

Chapter 15

Part G

VOLUME 2

Urban Form and Function

Overview

Potential urban design effects of the Project have been assessed, including in terms of amenity, community severance, connectivity (with and across the Expressway), urban form, land use patterns and the impact on the existing SH1.

The ULDF contains a full description of the urban and landscape design context of the Project (refer Volume 3 – Technical Reports, of AEE). It identifies urban design decisions made to date and recommends further methods for achieving optimal urban design outcomes as the design details of the Project are finalised.

The Project's overall urban design outcome is rated as "low (positive)". The existing urban form and land use patterns are not significantly disrupted as the Expressway alignment broadly follows the existing rail corridor on what is predominantly rural land. Retention of the underlying urban form within the Ōtaki Township is a good urban design result. Current cross-corridor connections are retained, with one exception at Old Hautere Road.

The form and ease of use of the new North Ōtaki and South Ōtaki interchanges at either end of the township will be important for the business viability of the current Ōtaki Railway Retail area. The interchanges provide excellent connectivity to and from the Expressway for the industrial / 'Clean Tech' area around Riverbank Road at the southern end of Ōtaki, and other future land use development and growth for Ōtaki Township and the wider region.

Important future urban design issues, outside the scope of the Project, will be the integration of the network of walking and cycling routes and the interfaces with key public realm spaces including the Pare-o-Matangi reserve and the Ōtaki Railway Retail area.

15 Urban Form and Function

15.1 Introduction

This Chapter summarises the findings of the urban design assessment of the Project.

The reports that detail the effects of the Project on urban form are:

- The Peka Peka to Ōtaki Expressway Urban Design Assessment (Technical Report 7); and
- ULDF (Technical Report 23).

These technical reports are included in Volume 3 of this AEE report.

The NZTA requires that the urban and landscape design considerations for its projects are addressed within an ULDF. A ULDF has been prepared for the Project. It is a technical document, rather than an assessment of effects, and contains recommended methods for achieving good urban design. The relevant content of the ULDF is summarised in the AEE report.

15.2 Methodology

The process for determining urban design effects is based on the draft NZTA Guideline on the Assessment of Urban Design Effects, which requires the key areas for assessment of urban design effects to include:

- Urban form and land use effects;
- Amenity effects; and
- Connectivity effects.

The existing urban design environment was then assessed to provide a baseline. Assessment of urban design against the baseline environment was then completed, using the ULDF and other recognised urban design principles, policies and objectives.

15.3 Existing Environment – Urban Design

The overall landform of the Kāpiti region is characterised by the Tararua ranges to the east and the coastal edge to the west. SH1 and the rail corridor affect connectivity for both Te Horo and Ōtaki. The majority of the Project area is zoned rural, with urban activities mainly limited to Ōtaki. The urban boundaries of Ōtaki are the Ōtaki River to the south and the Waitohu Stream to the north.

The existing SH1 and NIMT corridor bisect the Ōtaki township and (to a lesser extent) Te Horo, and typically defines the urban form and land use boundaries through "built edges" where buildings or structures define streets or public places.

15.3.1 North Ōtaki

North Ōtaki is characterised as an elevated eastern block of suburban residential land use on the Waitohu Plateau, surrounded by lifestyle and rural farms. The amenity values of this area are predominately its rural residential character, but the current SH1 runs through the western edge of the residential area. The Pare-o-Matangi reserve is a key recreational and amenity feature in this area.

Taylor's Road currently connects directly into SH1. SH1 runs through this section of Ōtaki to the Ōtaki Railway Retail area. Te Manuao Road is the key residential feeder road to the east, perpendicular to SH1. County Road acts as a secondary connector road and runs down to Rahui Road.

15.3.2 Ōtaki Township

The Ōtaki Township contains two commercial areas, the Ōtaki Railway Retail area and the Ōtaki Main Street. The Ōtaki Railway Retail area is a retail area along the existing SH1 between Waerenga Road and Mill Road/Rahui Road roundabout. The centre of the Ōtaki Railway Retail area is the Arthur Street intersection, which acts as a minor axis to the major axis of SH1 and defines the 'heart' of an increasingly pedestrian-oriented precinct. The historic Ōtaki Railway Station is located at the eastern end of this minor axis.

The amenity values of the Ōtaki Railway Retail area are characteristic of a retail high street. The length of this stretch of retail shops creates a walkable streetscape of approximately 400m end to end. A small park space is located around the Information Centre. Existing traffic volumes and resulting congestion on SH1 through this area have a negative impact as they impede vehicular, pedestrian and cyclist access to SH1 from local roads and movements that traverse across Ōtaki township.

The Ōtaki Main Street is located approximately 1.5km to the west of the Ōtaki Railway Retail area, down Mill Road. The Ōtaki Main Street town centre predominantly serves the local community.

15.3.3 South Ōtaki

South Ōtaki is dominated by an industrial zone including aggregate extraction and precast concrete works. KCDC has also identified the area around Riverbank Road as a growth area, with a focus on clean technology industries.

The Ōtaki Lake Development area to the east of the existing SH1 is proposed to include a lake and amenities on the northern bank of the Ōtaki River. Within the south Ōtaki area, the Ōtaki River is the key amenity function with recreational access provided at the Chrystalls Bend Reserve on the northern banks of the Ōtaki River and its associated riverbank walkway.

15.3.4 Te Horo

Te Horo is a small settlement within the Project area and is divided by the current SH1 and the NIMT corridor. The urban form of Te Horo is linear with the main community

functions along School Road and market garden shops on SH1. These areas are severed by the existing SH1 and the NIMT corridor. Te Horo's community facilities are located on the eastern side of SH1 while the main residential areas are on the west. Connectivity is, therefore, important for this area to function well.

15.3.5 Mary Crest to Peka Peka

The Mary Crest to Peka Peka section of the Expressway is predominantly rural with a mixture of pasture and horticultural land on the eastern side and pasture and remnant native bush on the western side. The largest group of buildings is Mary Crest, a former Catholic school which sits prominently at the top of a small sand dune hill to the west of the existing SH1.

15.4 Design Process and Alternatives

The design process itself is an important consideration, as good urban design is key to delivering successful urban outcomes. Through the design, alternatives were considered and either adopted, refined or rejected. The current urban form and land use patterns along the Project route are described in the ULDF.

15.4.1 Assessment of Interchange and Connectivity Options

For the Expressway the primary connectivity is the north / south SH1 and access to and from Ōtaki Township. In terms of urban design, the access to the wider road network to and from the Project was assessed, as was how the Project would affect current and future land use patterns. Different forms of interchange were evaluated using a MCAT process.

Ōtaki Township was the key consideration of the wider road network connectivity to the Expressway. Particular consideration was given to access from the north and south to facilitate the existing Ōtaki Railway Retail area and the anticipated 'Clean Tech' growth in the existing Riverbank Road industrial area.

A range of interchange forms, including a single full-diamond, were considered in the Project design process. This provided full connectivity at a single location and is efficient from a transportation perspective but on balance did not support the broader access objectives for the Ōtaki Township outlined in the Project objectives and was therefore rated below the final outcome. It was considered that half-diamond interchanges at both the north and south ends of Ōtaki facilitated both the physical and perception of connectivity to the Ōtaki Township.

The final location and arrangement of the interchanges was then considered. From an urban design perspective the key criteria were integration with the wider urban form, particularly the existing urban circulation network / street pattern, respect for or enhancement of amenity values and the ability to support current and future land use.

There were also critical topographical constraints with Waitohu stream to the north and the Ōtaki River to the south, both dictating the location of interchanges. At the north there are connections to Taylors Road, and the Waitohu Plateau residential area to be maintained. Connectivity to and from the plateau is important as the majority of the community and retail functions are located in the township on Main Street. The vertical elevation of the plateau and the separation of the urban form at this point is also an important consideration as it allows the Project route and realigned NIMT rail corridor to pass through Ōtaki with minimal disruption to the overall urban form.

The KCDC Vision for Ōtaki Township (the GOV) is for medium-density development within the existing urban area. Half-diamond interchanges at the north and south ends of Ōtaki encourage development to occur between the two interchanges as easy access is available for both northbound and southbound transportation, creating a good regional destination.

15.4.2 East-west Connectivity

The retention and enhancement of connectivity across the north-south Expressway and rail corridor (i.e. east-west) was a key urban design consideration throughout the Project's development. Corridor severance effects exist in the current SH1 and rail corridor and could be further increased by the Project. The Project design team identified where these severance effects currently occur, and obtained information about the community's desires in terms of which east-west connectivity locations were critical to maintain.

In this context the existing Rahui Road link was of particular significance, as it provides a second link to the north-eastern residential area of Ōtaki, is the direct access to the Ōtaki Māori Racing Club (a key local amenity and economic asset) and it is part of a historic interchange with Main Road linking to the local retail centre (further to the west) and the existing SH1.

Rahui Road currently connects to the Ōtaki roundabout and has an at-grade rail crossing where it straddles the NIMT rail line. Any new connectivity at Rahui Road would need to cross over both the Expressway and realigned NIMT rail corridor now running parallel to each other. Options considered included:

- not recreating a link and relying solely on the new northern interchange;
- a pedestrian-only footbridge or underpass; and
- a grade-separated structure allowing full vehicle movement.

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

A key consideration in the form and geometry of the new connection at Rahui Road was the flood plain of the Ōtaki River and the local Mangapouri Stream. This meant that at-grade or depressed underpass options were quickly discounted as this could potentially increase flooding to the west. To gain sufficient clearance for a local underpass (local road at-grade) the Expressway would have to be raised about 8m above the existing ground level over a significant length and would therefore have a significant visual and noise impact on the adjacent township. The NIMT rail corridor could not be raised in vertical alignment with the Expressway due to the current location of the Ōtaki Railway Station. A new at-grade rail crossing would therefore be created, which was considered to be a poor safety outcome.

Through further evaluation, a local bridge spanning 150m over the Expressway and rail corridor was considered the best solution and preferred over other options. This option has good walking and cycling provision, ties into the existing street pattern and allows for the full range of vehicle connectivity, including specifically to the Ōtaki Racecourse for larger trucks and horse floats. It does have localised property effects requiring removal of some residential houses on both the eastern and western sides of Rahui Road / County Road, and these were considered in the overall MCAT evaluation.

A similar exercise was also carried out for an east-west connection at Riverbank Road. Any connection at this point was primarily for recreational access as it was located south of the Chrystalls Bend stopbank and was not clearly earmarked for residential or other core community facilities. This potential link was quickly discounted due to a vertical alignment under the existing rail bridge that was susceptible to flooding.

The overall evaluation of the alternatives for east-west routes concluded that to maintain a second east-west link at Rahui Road provided the most benefit in terms of connectivity across the corridors, with the least negative effects. This option was therefore carried through into the Project design.

Old Hautere Road

At Old Hautere Road on the straight section of SH1 from Te Horo to the Ōtaki River there is currently an existing at-grade crossing of the NIMT rail corridor at the intersection. This

connection serves the rural and lifestyle properties along Old Hautere Road to the east of the corridor. Old Hautere Road also currently connects into Ōtaki Gorge Road further to the east.

With the Expressway running on the eastern side of the rail corridor the original proposal for Old Hautere Road was to close the intersection and leave it as a dead end. There were mixed views from public consultation regarding this change with some concerned about 'boy racers' using Old Hautere Road for racing and others seeking that connectivity to SH1 be retained. The design team undertook to develop and evaluate options to reconnect to Old Hautere Road to SH1. KCDC were keen in principle to reinstate like-for-like connectivity along the length of the corridor.

In this context two options were developed:

- The first was a grade-separated local bridge structure across the Expressway, existing rail corridor and the existing SH1 with a span of around 150m.
- The second option was an at-grade local road running parallel with the new Expressway to the southern interchange at Ōtaki Gorge Road.

Both were evaluated as part of the MCAT process. On balance the at-grade connection to the interchange was preferred and adopted as it had visual benefits over the larger grade-separated structure, which was assessed to be out of context in the wider flat rural topography.

Te Horo

East-west access at Te Horo needed to be recreated to support community connectivity and link into the local arterial road proposed for the former SH1. There was a strong desire by KCDC to restrict urban growth pressures at Te Horo to maintain both the rural character and viable agricultural land use practices in this fertile area. An Expressway interchange was therefore discounted for this location.

A series of options for a new grade-separated local connection were developed and evaluated. Three connection options considered were located north of School Road, at School Road, and to the south. At-grade connections proved impractical as it would require elevating both the Expressway and rail corridor for a considerable distance to provide clearances, with associated additional visual effects and cost.

A direct connection across the corridor at School Road would have had benefits in terms of a logical street pattern, but this option would have had considerable effects on a number of properties on the western side of the current SH1, and the elevated, grade-separated structures would have had considerable visual effects on an otherwise low rise, flat rural context.

A northern location for the connection was therefore preferred, due to reduced individual property impacts and visual effects.

15.4.3 Preferred Alignment

The overall preferred proposal alignment led to the overall urban design outcome to be rated as low (positive). This was because:

- The existing cross-corridor connections are retained, with one exception at Old Hautere Road. In the case of North Ōtaki the cross-corridor connections are actually enhanced with improved pedestrian and cycleway provision. This has a positive outcome on the potential for community severance caused by the Project and also maintains the current underlying urban form and street pattern;

- With the exception of the localised area around Rahui Road, existing land use patterns are not materially disrupted, as the Expressway alignment broadly follows the existing rail corridor on what is predominantly rural land; and
- The form of the new North Ōtaki and South Ōtaki interchanges that bookend the township, and their legibility by Expressway users, will be important for the business viability of the current Ōtaki Railway Retail area, as discussed further in Chapter 28 (in Volume 2 of this AEE report), but equally provide excellent connectivity to the Expressway for the industrial / 'Clean Tech' area around Riverbank Road at the southern end of Ōtaki, and other future land use development and growth for Ōtaki Township and the wider region.

15.5 Assessment of Effects

Most adverse effects from an urban design perspective were avoided, remedied or mitigated through the process outlined above, through which stakeholder and community consultation and feedback was integrated into the overall Project design.

The assessment of effects has been divided into Project sectors and their effects on:

- Urban form and land use – how the Project may affect the existing and future urban form, including town centres and residential communities;
- Connectivity – how the Project may affect local road connections and other forms of connectivity, despite the measures adopted during the design process to avoid or mitigate such effects (discussed above); and
- Amenity values – how the Project may affect amenity values including people's direct experiences and perception of recreational amenity.

15.5.1 North Ōtaki

The urban form of Ōtaki is largely unchanged from its current state due to the existing dislocation caused by the rail corridor and the vertical elevation of the Waitohu Plateau. The new northern interchange recreates the existing connections, bridging both Expressway and NIMT corridors.

The effects on current and future land use are largely limited to the removal of a portion of the northern dunescape and Pare-o-Matangi reserve. Connectivity is maintained (with potential for future enhancements) enabling potential future growth or development in the northwest of the Ōtaki township on the Waitohu plateau area.

The access proposed to Taylors Road does not support growth nodes to the north of Waitohu stream. KCDC's growth vision is to the north of the Ōtaki township, densification around the railway station/transport hub and along Riverbank road. If the Taylors Road area is to be developed this may, in time, require a different local access strategy towards Ōtaki township. The North Ōtaki and South Ōtaki interchanges are in close proximity to a natural urban containment line, which reinforces the GOV's aim of encouraging urban growth within the existing urban structure.

In terms of amenity values, reducing through traffic along the existing SH1 will improve the amenity of properties adjacent to this road. This will lead to a better environment for walking and cycling along the road. High traffic volumes from through traffic will be significantly reduced, even with a southbound off-ramp and a north bound on-ramp.

The character of the Pare-o-Matangi reserve after reinstatement will be different due to its closer proximity to the adjacent transport corridors. However, with the proposed mitigation (which incorporates adjoining vacant land into the reconfigured reserve, and emphasises community / iwi involvement in finalising design) it will provide improved public amenity that is more accessible from the Ōtaki Railway Retail area. There is also

opportunity for it to be connected into the wider 'green' corridor of walking and cycling networks along the route of the existing SH1 and local arterial road.

The new alignment has the potential for a significant increase in severance. However several mitigating factors will create a net positive outcome for the local community. The current two local cross connections at 'The Ramp', which is the current SH1 bridge over the NIMT at the north of Ōtaki, and Rahui Road will be maintained. The new 'Ramp' underpass will provide improved walking and cycling facilities which are important for local journeys from residential areas to destinations within the township.

As discussed above, the Rahui Road underpass, a local road over the Expressway and NIMT, reconnects Rahui Road and the Ōtaki Racing Club to the Mill Road roundabout with a vehicle bridge and walkways on both sides. Pedestrian pathways across and under the bridge, to connect with the Ōtaki Railway station to the south and the reconfigured Pare-o-Matangi reserve to the northwest, have been incorporated in the Project and are important for maintaining access to these amenities.

Overall connectivity will be maintained or enhanced.

15.5.2 Ōtaki Railway Retail area

The overall urban structure of the Ōtaki Railway Retail area from the roundabout at Mill Road/Rahui Road south to Waerenga Road will not be affected by the Expressway. The reduction of traffic on the existing SH1 is likely to have a positive effect on the quality and amenity of the public realm for the Ōtaki Railway Retail area as a high quality, well designed space, that supports the attraction of a proportion of passing trade.

Rahui Road will change from a rural road connecting into the town to a grade-separated, curved local bridge spanning across the Expressway and the NIMT corridor. The interaction with the existing frontages will be removed (apart from at the ends of the bridge), and elevates the connection above the surrounding townscape, similar to the Ramp. The planted embankments will add to the new Pare-o-Matangi reserve landscape treatment.

The reduction in through traffic will have a positive effect on other local connections and cross-town movement. The existing SH1 will become the main north-south spine for the local community.

15.5.3 South Ōtaki

The land used for the Expressway corridor for this section is parallel with the existing SH1 and railway corridors and is rural land. The South Ōtaki interchange minimises land take and minimises impact through use of the underlying topography and a depressed Expressway alignment.

The proposed Ōtaki River Bridge (actually two side-by-side bridges) is designed with sufficient clearance underneath to allow access to a new potential recreational area, the Ōtaki Lakes development to the north of the Winstone Aggregates yard. On the south side of Ōtaki River, access to the recreational area along Ōtaki Gorge Road will be maintained and enhanced, with a safer grade separated interchange and alternative access provided to a reconfigured river walkway car park.

In terms of connectivity the Expressway will be depressed into the underlying topography north of Old Hautere Road, which reduces the perception of severance. Connection to Old Hautere Road is reduced but, given the low population density and low traffic movements, is considered preferable to construction of an additional grade-separated Expressway underpass in close proximity to the new South Ōtaki interchange.

15.5.4 Te Horo

The existing SH1 and NIMT corridor already creates severance effects for the Te Horo community in terms of connectivity. The Project does not provide direct access to or from the Expressway at Te Horo. East-west connectivity will be provided by the Te Horo Underpass to the northern edge of the settlement. This new link will provide a safer, grade-separated interchange. This results in some residual land areas, which are proposed to be planted for landscape mitigation. The east-west local bridge will provide improved safer access between the two parts of the Te Horo community.

Within this section the Expressway is elevated by approximately 2.0m over the surrounding topography. This will emphasise the visual severance effect.

Careful consideration has been given to the landscape planting through this area to mitigate that effect.

There are some residual severance effects of the Expressway at Te Horo, in that some walking and cycling users may be discouraged from using the crossing point to the north due to the 1.9km detour required.

15.5.5 Mary Crest to Peka Peka

The urban form and land use within this section will remain unchanged. Amenity values are also unaffected and the significant remnant vegetation at Mary Crest will be unaffected.

Connectivity will be maintained on the eastern site of the new Expressway and access to individual properties on the western side of the new corridor will be reinstated off a new local arterial road, including connectivity at Te Hapua Road.

15.6 Measures to Avoid, Remedy or Mitigate Actual or Potential Adverse Effects

In summary, the Project design incorporates design features that have reduced or eliminated potential negative effects, as follows:

- The selection and fine tuning of the geometry for the interchange at the northern end of Ōtaki township, which utilises the existing urban grid and avoids significant property impacts;
- The provision for a Rahui Road link which maintains a secondary connection to the east of the Project;
- The geometry and vertical alignment of the southern interchange to Ōtaki Township which uses the existing landform to reduce the overall impact of the structures;
- The severance of the direct connection of Old Hautere Road to the new local arterial and re-routing to Ōtaki Gorge Road avoids another underpass structure;
- The realignment of the Te Horo link to the north which avoids property impacts on the western side of Te Horo, and specifically on the Red House Café;
- The design of the structures along the entire route has been developed to integrate into the surrounding landforms where possible and complement existing structures; and
- The alignment of the Expressway in the Mary Crest section avoids important areas of native vegetation.

Overall, the degree of effects for urban form, and land use, and connectivity are considered to be "low (positive)", which means there will be minimal overall effect, with positive effects outweighing the negative. In terms of amenity the degree of effect is considered positive, particularly with the reduction of traffic through the Ōtaki township and the improved public amenity of the Pare-o-Matangi reserve.

Many of the potential adverse effects on urban design have been addressed through the design process.

A key aspect of the Project is a proposal to provide off-set mitigation within the enhanced Pare-o-Matangi reserve. As proposed, this reconfigured green space will provide valuable amenity values directly adjacent to the Ōtaki Railway Retail area. Local community involvement in this process has been (and will continue to be) important to the successful redevelopment of the area.