

# Appendix BB

## Landscape and Visual



**New Zealand Transport Agency  
SH1 Peka Peka to North Otaki Expressway**

**Specialist Report – Landscape & Visual**

(For inclusion in the Social and Env. Management Section of the SARA)



# New Zealand Transport Agency SH1 Peka Peka to North Otaki Expressway

## Specialist Report – Landscape & Visual

(For inclusion in the Social and Env. Management Section of the SARA)

Prepared By

.....  
David McKenzie  
Principal, Landscape Architecture

Opus International Consultants Limited  
Environmental  
20 Moorhouse Avenue  
PO Box 1482, Christchurch Mail Centre,  
Christchurch 8140, New Zealand

Reviewed By

.....  
Helen Anderson  
Principal Planner, URS Ltd

Telephone: +64 3 363-5400  
Facsimile: +64 3 365-7858

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Release By

.....  
Tony Coulman  
Project Manager

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## 1 Executive Summary

This report provides an assessment of the effects the proposed upgrade of SH1 between Peka Peka to Otaki to a four lane expressway will have on the landscape through which the highway traverses and on the associated visual amenity. The report will form part of the Scheme Assessment Report Addendum (SARA). The effects on the urban design aspects and on the ecology aspects of the proposal are described and assessed in separate reports.

The alignment passes through a landscape that has been highly modified by agriculture and to a lesser extent by horticulture and urbanisation. The local landscape and its associated urban context is described in some depth in the proposal's *Landscape and Urban Design Framework*. This document is currently in its final draft. The landscape aspect of the Framework document has been précised for inclusion in this SARA technical report.

Over its total length, the proposed expressway will 'double' the landscape and visual effects of the existing transportation corridor by adding the 'footprint' of the four-lane expressway and its local road connections to that of the existing and retained State highway/local arterial and that of the NIMT railway. However, by containing the proposed expressway within the existing transportation corridor the potential landscape and visual effect on the broader landscape and community is lessened.

The proposal affects two Outstanding Landscape Areas (OLA) as defined in the Kapiti Coast District Plan; being the Otaki River OLA and in the Te Horo 'Straight' area, a number of remnant stands of totara and manuka. The District Plan notes that these stands of native vegetation are also OLAs. Mitigation of effects on the OLAs will need to be considered as part of the combined landscape, urban design and ecology inputs to the project.

Overall the degree of effect on the landscape and visual aspects of the proposed expressway corridor as per NZTA PSF/13 is considered to be Medium.

## 2 Project Description

The planned upgrading of State Highway 1 between Peka Peka and Otaki North is “part of the Wellington Northern Corridor Road of National Significance (RoNS) – a planned four-lane expressway from Wellington Airport to Levin.”

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

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

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

The project seeks to safeguard for double tracking of the main trunk rail line and also involves the relocation of the track through Otaki in order to accommodate the proposed expressway.

## 3 Site description/existing environment

A broad description of existing environment and its landscape and urban design context is provided in the draft *Peka Peka to Otaki Urban and Landscape Design Framework*(ULDF)<sup>1</sup>.

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

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

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

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<sup>1</sup> *Peka Peka to Otaki Urban and Landscape Design Framework*, prepared for NZTA by Opus International Consultants Ltd, February 2011 – draft status

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

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

### **3.1 Landform**

The proposed expressway travels between the eastern foothills (which reach up to 510m above sea level), and the coast which is 3-4km to the west and follows a route that travels through varying environments (residential, commercial, rural, horticultural, and recreation areas) and topography.

North of Te Hapua Rd, the topography is generally flat and drops down to cross the Otaki River and floodplain at Otaki.

South of Te Hapua Rd, the proposed expressway route traverses lower lying areas (associated with interdune deposits) and undulating mounds (associated with sand dunes). These undulating sand dunes provide variation in what can be viewed from the existing state highway, and dictate which plant species grow there. This organically shaped topography should be considered during the design process of the expressway

### **3.2 Geology**

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

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

The floodplain around the 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 NZ. There are several faults within the vicinity of the proposed route including the Ohariu Fault, the northern Ohariu Fault, the Gibbs Fault, the Otaki Forks Fault, and the Wellington Fault. Resilience and route security will need to be considered in the design of the expressway.

### **3.3 Hydrology**

The existing SH1 crosses four significant water ways; as will the expressway.

#### **Waitohu Stream**

The Waitohu Stream and the surrounding flood plain are located at the north end of the Project area. The majority of properties affected by this waterway and its flood zone are rural properties.



The Waitohu Stream is very active geomorphologically, and is not set to a stable stream channel and the ground surrounding the watercourse is very swampy.

### **Mangapouri Stream**

Mangapouri Stream is located just north of Rahui Rd and flows through Pare O Matangi reserve adjacent to Mill Road. The stream acts as a natural containment line for development to the north of Otaki.

### **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 to the south for the town's development. The properties along the Otaki River banks are generally of a recreational, industrial or rural nature.

There is currently only one vehicle and one railway bridge crossing the Otaki River. In terms of route security this poses a significant threat. The most recent stopbank work protecting Otaki is the Chrystall Stopbank, which ties into the existing railway embankment and bridge abutments.

### **Mangaone Stream**

The Mangaone Stream is located at Te Horo, and its flood patterns affect mainly rural lifestyle properties and rural land. The floodplain of this area is very flat, so small changes in topography have the potential to divert flooding elsewhere and the current state highway regularly floods in this area.

## **3.4 Vegetation**

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

Indigenous vegetation is largely confined to a few small remnants, though these scattered stands of native vegetation are more common and distinctive in the Otaki Gorge Road/Old Hautere Road/Te Horo area. The proposed expressway alignment passes through stands of native mature trees and wetland in a few discrete localities along the alignment. Many of these sites are of local significance e.g. Cottles Bush. Two areas of swamp forest have also been identified near Mary Crest.

## **3.5 Land uses**

### **Current**

The majority of the Project is currently zoned as rural, with urban activities mainly confined to Otaki and to a much lesser extent, Te Horo.

There are two zoned retail/ commercial areas within Otaki; the Main St Town Centre and the Railway Retail Area. The Main St Town Centre serves the local Otaki community, while the Railway Retail Hub serves both a local and regional clientele.

Many of Te Horo's community facilities (including Te Horo School) are located on the east side of the state highway, while the main residential area is on the west side. Therefore, connectivity across the state highway is important for the functionality of the settlement.

## **Future**

Within the project area, KCDC has expressed desire for future industrial and residential growth to be based around Otaki. Development of the existing industrial zone along Riverbank Rd is currently underway as a 'CleanTech' business park. This is intended to be of local and regional significance.

Although severance is more acute at Te Horo, the settlement is small and is likely to remain so as the KCDC District Plan seeks to restrict residential development in this area so as to retain rural character.

There is also a proposed Otaki Lake Development, which includes the development of a lake and amenities to the north of Stresscrete, on the northern bank of the Otaki River. The proposed alignment of the expressway currently runs along the eastern side of the Otaki Lake area, so consideration will need to be given to how local access to the area would be achieved.

### **3.5.1 Communities**

#### **Otaki Township**

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

#### **Otaki Railway Retail Area**

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

#### **Te Horo**

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

### **3.5.2 Reserves**

#### **Pare O Matangi Reserve**

Pare O Matangi Reserve does not hold reserve status in the district plan, but is a green space of importance to the community.

Pare O Matangi Reserve is likely to change significantly as a result of the expressway. This provides opportunity; firstly, if the reserve is extended, it can be developed to provide a buffer between the expressway and Otaki. Secondly, the open space allows any underpass on Rahui Rd to be treated as a landscape element with longer ramps to ensure a high-quality pedestrian environment.

### **3.6 Landscape Character Areas**

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

#### **Rural**

The majority of the expressway corridor passes through rural land, with the resultant character being dominant then from Taylors Road to Waitohu Stream and then from Otaki River to Peka Peka (the Hautere Plains).

North of the Project area is the distinctly undulating farmland of the Horowhenua Plains. Travelling south from Taylors Road, open farmland continues to Waitohu Valley Road on the east and beyond the Waitohu Stream and a localised ridge to the west. Rural landuse continues to the river terrace north of Rahui Road and then is visible again east of the highway and railway line within the Otaki River floodplain.

North of Te Horo and to the east of the highway and railway line the land flattens out to a localised area of broad plain that drains towards the 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 in the area.

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

#### **Lifestyle**

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

#### **Residential**

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

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

#### **Reserve/open space**

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

### **Industrial**

Currently industrial landuse within the expressway 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 current state highway as the bridge structure obscures the view.

### **Commercial/retail**

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

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

### **Transportation**

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

### **Landscape Character Summary**

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

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

## **4 Effects**

The landscape and visual effects of the proposal result from changes to the following:

<b>Landform</b>	effect of the proposed expressway (and corresponding rail realignment) on existing landform
<b>Landcover</b>	effect of the proposed expressway on existing vegetation such as shelterbelts and remnant stands of totara
<b>Landuse</b>	effect of the proposed expressway where there is a change from rural or urban landuse to the landuse of an intensive transport corridor
<b>Visual</b>	The combination of changes to landform, landcover and landuse that will create a visual effect on how the existing landscape is seen and perceived by local community and the travelling public

It is noted that there is a high degree of 'cross-over' between the 'landscape and visual' aspects and the 'urban design' aspects of the Project.

Travelling from the north:

- The underpass at North Otaki and at Rahui Road that would introduce a reconstructed element and a new, obvious constructed element into the landscape; both would be visible to highway and road users and to local residents
- At the Otaki River crossing the presence of industrial activities such as river gravel extraction and processing would mean that a new bridge could be accommodated without unduly affecting the existing character. However having a pair of new highway bridges in a short section of the river landscape that already contains a highway bridge and a rail bridge will have a very obvious visual effect.
- Proposed Otaki Gorge Road underpass will be a new, obvious constructed element as seen from the expressway and from the adjoining area
- Likewise, Te Horo underpass will be a new, obvious constructed element, particularly as seen from the expressway and from the adjoining Te Horo and School Road dwellings
- Forming the proposed Mary Crest 'curves' will have a direct effect on local dune landforms and pockets of native vegetation.

Over its total length, the proposed expressway will 'double' the landscape and visual effects of the existing transportation corridor by adding the 'footprint' of the four-lane expressway and its local road connections to that of the existing and retained State highway/local arterial and that of the NIMT railway. However, by containing the proposed expressway within the existing transportation corridor the potential landscape and visual effect on the broader landscape and community is lessened.

With many current NZTA expressway proposals where there is a larger urban context there are higher requirements for noise mitigation than is the case with the Peka Peka to North Otaki expressway proposal. With noise mitigation measures such as noise walls and other built barriers, there is also a resultant visual effect that has to then be mitigated. This is not the case with this proposal. In this instance, there will be no noise barriers required along the length of the proposed expressway. There will be noise mitigation requirements on all bridges and underpasses, but this will be catered to by the use of 0.8m high concrete barriers, being the standard TL4/NJB vehicle safety barriers. These necessary and functional aspects of bridge construction will be integrated via the urban design input into the overall bridge design for the expressway. There will be one 120m long section of 2m high noise fence along the combined, existing SH1 frontage of four residential properties immediately north of Mill Road/SH1/Rahui Road roundabout. This noise fence will have the appearance of common, boundary timber fences used in the area and will not be out of context with their surroundings.

**Outstanding Landscapes' affected???** – The proposal crosses the Otaki River Outstanding Landscape Area (OLA) and in the Te Horo 'Straight' area, the proposed expressway would affect a number of remnant stands of totara and manuka. The Kapiti Coast District Plan notes that these stands of native vegetation are also OLAs.

## 5 Degree of effect

Containment of the proposed expressway within the existing transportation corridor implies that the potential landscape and visual effect on the broader landscape and community is kept to the minimum. However there will be a distinct degree of effect within and along the whole length of the corridor, but this effect will be able to be mitigation by standard landscape mitigation practices such as screen planting, batter planting and the enhancement of the expressway margins and residual spaces for amenity purposes.

Overall the degree of effect on the landscape and visual aspects of the proposed expressway corridor as per NZTA PSF/13 is considered to be Medium.

## 6 Requirements

Legislative provisions or conditions e.g. National Environmental Standards, national standards or regional or district plan requirements where consents are likely to be required are those that will be covered by the overall planning input to the proposal and respond to the 'avoid, remedy or mitigate' expectations of the RMA

Section 2 Policy Context of the draft Peka Peka to Otaki ULDF notes various regional and local planning documents and NZTA standards, objectives, policies or similar that relate to this proposal. A specific 'landscape' document not currently noted in the proposal's draft ULDF is the NZTA *Guidelines for Highway Landscaping*, Version 2, December 2006.

## 7 Addressing effects and meeting requirements

Section 4 Corridor Design and Section 5 Sector Design of the draft ULDF outline in considerable detail corridor-wide design issues, objectives and principles that address the combined urban design and landscape effects of the proposal, along with ecological effects. The particular principles covered are the broad landscape aspects of the proposal, earthworks, structures, noise barriers (now a non-issue...), pedestrian, cycle and bridleway links, planting, road furniture and stormwater. The specific sectors of the proposal that are discussed are Otkai, Otaki Railway retail area, Te Horo and Mary Crest to Peka Peka.

In June 2011, a set of draft landscape concept drawings were prepared that follow-on from the principles in the draft ULDF and these concept drawings are now being refined further, subsequent to discussion with and feedback from NZTA and KCDC. This input has included the recent 'Value for Money' workshop

The landscape concept drawings have been prepared for inclusion in the SARA. The concept drawings were developed in discussion with KCDC. The expectation of this landscape input is to minimise the landscape and visual effect of the proposal on the local community while enhancing the travel experience of the users of the expressway.

## 8 Costs

As noted in the previous 2003 'Te Waka' landscape assessment...

*Full mitigation is difficult and expensive to achieve due to the scale of change taking place, but the degree of mitigation is influenced by the size and nature of the buffer, and the landscape treatment within it. Any buffer would need to be of sufficient size to reduce both the adverse visual and landscape effects for the neighbouring properties, and to allow for a highway setting that would give a positive experience for the motorist.*

As stated in the above, there is a significant cost associated with providing effective and responsive landscape mitigation for a project of the scale of the SH1 Peka Peka to North Otaki Expressway and this has been taken into account in the cost estimating for the project. At this time, an allowance of approximately \$6.5M has been provided for landscape mitigation works, being approximately 3% of the project base cost estimate.

## References/Background Information

The following have been considered as part of this assessment:

- Google Earth
- Horowhenua and Kapiti Coast District Plans and maps
- Current PP2O Expressway reports i.e. draft Alternative Corridors Technical Feasibility and draft Urban and Landscape Design Framework
- Previous scheme assessment reports from NZTA PP2O project web site i.e. *Preliminary Landscape Assessment of Te Waka Highway Upgrade Alignment Alternative*, January 2003
- District and region-wide landscape studies i.e. *Assessment of the Outstanding landscapes & natural Features of the Horowhenua District*, August 2009; *Wellington Regional Landscape Atlas*, May 2009