

1 Executive Summary

1.1 Report Purpose

This Scheme Assessment Report Addendum summarises the findings from further investigations focused around enhancing outcomes for the Peka Peka to North Otaki (PP2O) Expressway. PP2O forms part of the Wellington Northern Corridor Road of National Significance.

1.2 Project Overview & Background

The Wellington Northern Corridor runs from Wellington Airport to Levin and completing it will assist regional and national economic growth. The PP2O project is one of eight sections of the Wellington Northern Corridor, its location is illustrated in Figure 1-1.



Figure 1-1: Northern section of Wellington Northern Corridor Road of National Significance

The PP2O project is identified as part of the first phase of projects to be constructed from the Wellington Northern Corridor. This Scheme Assessment Report Addendum describes the process to find and a preferred scheme option. The NZTA board will then use this information to decide upon the preferred option before proceeding with Resource Management Act applications for the expressway.

The PP2O scheme includes a 4-lane expressway from the northern extent of the Peka Peka interchange ramps (being developed by the MacKays to Peka Peka (M2PP) project), through to an interface with the existing State Highway 1 (SH1) near Taylors Road, a distance of approximately 13.5km. A half interchange (with local road bridge) will be provided north and south of Otaki, together with further local road bridge connections at Rahui Road, and Te Horo.

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

with provision of a parallel walking and cycling facility (including the clip-on across the Otaki River Bridge), will be addressed as part of the SH1 revocation process.

Earlier scheme assessment reports and addendums (2002/03) have considered a range of alternative corridors, and following public consultation in 2003 and 2009 the NZTA Board adopted a preferred central corridor in December 2009. A further independent review of this process has been documented in a separate Route Options Review Report to draw all of the corridor option consideration into a single document.

The focus of this investigation and scheme assessment has been to identify options that improve on the 2009 expressway scheme and that deliver an integrated scheme that responds to current and planned urban design, environmental, cultural, land use, and community issues, including the Otaki Vision Statement.

1.3 Problem Description

The PP2O Project is close to the northern edge of the Wellington Corridor RoNS and is currently subject to significant traffic congestion during peak periods, particularly at weekends and public holidays, which impact on route efficiency.

The route is also currently subject to significant road traffic safety concerns (it has a high number of serious/fatal crashes, and is assessed as medium/medium-high under the KiwiRAP system), and contributes to severance between east and west communities due to high traffic volumes along the existing transport corridor. Delivery of the PP2O project will provide significant benefits in terms of improved route efficiency, safety, the opportunity to reduce community severance through the provision of safe grade separated connections which separate local and regional traffic, and a reduction in traffic (including significant through traffic) in urban areas.

1.4 Project Objectives

The overall project objectives 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.”

The full project specific objectives are listed in Section 2.2 of the report. Sitting above the project objectives are a set of Wellington Northern Corridor RoNS wide RMA objectives which have been defined as follows:

- To enhance inter-regional and national economic growth and productivity;
- To improve access to Wellington’s CBD, key industrial and employment centres, port, airport and hospital;
- To provide relief from severe congestion on the state highway and local road networks, and to improve the journey time reliability of travel to the section of SH1 between Levin and the Wellington Airport; and
- To improve the safety of travel on state highways.

The extent of the PP2O Project is illustrated in Figure 1- below.



Figure 1-2: Extent of PP2O Project

1.5 Strategic Context

SH1 between Levin and Wellington Airport is one of seven RoNS which have been given top priority by the Government. The identification and development of the seven RoNS, including the Wellington Northern Corridor, is a cornerstone of the Government's strategy to unlock economic growth potential.

The NZTA's Statement of Intent for 2011-2014 (SOI) reflects the government's priorities as set out in the Government's Policy Statement on Land Transport Funding (GPS), National Infrastructure Plan (NIP) Safer Journeys initiative and the Wellington Regional Land Transport Strategy. Within the SOI the planning for and delivery of the RoNS is the top strategic priority. As part of the Wellington Northern Corridor RoNS the SOI commits the NZTA to commencing a tender process for PP2O in the 2013/14 financial year.

Development of the PP2O scheme has also recognised the existing KCDC Otaki Vision and known developments such as the proposed Riverside 'clean tech' development and the expansion plans for Paraparaumu Airport.

1.6 Travel Demand Management (TDM)

The project provides improved walking and cycle facilities both across and along the corridor which should help to encourage the use of more sustainable travel modes. The reduction of traffic on the existing SH1 corridor will not only make walking and cycling a more attractive and enjoyable experience, it will also facilitate access to and from the Otaki Railway Station and improve bus operation along this corridor (using either the existing SH1 or the Expressway for long distance trips). The project has also safeguarded for the duplication of the rail corridor and associated station requirements in Otaki.

Transport modelling using the Wellington Transport Strategy Model and the project specific model provides little evidence to suggest that the provision of the expressway will result in greater use of private motor vehicles within the project area, therefore having little or no impact on travel demand management targets to increase the use of trips made by sustainable modes.

1.7 Key Issues

The key environmental, social, cultural, and engineering aspects that have been considered in the scheme option development and assessment include:

- The requirement for a designation for both road and railway purposes, resource consents and Historic Places Act authority;
- Significant ecological bush remnant habitats identified in the vicinity of Mary Crest, together with localised bush remnants along the corridor;
- The need for high standards of stormwater treatment, in line with KCDC and NZTA's current best practice;
- The need for provision of adequate waterway capacity and hydraulic modelling at the key waterway crossings to maintain, or enhance existing flood regimes, specifically at the Waitohu Stream, Otaki River, and Mangaone Stream, together with retention of existing throttle controls on the Mangapouri Stream;
- Key social/amenity impacts relating to the Pare O Matangi Reserve, operational noise, potential visual effects, local road connectivity (particularly for access across and parallel to the expressway) and cycle/walking connectivity;
- Business viability within Otaki and the need to develop interchange configurations that provide efficient and intuitive access to and through Otaki, recognising Otaki as a destination in itself;
- Cultural values and sites along, or adjacent to the route, particularly to the north of Otaki and in the vicinity of Mary Crest and Te Horo Pa;
- Mitigation/treatment for the presence of heritage sites and buildings including the Otaki Railway Station;
- Recognition of the Otaki Vision and opportunities for integration with this;
- The need for quality architectural and urban design solutions for the key local road bridge connections to achieve aesthetically pleasing outcomes;

- Key engineering risks relating to poor ground conditions in peat areas south of Mary Crest, assumptions around the extent of material re-use, extent of bridge piling, and the extent of stormwater and flood mitigation controls; and
- A desire to optimise the expressway footprint and form to reduce effects on productive land, improve sustainability of the outcome by optimising the cut-fill balance, and to provide value for money.

1.8 Options Assessed

A wide range of options have been identified and assessed to respond to the key issues and objectives identified above. This included an initial scoping phase in mid-late 2010, a public consultation process in February 2011, and further option assessment and scheme development with stakeholder input following receipt of this feedback. The key options considered comprise the following:

Expressway Connectivity

Six connectivity scenarios were developed, agreed at a stakeholder workshop, and then assessed by the team. The range of options included the original 2009 scheme, as well as options with a single point full interchange at Otaki, through to split interchanges surrounding Otaki. Following a Multi Criteria Assessment process two options were identified to be taken forward to public consultation in February 2011.

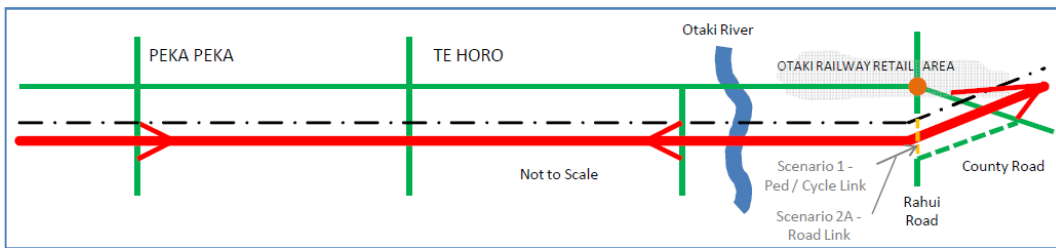


Figure 1-3: Connectivity Scenarios taken to Consultation

The scenario illustrated in Figure 1-3 provides a split interchange to the north and south of Otaki with either a pedestrian/cycle link, or road link at Rahui Road. These connectivity scenarios were shortlisted because they provided the best balance between improved transport outcomes, social, environmental and economic value. The provision of a split interchange on either side of Otaki also provides legible and intuitive access to and from the township while supporting the aim for future growth to be focused within the Otaki township.

In addition to the improved access to and from Otaki to the expressway, a further key benefit of the above scenarios is the removal of southbound expressway access off County Road (as included in the 2009 proposal). This reduces detour lengths for southbound visitors departing Otaki and significantly reduces County Road traffic volumes relative to the earlier 2009 proposal.

Interchanges

North Otaki Interchange

Three alternative configurations were assessed for a north facing expressway access on the north side of Otaki. These included options that provided a conventional half diamond interchange (with relocated entrance to Otaki), a free flow interchange connection into the existing SH1 at the Mill Road roundabout (with the local arterial diverted via County Road), and a staggered interchange option that retained the current entranceway into Otaki.

The staggered interchange option was assessed as the clearly preferred option, and was assessed to provide the better overall transportation and social-environmental outcomes while providing the best value for money. This option received strong support from key stakeholders and in the 2011 public consultation feedback (80% support indicated), and is the recommended scheme option for North Otaki (see Figure 1-).

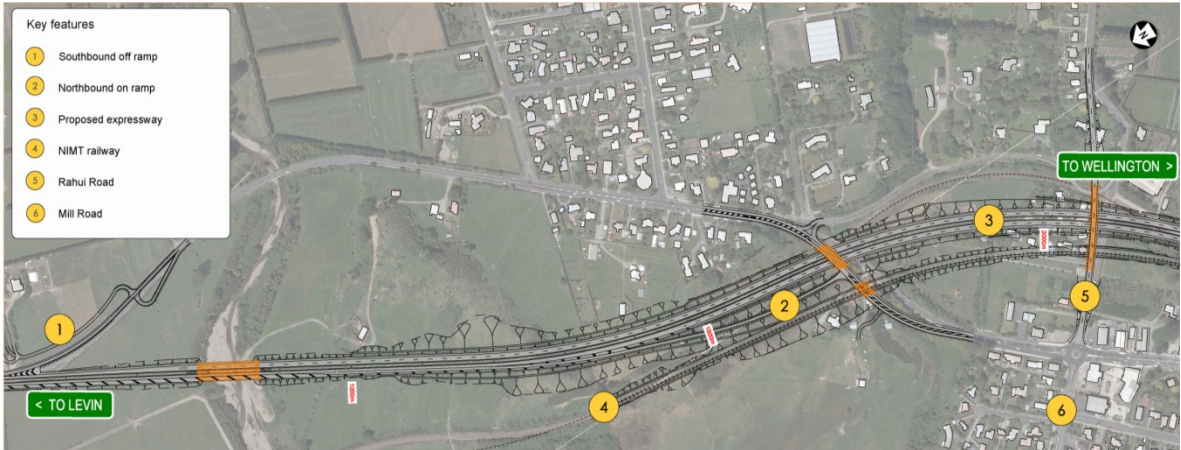


Figure 1-4: Recommended North Otaki Interchange Option

South Otaki Interchange

Three alternative options were assessed for providing south facing expressway access on the south side of Otaki, combined with a local link to Otaki Gorge Road. These included an option on the northern side of the Otaki River that was discounted on flood and value for money grounds, a conventional half diamond positioned at Otaki Gorge Road (requiring a loop access back to the existing SH1), and a half diamond with local overbridge located to the north of the existing Otaki Gorge Road access (providing a direct roundabout connection into the existing SH1).

A half diamond interchange with direct connection to the existing SH1 clearly provided the best economic, environmental and social outcomes, while transport outcomes were comparable for both options. This is primarily due to the fact that the option better utilises the topography to reduce visual and land effects and was assessed to provide a more legible and better gateway for access to and from Otaki. Value engineering resulted in cutting the expressway into the ground at this location, resulting in reduced effects and an approximate saving of \$8M over other options. This option received strong support from key stakeholders and the public in the 2011 public consultation feedback (87% support indicated), and is the recommended scheme option for South Otaki (refer to Figure 1-).



Figure 1-5: Recommended South Otaki Interchange Option

Cross Corridor Connections

Rahui Road Cross Corridor Connection

The 2011 consultation process and stakeholder feedback identified a strong community desire to retain two east-west link across the expressway at Otaki. Numerous alternative configurations were considered for maintaining these two east-west connections. These included elevated expressway proposals and submerged Rahui Road options, all of which were discounted on the grounds of technical complexity or highly significant effects.

With the recommended North Otaki Interchange providing a local bridge connection (known locally as the 'Ramp') between the Waitohu Plateau and town centre, the logical locations for a second link include Rahui or Waerenga Road. Four key options were assessed in more detail, including: a pedestrian/cycle bridge at Rahui Road, a road bridge at Rahui Road, a road bridge connecting to Waerenga Road, and an elevated expressway over an at-grade link to Waerenga Road.

A road, pedestrian and cycle bridge connection across Rahui Rd has been identified as the recommended option for maintaining two points of east-west connectivity. Improvements to the rail and expressway relationship, refined flood assessments, and changes to the eastern approach geometry allow for a reduced structure height and approach grades. This option was assessed as providing the best overall outcome in that it retains the current desire lines, has the least visual impact and is economically justified when compared to other road connection options, and provides more benefits and functionality than a pedestrian/cycle bridge at this location. This outcome has received positive support to date from key stakeholders.

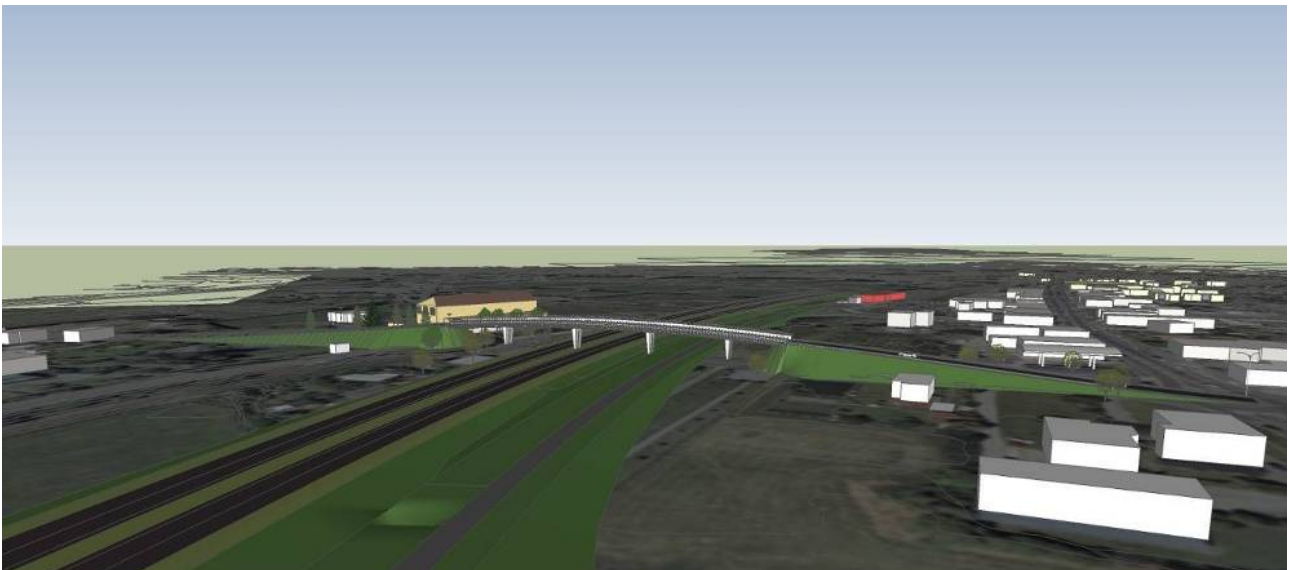


Figure 1-6: Recommended Rahui Road Scheme Option

Old Hautere Road Connection

Three alternative configurations have been assessed for the treatment of the existing Old Hautere Road connection to SH1. These included a cul-de-sac, an at-grade link back to Otaki Gorge Road, and a grade separated connection over the existing rail corridor to the existing SH1.

Inclusion of an at-grade link to the south Otaki interchange and Otaki Gorge Road (refer to Figure 1-) has been identified as the preferred option (similar to the 2009 scheme), and is economically justified over a cul-de-sac proposal. While this option provides slightly less connectivity than a grade separated crossing it delivers significantly better value for money, only marginally reduced connectivity benefits, and reduces the localised visual/landscape and property effects of introducing a grade separated structure.

Te Horo Cross Corridor Connection

Numerous options have been considered for providing a connection between east and west Te Horo, with six alternatives taken through a Multi Criteria Assessment screening process. All options exclude any direct connection to the expressway, but provide for differing locations for a local road bridge, or subway across the corridor.

Feedback from the 2011 consultation process, including KCDC and Otaki Community Board (OCB) feedback, showed overwhelming support for an option that provides a local road bridge connection just to the north of Te Horo Beach Road (Proposal B in the brochure). The main rationale for this has been to address visual and proximity effects of the grade separated infrastructure from residences and businesses at Te Horo.

While the Multi Criteria Assessment process indicated an enhanced outcome with a proposal located to the south of the settlement (improved pedestrian/cycle connections), it is recognised that Proposal B has local support, reduced impact on residential dwellings, and shifts the grade separated structure to the north of the main settlement. The options are relatively cost neutral and on this basis, and the fact that flood management can be addressed, it is recommended that Proposal B (refer Figure 1-) is adopted.

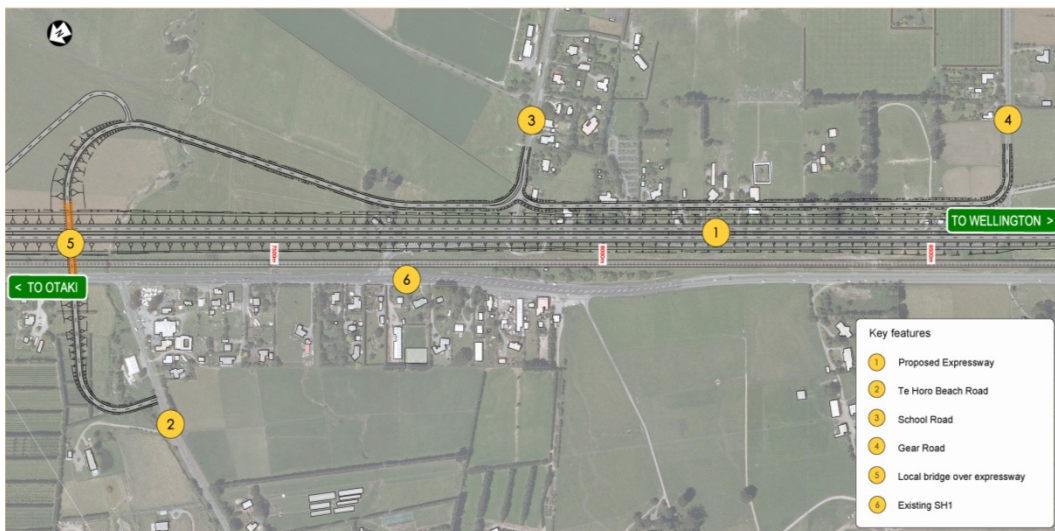


Figure 1-7: Recommended Te Horo Cross-corridor Connection Option

Alignment Optimisation

Mary Crest Alignment

Through the 2011 consultation and scheme assessment process areas of ecological and cultural/heritage significance were identified in the vicinity of Mary Crest. As a result, alternative locations were investigated for crossing the rail and local road corridor near Mary Crest. Three options were identified and assessed including the 2009 scheme alignment, an eastern option that crossed the railway south of the existing SH1 curves at Mary Crest, and an improved western alignment that avoided significant 200-300 year old bush remnants.

When considering ecological, heritage, social, property and cost factors a preference was identified for the improved western alignment in that it significantly reduces ecological and cultural/heritage impacts relative to the 2009 scheme, avoids a significant fill embankment that would be associated with an eastern option that crosses the rail corridor further to the south, limits impact on properties to the east of the current rail/SH1 corridor, and is more consistent with previous options presented for the corridor. This modified western alignment is recommended and has received positive responses from technical stakeholders (KCDC, GWRC, KiwiRail, HPT) and Iwi to-date (refer to Figure 1-)



Figure 1-8: Recommended Mary Crest Scheme Option

Optimisation of Earthworks Requirements

Further value engineering during the scheme phase has optimised the expressway corridor placement relative to the railway (hence reducing land and bush remnant effects), and explored opportunities to reduce the extent of earthworks by refining the alignment, achieving an appropriate balance between barrier and clear zone provision, together with realising opportunities to better utilise areas of suitable material. A comparison to the 2011 scoping phase design (which was based on only minor improvements to the 2009 scheme) demonstrates a reduction in the fill shortfall from approximately 400,000m³ to 50,000m³, resulting in an approximately \$10M reduction in cost over the scoping phase estimate.

1.9 Other Investigation Findings

Existing SH1 and Walking/Cycling

An urban design and landscape framework has been developed to ensure that broader urban design considerations, including desire lines for non motorised users are identified and catered for. Pedestrian and cycle links are proposed at all locations in which local roads cross over the expressway, including Otaki North interchange, Rahui Road, Otaki South Interchange (Otaki Gorge Road and Old Hautere Link), and Te Horo.

The project has assumed that an off road parallel shared path and cycleway for vulnerable/recreational users will also be developed in conjunction with the project. Assessment and stakeholder meetings have concluded that the facility should be provided within the existing SH1 corridor, and not the expressway corridor, given that this is where people want to move to and from. There remains some uncertainty as to whether this should be located on the east or west side of the road. Feedback from stakeholders provides greater support for a facility on the western side, however there are a number of design, safety and value for money issues that need to be addressed.

For the purposes of this SARA it has been identified that a facility can be provided within the Existing SH1 Road corridor and it has been agreed that the project being undertaken to look at the revocation of SH1 should look at the final form of this facility in more detail.

Potential Northbound Off-ramp Access South of Te Horo

Through the 2011 consultation several business groups identified a desire for northbound access off the expressway between Peka Peka and Te Horo with an aim to increase accessibility and traffic passing businesses south of Otaki Gorge. KCDC were supportive of this provided direct access is not provided to Te Horo as a means to manage growth pressures.

Options for a northbound (NB) off-ramp have been assessed and viable locations have been identified just north of Te Hapua Road (south of Mary Crest), or at the Peka Peka interchange. Options to the north of here were considered, but were eliminated on the grounds they would introduce significant new grade separated infrastructure, or impact significantly on identified ecological areas at Mary Crest. Assessment has highlighted that the presence of a ramp at Te Hapua Road does not provide a significant increase in trips along the Existing SH1 (estimated at only 10 more vehicles per hour in the PM peak), and results in additional ecological and property impacts. Greater benefits, with potentially lower environmental effects could be achieved with a NB off-ramp at Peka Peka, however this needs to be balanced with desires to manage growth pressures at this location and is being considered by the M2PP Project. For the purposes of PP2O it is recommended that no north bound off-ramp is located at Te Hapua Road.

1.10 Consultation

Consultation to-date has informed and influenced the option development and has included key stakeholder involvement (KCDC, Greater Wellington Regional Council, KiwiRail, Historic Places Trust, Iwi, OCB, Emergency Services), and community feedback on issues and options during February 2011. Initial liaison and site walkovers have also been completed with Raukawa and Nga Hapu o Otaki to enable an appreciation of local cultural values. The comments received through consultation to-date has helped shape the project and influence the design (eg. Te Horo cross corridor connection). Further consultation processes will be needed to inform the community of the scheme assessment outcomes and then to consult on mitigation measures as they are developed during the AEE phase.

1.11 Scheme Costs

A scheme estimate and quantified risk assessment have been completed for the preferred PP2O scheme, together with an independent parallel estimate. The expected and 95%ile estimates are \$252M and \$278M respectively (inclusive of property).

This estimate includes the outcomes of various basis of design and value engineering inputs. These culminated in a value for money challenge workshop and Value for Money Statement prepared for the Value Assurance Committee.

The BCR for the Wellington Northern Corridor (including agglomeration and wider economic benefits) is over 1. It is noted that without the inclusion of this project and other parts of the Wellington Northern RoNS package, the agglomeration benefits and GPS outcomes sought for this corridor may not be achieved. The funding allocation profile for PP2O has been assessed as High, High, Low.

1.12 Recommendations

It is recommended that the options described above are adopted as the scheme proposal for the PP2O project and that the following aspects should be considered further to provide input into the preliminary design and AEE phase:

- Take the refined options and decisions back to the public in a newsletter outlining decisions made and the process going forward;
- Undertake specific landowner consultation to ensure those newly effected or those no longer effected understand the preferred project and the decisions made, while also finalising specific private property access arrangements; and
- Progress further environmental and social/cultural assessments (including a CIA) to further inform the development of mitigation measures, and the preliminary design prior to lodging an application with the EPA.