minimise residual or landlocked spaces by keeping the Project corridor as tight with the NIMT railway and local road alignments as practicable, while still allowing future NIMT double tracking and appropriate screening and separation where required.

Consider possible uses for the residual area of land between School Road and the Te Horo Underpass. Possible treatments could include planting the area for ecological mitigation, or treating the area as an amenity space with a recreational walkway through it.

Protect the character and quality of the rural environment. This includes the design of bridge structures, so as to sit within the rural context.

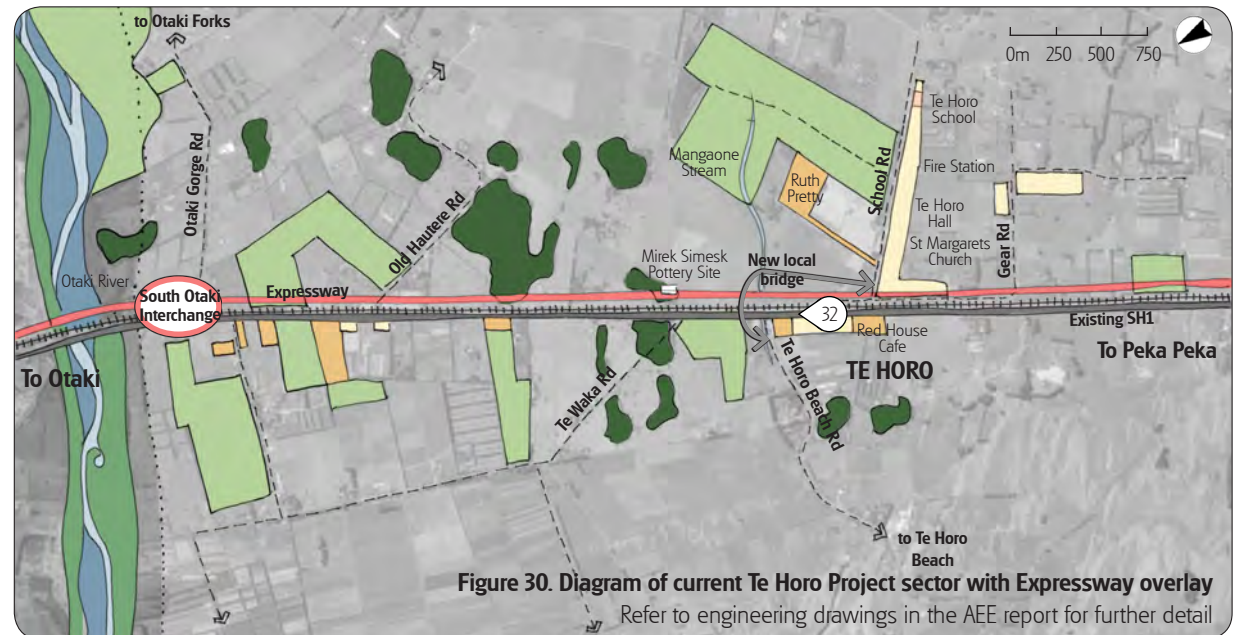




Figure 31. Existing view looking north along the local arterial at Te Horo, towards the proposed Te Horo Underpass



Figure 32. Visualisation looking north along the local arterial at Te Horo, towards the proposed Te Horo Underpass

Refer to Figure 30 for viewpoint location

Severance and community connectivity

The Te Horo community is already bifurcated by the NIMT railway and the existing SH1. The Project will increase the width of this transport corridor, adding a further sense of visual separation between the east and west communities. However a good quality pedestrian, cycle and vehicular connection across the corridor may reduce the functional and social separation of the two sides of Te Horo.

At consultation, two options were tabled for the community to provide feedback on. Proposal A provided a direct connection between the Te Horo communities on either side of the existing SH1 and would have improved the pedestrian and cycling connectivity. Proposal B minimised the physical effects on local property and business. The community response indicated a strong preference for Proposal B even though it would create more residual space and a less direct route for local journeys. As a result, Proposal B is now the preferred option. Refer to Figure 33.

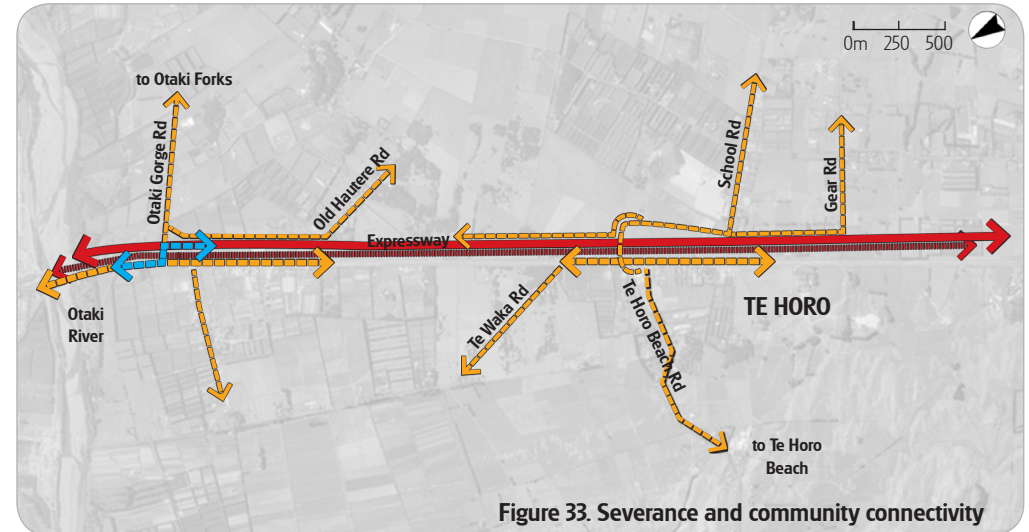


Figure 33. Severance and community connectivity

Business sustainability

Future residential growth is to be discouraged at Te Horo (as discussed on the following page), and existing SH1 businesses' exposure to through-traffic will be reduced. This is likely to have an effect 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 local arterial (existing SH1). Good connections between these two local routes will improve the environment for businesses along the new local arterial road.

The mix of business along the existing SH1 may change due to the nature of traffic flows, so the quality and character of the area will be an important consideration for any enhancements as part of the SH1 Revocation Project.

Refer to Figure 34.

- Proposed expressway
- - - Existing railway
- - - Local connections (access to local Te Horo commercial activities)
- Key commercial activities
- - - Local connection and Expressway junction

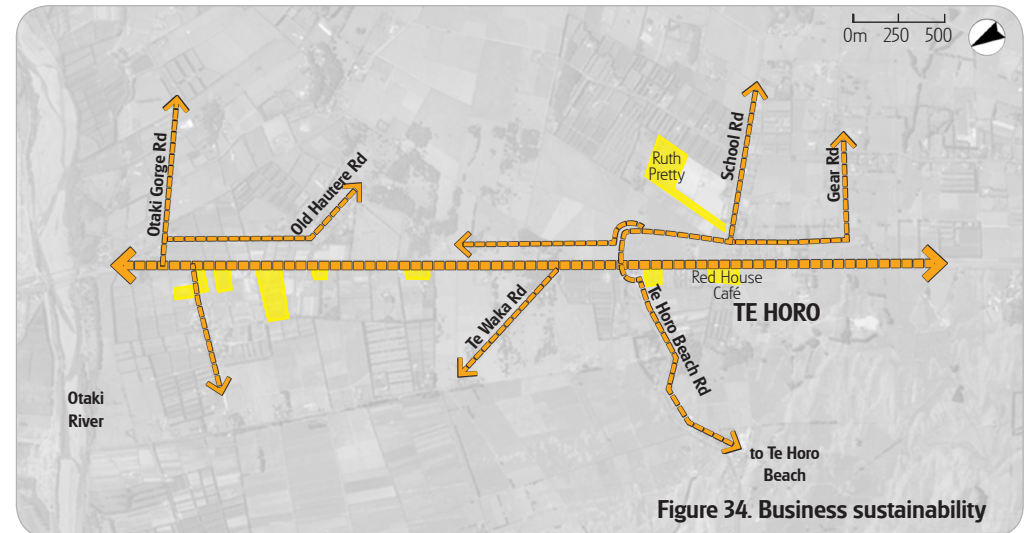


Figure 34. Business sustainability

Potential landlocked sites

The Project will create a large residual spaces at Te Horo (as indicated on Figure 35), due to the approach geometry from School Road to access the bridge. It is important to consider the options for this space, which could include planting the area for ecological mitigation, or treating the area as an amenity space with a recreational walkway through it.

The Expressway will sever access to properties along Gear Road. A new Gear Road connection is proposed to sit parallel to the Expressway, to ensure that properties do not become landlocked, and to ensure access and viable street frontages can be achieved again.

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). As mentioned previously in the ULDF, discouraging urban growth at Te Horo was a contributing factor to the design of the Project interchanges.

Future potential: shared recreational pathway between Te Horo and Otaki

As shown in Figure 35, there is a future opportunity to create a shared pathway (perhaps including bridleway), linking Te Horo and Otaki. Some of the road width of the local arterial could be utilised for this pathway. This recreational corridor could tie into existing amenities, such as the Otaki River walkways, the rest area on the southern bank of the Otaki River, the Red House Café, the Mangaone Stream, Brown Sugar Café, the various businesses along the existing SH1, as well as the proposed Otaki Lake development.

The Expressway diverts through-traffic away from the existing SH1 businesses, whereas the proposed pathway could re-establish a new form of traffic to mitigate some of the loss of business.

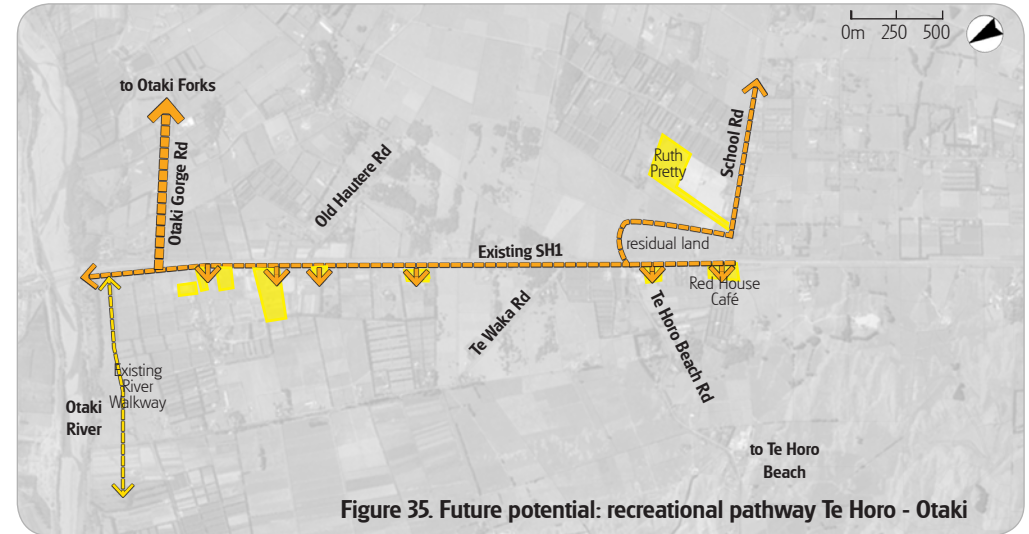


Figure 35. Future potential: recreational pathway Te Horo - Otaki

- Key commercial activities
- Shared path opportunity
- Existing recreational river walk/cycleway

5.3 Otaki

In Otaki, much of the retail development is linear and follows the existing SH1 corridor so that large numbers of commercial properties abut or are in close proximity to the highway. An older retail centre (the Main Street Town Centre) is located approximately 1km to the west of the existing SH1, catering for local residents needs - i.e. groceries.

The Main Street Town Centre is equidistant from the existing SH1 and Otaki Beach. Industrial development is located on either side of Riverbank Road along the northern bank of the Otaki River. This industrial development has a regional focus, and the Otaki Vision document expresses a desire to enhance and grow the industrial development.

The majority of residential development is located to the west of the existing SH1, east of the Main Street Town Centre. There is also a smaller residential area, disconnected from the main urban area (due to severance caused by the existing SH1 and NIMT railway) located east of the existing SH1, near the Waitohu Stream and elevated above on a local plateau.

As part of SH1 Revocation project, the opportunity arises to upgrade the new local arterial road (especially in the Railway Retail Area and Arthur Street), to ensure a pleasant shopping experience, and to ensure the viability of commercial businesses. This includes parking and streetscape improvements (refer to Section 54).

Key issues:

- Severance and community connectivity
- Current and future land use
- Local and regional gateways
- Potential landlocked sites
- The quality of the urban environment
- Business sustainability

Specific objectives:

- Create good quality connections across the Expressway and NIMT railway corridor.
- Create and emphasise legible routes and networks across the corridors

– e.g. smaller ‘loop routes’ along pedestrian desire lines reinforce connections and choices.

· Create a sustainable, viable community.

· Enhance external (Regional) access and consider opportunities for improved internal (local) connectivity

· Emphasise the quality (design, material) 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 Road by providing legible, easy access for heavy vehicles.

· Encourage residential development to ‘radiate’ from the Main Street Town Centre and the ‘Railway Retail Area’, within the containment zones

outlined in Figure 5B.

· Create visually strong gateways to the north and south of Otaki, between the off-ramps and the natural containment lines of Otaki Township (the Waitohu Stream and the Otaki River). Ensure that views of Otaki River are still possible from the Expressway, as the river itself is a gateway marker. Refer to Sections 4.2.1 and 4.2.3 of this ULDF for more detail.

· Refer to Section 54 for details specific to the Otaki Railway Retail Area.

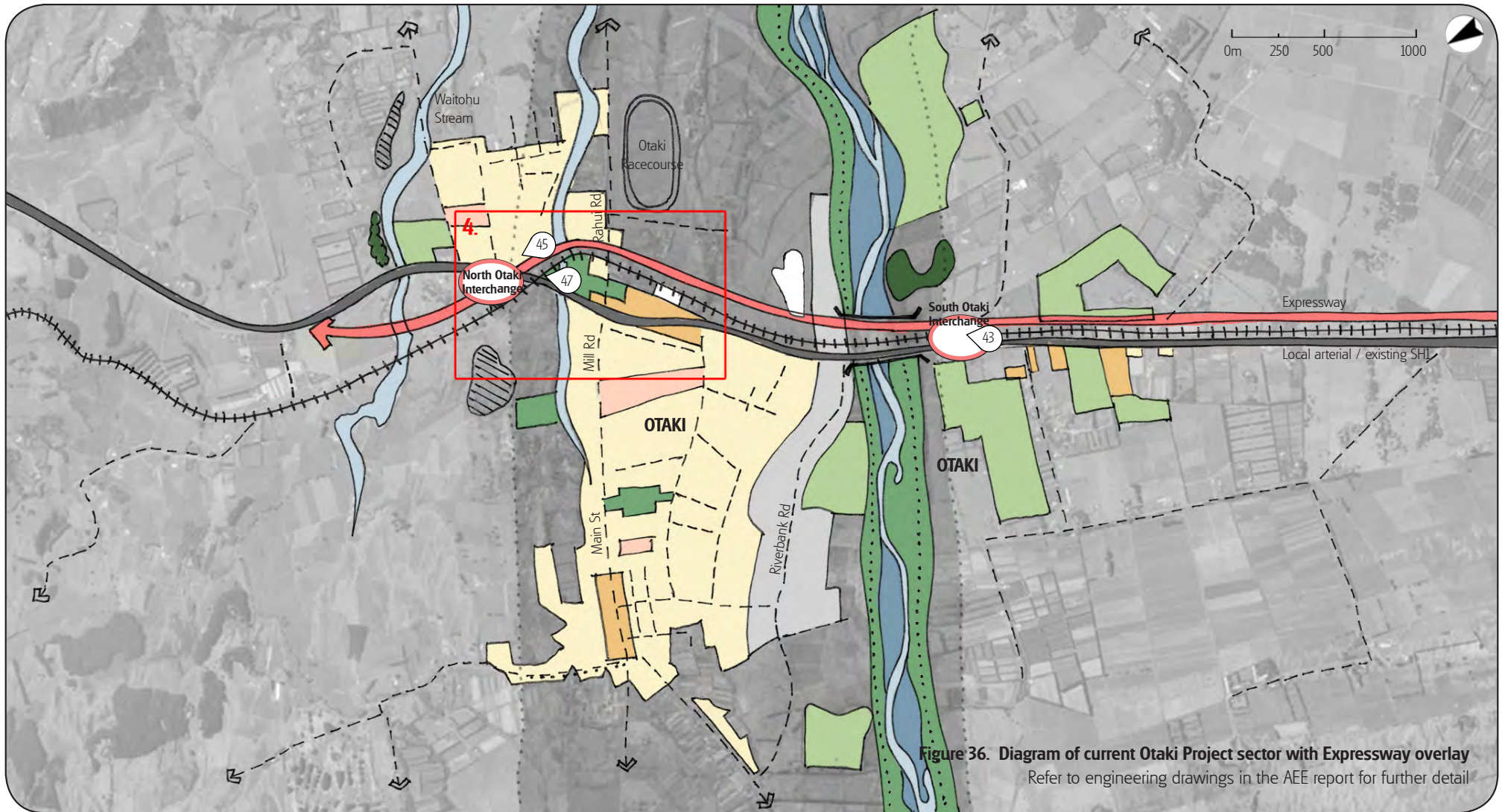


Figure 36. Diagram of current Otaki Project sector with Expressway overlay
 Refer to engineering drawings in the AEE report for further detail

- Local arterial (existing SH1)
- Indicative Expressway location
- NIMT railway
- Local connections
- Retail/commercial area
- Industrial area
- Residential area
- Stream/waterway
- Green space / recreation space
- Commercial horticulture
- Ecological heritage area
- Clusters of localised vegetation
- Otaki River flood plain extents

Severance and community connectivity

Figure 37 covers the same severance and connectivity issues as Figure 5A, but in more detail, at the local Otaki level.

Additional to the information provided with Figure 5A, Otaki 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. The proposed Rahui Road Underpass, North Otaki Interchange and South Otaki Interchange enable this connectivity to occur.

It is important that significant emphasis is put on the diagonal desire line between the two main residential areas separated by the Project and the new local arterial road, and the east-west connection along Rahui Road and Mill Road. There are numerous recreational facilities, schools, residences and businesses which are all accessed by this existing arterial pedestrian, cycle and vehicular route - including the Main Street Town Centre.

KCDC have outlined a number of plans for the future, which will need to be considered during design. For example, the Otaki Lake development adjacent to Winstones Aggregates will require local access in the future, so this should be considered during the detailed design phases of the Project.

Rahui Road and Mill Road are peripheral to built-up areas on both sides of the existing SH1 and NIMT railway corridors. Nevertheless, the two roads provide the traditional link between the east and west sides of the town. Their peripheral location has one advantage - the grade separated Rahui Road Underpass is slightly displaced from the heart of the commercial District, so the ramps are not so disruptive. Furthermore, the proximity of Pare-o-Matangi Reserve means that parts of a grade-separated link can be incorporated into the reserve's landscape.

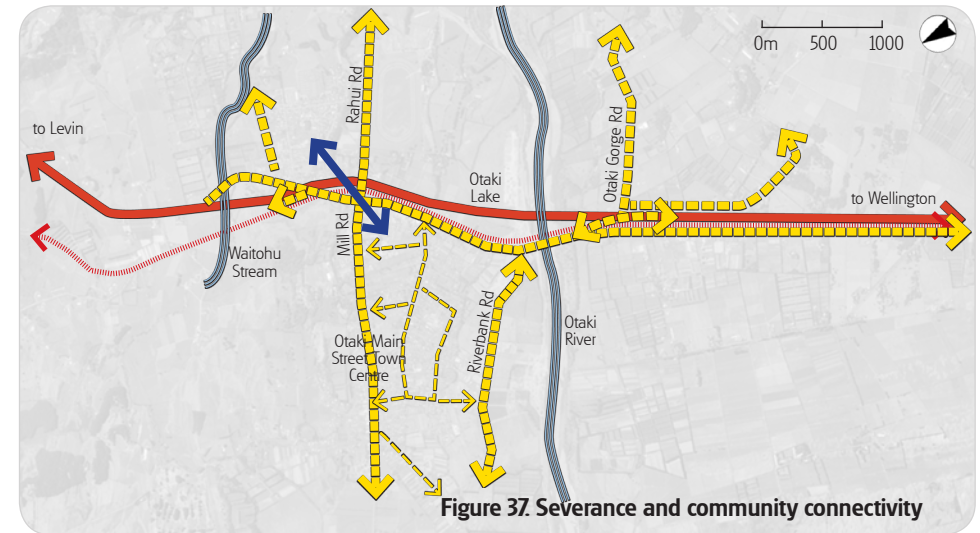


Figure 37. Severance and community connectivity

- Expressway
- Local connections
- Local diagonal desire line
- NIMT railway

Local and Regional gateways

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

With the proposed interchange configurations (and gateway zones, shown in Figures 38, 39 and 40) at North and South Otaki, Northbound Expressway users will be able to leave the Expressway, visit the Otaki Railway Retail Area (or Clean Tech area), and then access the Expressway again to continue to northbound without having to 'double back' to get to the Expressway. The same applies for southbound Expressway users.

The gateway into Otaki 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 Otaki River (for the southern gateway). It is important that formal gateway markers and treatment occurs well before the off-ramps so that motorists have time to make the decision to enter Otaki. Views of the proposed Otaki Lake and the increasing frequency of urban areas travelling south on the Expressway could become part of an extended Regional gateway sequence into the Kapiti Coast for Expressway users.

There are natural urban containment lines provided by the waterways of the Waitohu Stream to the north and the Otaki River to the south. Open views towards these waterways/containment should be enhanced as they are part of the gateway experience entering and exiting Otaki. Images depicting the 'before and after' of the South Otaki Interchange area is shown in Figures 42 and 43 respectively.

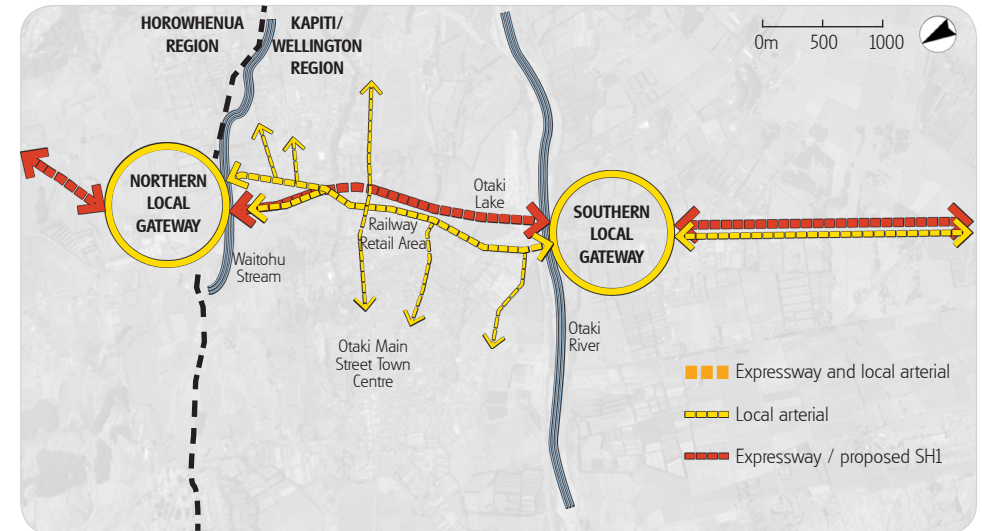


Figure 38. Local gateways

Refer to Drawing Sheets LA01 and LA03 in Appendix A for more full landscape plans, showing the gateway zones.

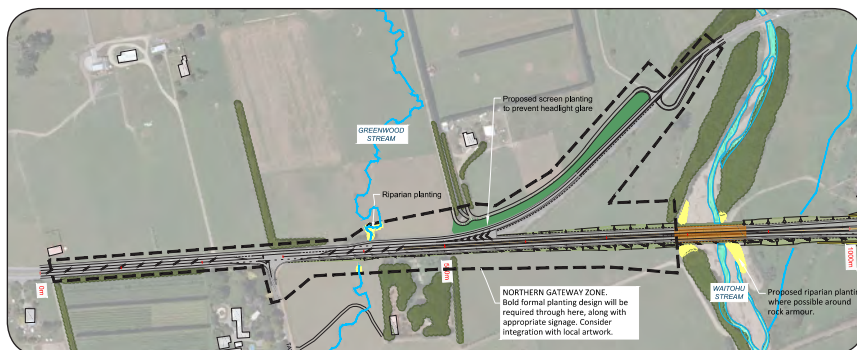


Figure 39. Indicative location of northern gateway (not to scale).



Figure 40. Indicative location of southern gateway (not to scale).

Future potential: recreational loop

The Otaki 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 41 would create the opportunity to improve access to and knowledge of Otaki'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 Road
- waterways of Waitohu Stream, and Mangapouri Stream
- the heritage 'Pipi Trail'
- Haruatai Park
- Pare-o-Matangi Reserve
- Main Street Town Centre
- Otaki Racecourse
- Otaki Domain
- the historic Old Coach Road route
- the existing walkway from Mill Road to the Railway Station

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

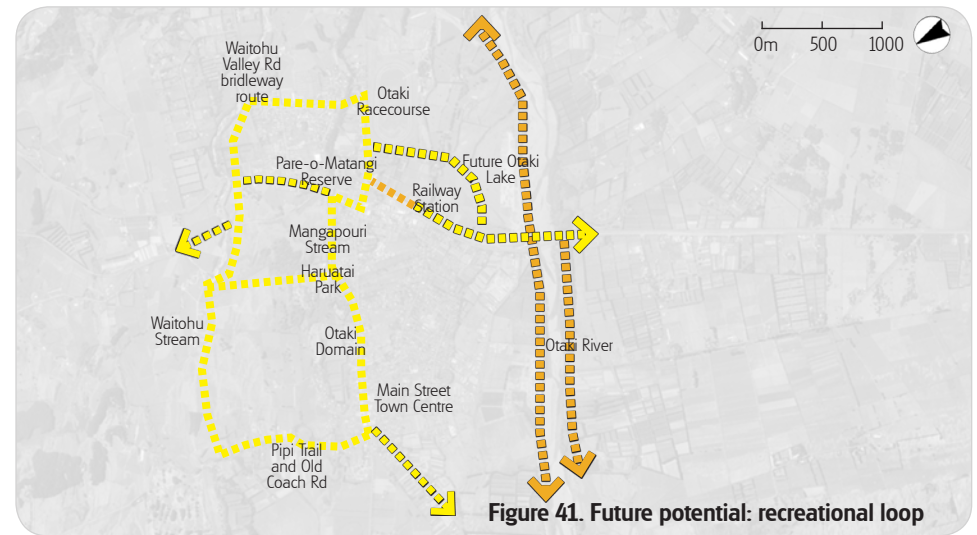




Figure 42. Existing site



Figure 43. Visualisation of the Project from South Otaki Interchange
Refer to Figure 36 for viewpoint location

5.4 Otaki Railway Retail Area

The Otaki Railway Retail Area raises the Project's most important urban design issues. The Project skirts the retail area and passes between two built-up areas.

South of Arthur Street, the NIMT railway provides a clear edge to the town's commercial centre. As the Project follows

the eastern side of the railway alignment, the Project has little additional effects on urban form. North of Arthur Street, the Project bisects the triangular area of open space between the existing SH1 and County Road, removing the eastern half of Pare-o-Matangi Reserve (see Figures 44 and 45). It also directly effects a block of residential development bounded by Rahui Road, County Road and the

Mangapouri Stream. By incorporating the area of vacant land adjoining the Otaki Motel (on the west side of the reserve) with the reserve, the enlarged open space provides a very effective buffer between the Project and the adjacent built-up areas to the west.

While this relationship is advantageous for most neighbouring properties, effects

on the reserve are significant and will change the character of the open space (see Figures 46 and 47).

The Project will separate the residual open space bounding County Road from the reserve. Earthworks will disturb existing vegetation, vehicle noise may affect the reserve and the Project may be visually intrusive in places, especially

if the Expressway is elevated above the natural contours of the site.

At the same time, the reserve will increase in area and will acquire a more cohesive shape. The residual open space on the County Road and NIMT railway margins will be a conspicuous feature on the Expressway, and has the potential to become a key component of a local or



Figure 44. Existing view looking north along County Rd



Figure 45. Visualisation looking north along County Rd, with Kennedy Wetland on the left
Refer to Figure 36 for viewpoint location

regional gateway experience for southbound motorists.

It is also noted Mill Road/Rahui Road and the Mangapouri Stream cross the reserve in an east-west direction and therefore have reduced exposure to the Project. On balance, the Project's relationship to Pare-o-Matangi Reserve is an appropriate response to Otaki's urban form.

As changes to the reserve are significant, a comprehensive landscape design should be prepared. This design should acknowledge and respect existing planting, some of which has special value for the Otaki 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. There is also scope to further integrate the reserve with the open space south of Rahui Road, the railway station and commercial properties in the Railway Retail Area.

Aside from the reserve, the principal urban design issue at Otaki is severance of the community. It has already been noted in Section 1.6 of this document 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, which is achieved with the proposed Rahui Road Underpass (local road bridge over Expressway). The proposed link accommodates pedestrians, cyclists and two-way vehicle traffic. By utilising the historic alignment, the urban form and street pattern is maintained, which is important in overcoming the potential severance effects of the Expressway and NIMT railway corridors. Careful consideration has been given to the design aesthetics of the structure to minimise its landscape and visual effect and tie it into the underlying movement networks.

Finally, it should be noted that the Project allows Arthur Street (which connects the existing SH1 and Otaki Railway Retail Area to the Otaki Railway Station) 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 and the broader Railway Retail Area.

Between Mill Road and Waerenga Road,

the new local arterial road can be re-developed (as part of the SH1 Revocation project) to 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 Otaki.

Key issues:

- Severance and community connectivity
- Current and future land use, especially around Pare-o-Matangi Reserve (and the loss of reserve land)
- Business sustainability
- Access to and amenity of the future Pare-o-Matangi Reserve

Specific objectives:

- Allow for future NIMT railway double tracking.
- Maintain the railway station's relationship to the line of Arthur Street (i.e. the station should be positioned at the eastern end of Arthur Street).
- Recognise the opportunity to enhance Otaki Railway Station and

integrate with the Railway Retail Area.

· Ensure the Railway Station re-orientation maintains as much of the existing parking area as possible, and reflects the original context.

· Integrate Pare-o-Matangi Reserve and the Rahui Road link via the re-development of residual open space between the Otaki Railway Station and Rahui Road.

· Integrate stormwater basins and wetlands into the design of residual and landlocked spaces, creating green fragments or 'fingers' and mitigating loss of wetland elsewhere in the Project Area.

· Mitigate effects on Pare-o-Matangi Reserve by acquiring adjacent vacant land with SH1 frontage. Mitigation planting should reflect the amenity of the current Pare-o-Matangi 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 reserve, whilst still providing opportunities to enhance ecological values and improve biodiversity, especially around waterways.

· As discussed with Keep Otaki Beautiful and KCDC, consideration will be given to early planting, particularly in the proposed reconfigured Pare-o-Matangi Reserve space. This would allow new vegetation to establish prior to the removal of the eastern side of the reserve for the construction of the realigned NIMT railway and Expressway.

· Provide legible vehicular, pedestrian and cycle entrance and access points to Pare-o-Matangi Reserve, and utilise the highly visible local arterial frontage to the reconfigured reserve.

· The construction of the Project will remove the on-street parking along Rahui Road and the small Pare-o-Matangi Reserve carpark. Consider appropriate alternative vehicular access and parking in the design of the new reserve. The adjacent vacant land acquired for the reserve will provide a frontage to the reserve from the former SH1 and could provide a new legible access and off-street reserve parking area.



Figure 46. The existing view from within Pare-o-Matangi Reserve, looking towards the 'ramp' bridge and County Road



Figure 47. The proposed view from within Pare-o-Matangi Reserve, showing the realigned rail, the new 'ramp' bridge, and pedestrian connection through the reserve

Refer to Figure 36 for viewpoint location

Severance and community connectivity

Additional to the issue of severance and community connectivity outlined in Figure 37, Figure 48 shows the two dominant desire lines which connect the residential areas of Otaki, which are severed by the proposed Expressway and realigned NIMT railway corridor. These desire lines have been considered during the design of the Project, as Otaki 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 Otaki. From a connectivity and urban design perspective, the ideal outcome is to maintain a vehicle, pedestrian and cycle link at Rahui Road, which has been achieved with the proposed Rahui Road Underpass.

Existing pedestrian routes must also be considered in the design of the Project. At a minimum, where the proposed 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.

Future potential: reserves and pedestrian networks

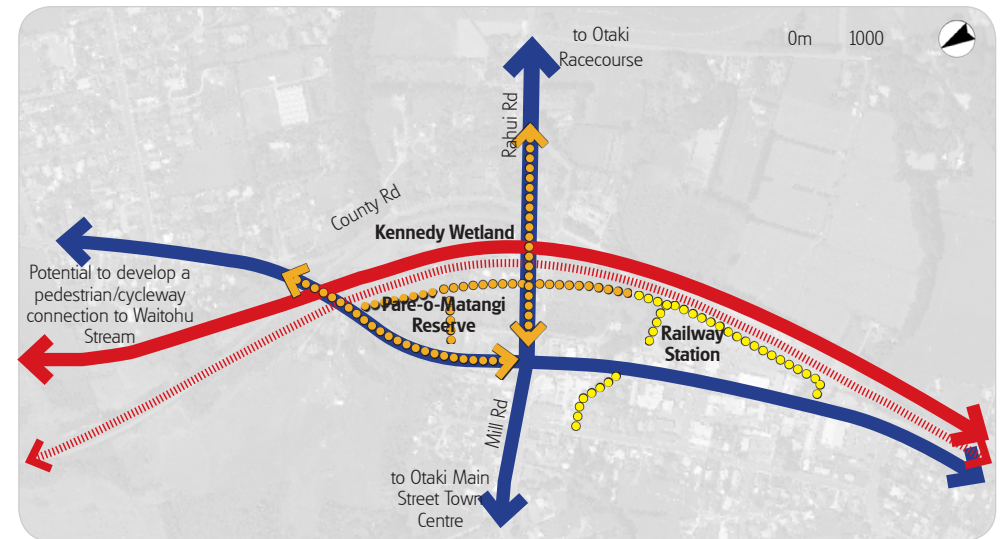
Figure 48 also shows how pedestrian and cycle networks could tie in with the reconfigured Pare-o-Matangi Reserve.

The Project runs through what is currently a small area of residential properties (on the corner of Rahui Road and County Road) and a large portion of Pare-o-Matangi Reserve.

The Expressway and NIMT railway run between two portions of land - one of which is the proposed Kennedy Wetland, the other is the proposed reconfigured Pare-o-Matangi Reserve.

Kennedy Wetland (and the planted former railway bund) will provide a buffer between the County Road residences and the Expressway, while also providing some mitigation for the wetland lost in the construction of the North Otaki Interchange.

Pare-o-Matangi Reserve will be a reconfigured open space for the community to use, with a mixture of native and amenity plantings, and walking and cycling links between North Otaki, Mill Road and the Otaki Railway Station.



- Expressway
- NIMT railway
- Existing pedestrian routes maintained
- Key desire lines / local roads across the Expressway
- New or upgraded pedestrian/cycle links

Figure 48. Severance and community connectivity

Business sustainability

Otaki 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 Otaki.

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

Entering Otaki:

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

Leaving Otaki:

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

The proposed North Otaki and South Otaki Interchanges have been design to ensure that access to and from Otaki is legible and efficient. Refer to Section 5.3 and Figures 38 and 49.

2. Streetscape upgrade of Otaki Railway Retail Area.

Currently the streetscape of Otaki 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.

Proposed reserve or planted spaces as green 'fingers'

During the design of the Project, some areas of landlocked or 'dead' spaces will be created. Where these spaces occur (and offset wetland, landscape or ecological mitigation is required), the opportunity arises to create a series of green 'fingers' along the Project (as indicated in Figure 50 through Otaki Township). Along the Project length, these green 'fingers' could include planted wetlands, stormwater attenuation, swales, grassed and planted reserve space, shelterbelt or ecological planting.

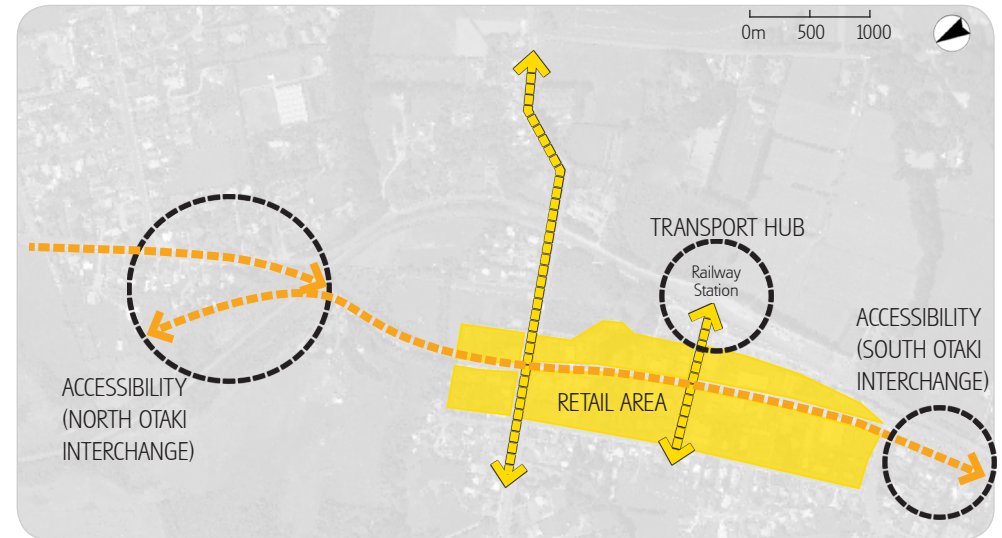
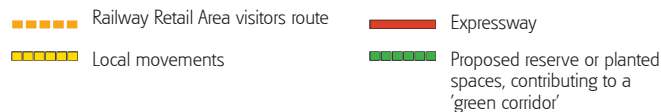


Figure 49. Business sustainability

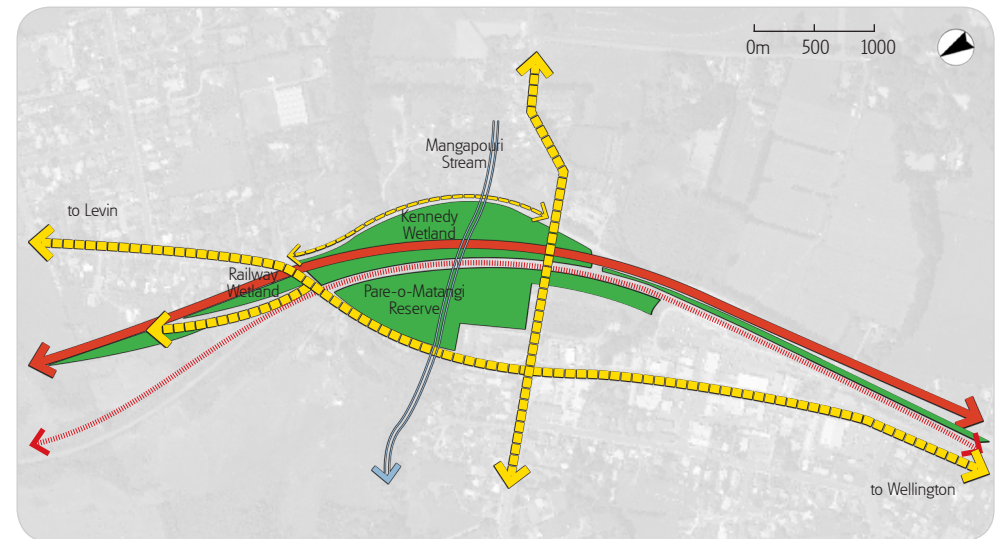


Figure 50. Green fragments

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