




In Committee

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Subject	NZ TRANSPORT AGENCY: (SH1) WELLINGTON NORTHERN CORRIDOR RONS ENDORSEMENT AND FUNDING FOR INVESTIGATION, DESIGN AND PROPERTY PURCHASE

Introduction

1 The Minister has identified 7 roads of national significance (RONS) in the GPS issued May 2009, the development of which is intended to deliver national benefits to the transport network and to economic development. The 7 RONS are:

- Victoria Park bottleneck in central Auckland;
- Completion of the Western Ring Route in western Auckland;
- Waikato Expressway from Mercer to south of Cambridge;
- Tauranga Eastern Corridor;
- Christchurch Motorways;
- Wellington Northern Corridor; and
- Puhoi to Wellsford.

- 2 This paper presents the 6th funding application to the Board relating to a RONS following funding approvals for:
- Victoria Park Tunnel (construction);
 - Waikato Expressway (investigation to preliminary design);
 - Completion of the Western Ring Route (investigation to preliminary design);
 - Christchurch Motorways (investigation to preliminary design); and
 - Puhoi to Wellsford (investigation to preliminary design).
- 3 The Wellington Northern Corridor RONS comprises the major state highway components of a series of packages from Wellington Airport to north of Levin, which will include local roading, public transport and walking and cycling improvements that will provide a fully integrated solution.

Purpose

- 4 To seek the Board's endorsement of the NZTA's (SH1) Wellington Northern Corridor RONS in the Wellington and Manawatu-Wanganui Regions and its approval for funding the investigation and design of the RONS and for funding the property purchase associated with the RONS.

Recommendations

- 5 That the NZ Transport Agency Board:
- a. endorses the NZ Transport Agency's (NZTA's) (SH1) Wellington Northern Corridor RONS from north of Levin to Wellington Airport;
 - b. approves funding as set out in the table below for the investigation and design of NZTA's (SH1) Wellington Northern Corridor RONS and for property purchase associated with the RONS at a total estimated cost of \$386.2 million from N and C3 funds, subject to:
 - i a hold point at the macroscope of each element of the RONS to enable the Board to confirm the preferred option;
 - ii a hold point at the end of investigation of each element before detailed design commences to enable the Board to consider the scheme assessment and confirm funding for detailed design;

- iii the procedures employed to procure the investigation and design of each element either complying with the NZTA's approved procurement strategy or, where the procedures do not comply with the strategy, approved as special procedures by the Group Manager Regional Partnerships and Planning; and
- iv achievement during investigation of the outstanding conditions of funding and funding outcomes for the Basin Reserve and Linden to MacKay's Crossing (Transmission Gully) elements of the RONS set out in Board resolutions 08/12/0121 and 08/06/3115;

Element	Funding requested (\$ million)			
	(Excluding previously approved funding)			
	Investigation	Design	Property	Total
Airport to Mt Victoria Tunnel (N funds)	6.0	12.7	36.6	55.3
Basin Reserve (N funds)	0.0	2.2	2.5	4.7
Terrace Tunnel (N funds)	4.3	6.2	23.9	34.4
Ngauranga to Aotea Quay (N funds)	1.7	1.3	0.0	3.0
Ngauranga to Linden (N funds)	7.2	12.2	22.8	42.2
Linden to MacKay's Crossing (C3 funds)	2.7	36.5	23.6	62.8
MacKay's Crossing to Peka Peka (N funds)	15.7	26.7	49.6	92.0
Peka Peka to Otaki (N funds)	6.0	9.9	18.5	34.4
Otaki to Levin (N funds)	3.7	6.2	27.9	37.8
All elements – internal people resources capitalised to WNCR (N funds)	19.5	–	–	19.5

TOTAL	66.84	113.94	205.42	386.20
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- c. notes that funding has been approved previously for investigation of the Basin Reserve (\$3.3million) and Linden to MacKay's Crossing (Transmission Gully \$27.1million) elements and for property purchase associated with Transmission Gully (\$37.2million);
- d. notes that the funding allocated in the 2009–12 NLTP to the New and improved infrastructure for state highways activity class is considered sufficient to cover the funding requested in this application and that the NZTA's Highway and Network Operations Group is expected to purchase services for and manage the activities within this allocation;
- e. notes that the construction cost for the (SH1) Wellington Northern Corridor RONS is estimated at \$3.24 billion, the 95th percentile cost is estimated at \$3.93 billion and the 5th percentile at \$2.23 billion, recognising that many of the projects in the RONS are at an early stage of development and that their cost estimates are of rough order level only; and
- f. agrees to take Board paper 09/09/0292 out of Committee when the Board has published the notice of decision.

Background

Description of project

- 6 The Wellington Northern Corridor RONS (WNCR) involves improvement of State Highway 1 from about 10km north of Levin to Wellington Airport, comprising of 9 elements:
 - a Airport to Mt Victoria Tunnel (Ruahine Street improvements and tunnel duplication);
 - b Basin Reserve (capacity improvements and Buckle Street memorial park realignment¹);
 - c Terrace Tunnel (duplication);
 - d Ngauranga to Aotea Quay (peak time hard shoulder running);
 - e Ngauranga to Linden (Grenada to Petone new link road);
 - f Linden to MacKay's Crossing (Transmission Gully new road);
 - g MacKay's Crossing to Peka Peka (capacity and intersection improvements);
 - h Peka Peka to Otaki (capacity and intersection improvements and Otaki Bypass);
 - i Otaki to Levin (capacity and intersection improvements and Levin Bypass).
- 7 Refer to the map in Attachment 1, showing the WNCR and the 9 elements.

¹ The realignment of SH1 to accommodate the Buckle Street memorial park will be funded outside of the NLTP by the Ministry of Culture and Heritage.

Previous funding applications, conditions of funding and policy

- 8 The Board has previously approved funding for two NZTA activities, being:
 - a Investigation of the Basin Reserve improvements (Board resolution 08/12/0121); and
 - b Investigation of Transmission Gully (Board resolutions 06/10/1848 and 08/06/3115).
- 9 The work approved for funding under the above resolutions has not been completed, but is required to deliver the WNCR and will continue alongside the work proposed for funding under this application.
- 10 Conditions of funding applied to the Basin Reserve approval, requiring:
 - a *the development of a Memorandum of Understanding, to the Chief Executive's satisfaction, amongst the NZ Transport Agency, Wellington City Council and Greater Wellington Regional Council, which sets out governance arrangements and obligations of each party with the aim of optimising and delivering the complete package of public transport, walking & cycling, roading, urban design and land use changes of which this project is part; and*
 - b *the establishment of a hold point during investigation following selection of the preferred option and before undertaking the assessment of Environmental Effects and lodging of the Notice of Requirement, to enable the Board and the NLTP Review Group to consider the macroscopes of this project and the Basin Reserve Package of which this project is part.*
- 11 Progress has been made on condition (a) with a Memorandum of Understanding developed and signed off, meaning that this condition can be closed off.
- 12 The second condition (b) is standard for projects of this scale and complexity, although there is the added requirement to consider the macroscope for the package as well as the project, given the special need for close inter-modal, network and land use integration.
- 13 A condition of funding for the Transmission Gully approval for further investigation (08/06/3115) required a cost-scope adjustment application, which has been received, so closing out the condition.
- 14 In addition, the Board's resolution listed a number of outcomes expected from the further investigation, to:
 - a *enable Land Transport NZ to assess the package of activities proposed to implement the Western Corridor Strategy;*

b *enable Transit NZ, in collaboration with Greater Wellington Regional Council, to complete:*

- *all activities required under the scope of its stage 1 investigation, as set out in paragraph 6 of Board paper 08/06/3115;*
- *an investigation to optimise the performance of the proposed package of activities to implement the Western Corridor Strategy; and*
- *definition of the scope and timing to implement the Western Corridor Strategy.*

- 15 The first outcome, (a) above, has been captured in the evaluation of the network plan that is part of the WNCR Business case, as well as the assessment of the WNCR in this Board paper. We are satisfied that the evidence provided closes this requirement out.
- 16 The second outcome, (b) above, will be achieved when investigation of the Linden to MacKay's Crossing element is completed. We expect that the final Scheme Assessment Report on Transmission Gully will demonstrate this.

Strategy support and/or package endorsement

- 17 One strategy involving the RONS, the Ngauranga to Airport Corridor Plan, has been formally supported by the Board under its funding policy as set out in the Planning, programming and funding manual (Board resolution 08/07/3131). From a funding perspective, the Board supported Stage 1 of the Plan, covering the first 10 years of implementation and comprising of:
- bus priority measures through the central area and to all key suburban centres;
 - Basin Reserve fly-over;
 - peak period lanes on the shoulders of SH1 from Ngauranga to Aotea, combined with a bus lane on the Hutt Road;
 - additional lanes on the two existing roundabouts on Cobham Drive; and
 - walking and cycling improvements.
- 18 Stage 2 of the Plan comprises projects that were expected to be constructed in the longer term and could be supported in due course. These projects were:
- Wellington Street and Ruahine Street widening (state highway);
 - Mt Victoria tunnel duplication (state highway);
 - bus way or light rail implementation; and
 - duplication of the Terrace Tunnel (state highway) and removal of two lanes from the central area waterfront route.

- 19 The state highway projects from the Ngauranga to Airport Corridor Plan have been incorporated in the WNCR.
- 20 The Western Corridor Plan predated the development of policy for formal Board support from a funding perspective, although it was endorsed by the Transit NZ Board in August 2005.

Issue definition

- 21 The key issues pertaining to the WNCR are:
- Economic development – identified by the government as a RONS in the GPS and intended to provide national benefits to the national transport network and to economic development. Congestion relief, travel time and trip reliability, network resilience, freight transport efficiency and access to markets and employment areas are specific issues impacting economic growth and productivity in the wider region. Congestion issues are indicated by the degree of saturation (DOS), the ratio of traffic volume to road capacity, and the levels of service (LOS)² set out in the table below. The information indicates that SH1 is operating close to or above capacity in some sections. Both measures are expected to deteriorate over time as traffic volumes grow. Forecast increases in traffic volumes are shown in the AADT information on the maps in Attachment 2.

Location	DOS – N'Bnd		DOS – S'Bnd		LOS – N'Bnd		LOS – S'Bnd	
	AM	PM	AM	PM	AM	PM	AM	PM
Mt Vic Tunnel	0.92	0.95	0.69	1.07	E	E	D	F
Urban Motorway	0.36	0.77	0.77	0.51	B	D	D	C
North of Ngauranga Gorge	0.27	0.77	0.74	0.42	B	D	D	C
Mana	0.41	0.86	0.70	0.58	C	E	D	C
Centennial H'way	0.29	0.66	0.55	0.46	B	D	C	C

- Safety – crash rates on parts of SH1 on the WNCR are high, particularly in the more northern elements, as indicated by the number of crashes in the 2004–08 period, shown in the table below. The crash rates for the 2 most northern elements are 18.6 and 21.9 crashes per 100 million vehicle km compared with the national average of 16.

² Level of Service (LOS) is a ranking from A to F used to describe operating conditions (speed and travel time) on a road. Level A represents free-flowing conditions and Level F represents heavily congested conditions.

Element	Crash History 2004 – 2008				
	Fatal	Serious	Injury	Non-injury	Total
1 – Airport to Mt Vic Tunnel	3	2	47	129	181
2 – Basin Reserve	0	4	16	146	166
3 – Terrace Tunnel	0	4	6	42	52
4 – Ngauranga to Aotea Quay	1	14	75	223	313
5 – Ngauranga to Linden	3	14	123	436	576
6 – Linden to Mackays ³	15	49	165	566	795
7 – MacKays to Peka Peka ³	5	23	77	254	359
8 – Peka Peka to Otaki	4	43	26	77	150
9 – Otaki to Levin	13	39	108	277	437
Totals	44	192	643	2150	3029

Objectives

22 The objectives of the WNCR are to:

- give effect to the GPS, in particular to deliver the RONS;
- enhance inter-regional and national economic growth and productivity;
- improve access to Wellington's CBD, key industrial and employment centres, port, airport and hospital;
- provide relief from severe congestion on the state highway and local road networks;
- improve the resilience of the transport network; and
- improve safety and journey time reliability on SH1 between Levin and the Wellington airport.

³ Safety improvements on the existing state highway, either in place or planned, e.g. central median wire rope barriers, are reducing/will reduce the number and seriousness of crashes on these two sections, which largely will be seen in future crash history reports.

Strategic context

Regional overview

- 23 The majority of the RONS is in the Wellington Region although part of the Otaki to Levin element north of Pukehou is situated in the Manawatu–Wanganui Region.
- 24 The Wellington Region is New Zealand's third largest region by population, containing about 479,000 people and forecast to grow to around 540,000 by 2030. Most of this growth is expected to occur in Wellington City and on the Kapiti Coast. The region has 11% of the national population and produces 13% of the nation's GDP. Income per capita of people aged 15 years and over averaged \$35,400 per annum in the 2006 Census, around 114% of the NZ average. Wellington City's income per capita averaged \$40,300, about 130% of the NZ average. The Region's average household income is the highest of all regions in the country.
- 25 The region has the highest rate of public transport use in New Zealand with 35 million passenger trips taken per year. According to the 2006 Census, 17% of Wellington City people walked or cycled to work and a further 17% travelled to work by public transport.
- 26 The Horowhenua District, through which the Otaki–Levin section of the RONS passes, is predominantly rural with a population of around 30,000 and relatively low population growth. Its income per capita of those aged 15 years and over was \$24,300 in the last Census, about 78% of the national average. The Manawatu–Wanganui Region's average household income is amongst the lowest in New Zealand.
- 27 The wider regional economy is based on a range of activities, including forestry, extensive agriculture (sheep and cattle), horticulture, viticulture, manufacturing, business and financial services, retail, performing and visual arts, tourism, health and community services, hospitality and the business of government. The more intensive economic activities are based on the Wellington CBD and a substantial portion of manufacturing focussed on Porirua and the Hutt Valley.

Key regional transport corridors

- 28 The Wellington Northern Corridor is one of 4 key transport corridors serving the part of the southern North Island impacted by the RONS, these being:
 - a Air transport into Wellington Airport provides for a substantial amount of domestic travel and some international travel with about 5 million passengers using the airport per year. It also caters for small volumes of higher value freight. Efforts are underway to attract long haul capable aircraft, which would enable greater freight loadings and position Wellington as an international passenger hub. The recent announcement of regional services based on Paraparaumu Airport could see some diversion of air travel from Wellington, but could also result in increases in demand due to the improved ease of travel.

While air transport is critical to the regional economy, particularly for activities such as business, tourism and government, it is restricted to those travelling longer journeys and more wealthy, time limited travellers or to lighter, high value freight. Air transport generally depends on land transport as part of the journey or supply chain. The greater the importance of an airport, such as Wellington, to regional and national economies, the more critical are the land transport connections that access it.

- b Sea transport to and from Wellington carries substantial volumes of freight and passengers, particularly between the North and South Islands. Over 1 million people travel by sea across Cook Strait each year and the ferry service transported around 3.4 million tonnes from North to South Islands in 2006/07. The breakdown of North Island origin and destination freight volumes in the following table shows that much of the freight involves regions well outside the Wellington Region, demonstrating the national importance of the ferry links.

The main coastal shipping service providers include Wellington in their freight schedules, linking to ports in both islands with Roll-on/Roll-off (RORO) and conventional vessels. Updated National Freight Demands Study information shows about 160,000 tonnes of general cargo flows out of Wellington each year as coastal shipping freight and about 65,000 tonnes is shipped into the port.⁴ CentrePort services export and import freight shipments, with cargoes accumulated from southern and central North Island. Specialised carriers bring fuel and cement to Wellington, cruise ships bring tourists, while a wide range of vessels serve public transport, fishing and recreational needs.

Cook Strait Ferry Freight Movements 2006/07 ⁵				
Origin or destination in North Island	Road		Rail	
	Million tonnes	% of total for mode	Million tonnes	% of total for mode
Upper North Is (Northland, Auckland, Waikato, BOP, Gisborne)	1.4	62%	0.8	74%
Lower North Is (Taranaki, Hawkes Bay, Manawatu-Wanganui)	0.6	24%	0.2	20%
Wellington	0.3	14%	0.1	6%
Total for mode	2.3		1.1	

⁴ Coastal Shipping and Modal Freight Choice, Rockpoint, 2009

⁵ National Freight Demands Study, 2008

As for air transport, sea transport depends on land transport as part of the journey or supply chain, and the importance of sea transport to regional and national economies dictates the need for high quality land transport connections to access it. In Wellington's case, sea transport is a very important part of inter-regional journeys as well as national and international supply chains and the land transport links to it need to reflect this importance.

- c Land transport along the Hutt Corridor is of high intra-regional importance. The Gracefield/Seaview industrial area in the Hutt Valley contains around 50% of the industrial floor space for Wellington and Lower Hutt and the southern part of the corridor, largely based on SH2, provides a critical freight route connecting to Wellington City, CentrePort and to the Northern Corridor based on SH1. The lower part of the corridor is also an important commuter route served by road and passenger rail modes.

Beyond the Hutt Valley, the corridor is of less importance providing road and rail access for freight and people to the Wairarapa and eastern North Island. Although this part of the corridor provides access to support Wairarapa's economic growth in life-style, horticultural and viticultural segments, the difficulty in upgrading SH2 and the generally extensive land uses in the areas served by both rail and state highway limits its potential to incremental rather than transformational improvements. Additionally, the section of SH2 over the summit of the Rimutaka Range is subject to occasional closure due to snow.

Efforts are being made to attract industry to the Wairarapa via the Wainawa industrial zoning and a major irrigation project is being explored. If this does happen it may accelerate improvement of the corridor but this is likely to be restricted to incremental improvements due to the difficulty of upgrading the route. Other accesses to the Wairarapa may have more potential for significant improvement.

- d Land transport along Wellington's Northern Corridor is of critical inter- and intra-regional importance. Substantial freight volumes are carried north and south on both road and rail to deliver products to markets and ports. The capacity utilisation on the North Island Main Trunk line is about 50%, indicating a capacity potential to increase rail freight movements.⁶ Road freight movements are substantial with about 1,400 heavy commercial vehicles (HCVs) per day at the regional boundary, increasing to about 1,500 at Paekakariki and to about 3,000 between Ngauranga and Aotea Quay after the merge of SH1 and SH2.

⁶ Coastal Shipping and Freight Modal Choice, Rockpoint 2009

Freight traffic into the Wellington Region are forecast to grow fairly substantially (+80% to 2031) driven to a large extent by growth of forest products in the lower North Island, while outbound freight flows are expected to increase more modestly (+40% to 2031).⁷ Although spare capacity in rail utilisation is apparent, the evidence from Rockpoint's report on coastal shipping is that only a portion of the freight growth will be carried by rail and that road will continue to be the preferred mode due to its supply chain reliability, simplicity, flexibility and timeliness.

People movements along the corridor are also of high importance, with many of these movements being in the form of commuting to and from the Wellington CBD, mostly by public transport and private motor vehicle, augmented by active mode commutes.

Constraints in rail and road modes are evident from studies and information supporting funding applications, which are impacting economic growth and productivity along the corridor. Given that much of the region's growth is planned in areas adjacent to the corridor, the issues of congestion and constrained public transport patronage, combined with the need to improve freight efficiency under the GPS, require significant improvements in the transport corridor. Although, there are difficulties in implementing some of the planned improvements, e.g. due to geographical and land use constraints, the potential for such improvement is feasible, unlike SH2 at the upper end of the Hutt Corridor.

Planning context

Wellington Regional Land Transport Strategy

- 29 The main planning document covering the WNCR is the Wellington RLTS, which sets out a series of transport issues, objectives, targets and policies for the region. Issues and outcomes of most relevance for the WNCR are:

RLTS issues relevant to the WNCR	RLTS outcomes relevant to the WNCR
<ul style="list-style-type: none"> • safety & personal security 	<ul style="list-style-type: none"> • Improved regional road safety
<ul style="list-style-type: none"> • traffic congestion 	<ul style="list-style-type: none"> • reduced severe road congestion
<ul style="list-style-type: none"> • Integration of transportation and land use planning 	<ul style="list-style-type: none"> • Improved land use and transport integration (in line with the Wellington Regional Strategy and local authority development strategies)
<ul style="list-style-type: none"> • Freight 	<ul style="list-style-type: none"> • improved regional freight efficiency
<ul style="list-style-type: none"> • economic development 	
<ul style="list-style-type: none"> • transport network reliability 	

⁷ National Freight Demands Study, 2008

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| <ul style="list-style-type: none"> strengthening east-west connections | |
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30 A number of multi-modal corridor studies have been undertaken and plans developed to give effect to the RLTS by identifying the transport projects required to address the issues and achieve the desired outcomes. WNCR project elements have been identified and developed as part of these corridor studies and plans, and are now positioned as part of a set of integrated transport packages. The plans and studies relevant to the WNCR are:

31 Western Corridor Transportation Study and the Western Corridor Plan

The study was undertaken in 2004 between Transit NZ and GWRC taking in the transportation corridor from Ngauranga to north of Waikanae, including associated east-west links. It involved a comprehensive assessment of the relationship amongst road and rail improvements, car, public transport and freight movements, travel demand management and road pricing along the corridor.

Five scenarios were developed and subsequently consulted on, with emphasis ranging from a strong passenger transport focus to a strong emphasis on new roads. The results of the assessment indicated that, even with substantial improvements to public transport and a corresponding increase in patronage, rail public transport capacity limitations and growth in the corridor means that road improvements are required. Consequently a scenario representing a balanced approach involving all key transport elements was selected as the preferred alternative.

This scenario formed the basis of the Western Corridor Plan, adopted in 2006, comprising rail improvements, increased rail frequencies, further rail rolling stock, improvement in the state highway, improvements in the local roading network, walking and cycling facilities where appropriate and travel demand measures. Key differences between the Study and adopted Plan were:

- the proposal that Transmission Gully be the preferred state highway option rather than the coastal route for the section from Linden to MacKay's Crossing. Initially the coastal route was favoured, even though it was assessed at a lower rating than Transmission Gully, as it was considered more affordable and could be staged to spread the costs and risks. However, the majority of submitters (96%) were against the coastal route and Transmission Gully was proposed as the preferred option.
- the removal of the Northern Expressway from the Plan on acceptance of submitters' views that the combination of the Kapiti Western Link Road and Transmission Gully would significantly improve the regional transport network well into the future. The Hearings subcommittee noted, however, the future merits of the Northern Expressway beyond 10 years.

Both the Transit NZ Board and GWRC adopted the plan in 2006, and the provisions were included in the RLTS.

32 Ngauranga to Wellington Airport Corridor Plan

The Ngauranga to Airport Strategic Study was a joint study amongst Transit NZ, GWRC and WCC, which led to development of the Ngauranga to Wellington Airport Corridor Plan. Stage 1 of the Plan was assessed using the funding assessment framework developed for strategy assessment and was supported by the Land Transport NZ Board in 2008 (Board resolution 08/07/3131). The Plan was subsequently endorsed by the NZTA Board in its state highway manager role.

33 Ngauranga Triangle Strategy Study

This was a joint study between NZTA, WCC and Hutt City Council, building on the previous work of the Western Corridor Plan in investigating alternatives to improve the movement of freight and people from Wellington and the Hutt Valley to Wellington's ports and points north of Wellington. The study recommends the construction of the Petone to Grenada Link Road to relieve congestion on SH1 and SH2 and improve freight transport efficiency, and is due to be publicly consulted early 2010.

- 34 There appears to be a robust alignment between the WNCR and the current Wellington RLTS. A point of misalignment is the inclusion of the MacKay's Crossing to Peka Peka element in the WNCR. As discussed above, this (in its guise as Northern Expressway) was removed from the Western Corridor Plan and therefore not included in the RLTS. However, Transit NZ and KCDC have long recognised that SH1 would need to be upgraded within the next 20 years and its inclusion in the WNCR effectively brings forward this long term intent.
- 35 GWRC is reviewing the RLTS currently with a view to replace it with a revised RLTS by mid 2010. This will provide the opportunity to take account of the state highway improvement through the Kapiti area. Options for SH1 and the Kapiti Western Link Road are now under consultation.

Wellington Regional Strategy, Regional Policy Statement and territorial growth strategies

- 36 The Wellington Regional Strategy (WRS) is the region's principal growth strategy, developed by all of the region's territorial authorities and adopted in 2007 as a non-statutory document.
- 37 Three of the regional focus areas in the WRS are supported by the WNCR, being:
- the Pauatahanui/Judgeford area identified by Porirua City Council as a future rural-residential and industrial/commercial growth node if Transmission Gully is confirmed as the preferred option;

- the growth spine from Johnsonville to Wellington Airport, which is the premise for WCC's Urban Growth Strategy. The growth spine concept includes development of Johnsonville as a major sub-regional centre, along with the Lincolnshire Farm structure plan area, which would be supported by the Ngauranga to Linden element. The growth spine also plans for intensification of inner urban areas in the Adelaide Road corridor and Kilbirnie town centre, which would be supported by WNCR elements such as Basin Reserve improvements and Airport to Mt Victoria.
 - the Grenada/Gracefield focus area, where the WRS signals an opportunity to develop an east-west link that aligns directly with the Ngauranga to Linden element.
- 38 Development of the WNCR through Kapiti is likely to impact on identified focus areas at the northern Waikanae edge. KCDC has approved district plan changes for an urban edge in Waikanae North, which is consistent with the WRS. This is intended to limit urban expansion to the north of Waikanae and is based on an assumption that Stage 1 of the Kapiti Western Link Road will proceed. However, until a decision is made on the macroscope for the MacKay's to Peka Peka element of the WNCR, it is unclear what form the local roading network will take.
- 39 Another major area of development on the Kapiti Coast is the proposal involving Paraparaumu Airport. None of the options being consulted on would preclude this development, although the preferred option, once selected, may need refining to optimise integration with the proposed land use.

Wellington Regional Policy Statement

- 40 The operative Wellington Regional Policy Statement (RPS) has little specific relevance to the WNCR. The proposed RPS does contain a number of objectives and policies relevant to the WNCR, and specifically includes a section on regionally significant infrastructure. We have submitted on the proposed RPS and are seeking to enhance provisions that will be relevant to the WNCR.

Wanganui-Manawatu (Horizons) Region

- 41 The Horizons RLTS identifies the need for capacity and safety improvements on SH1 as one of the region's highest transport priorities. The RLTS also identifies the need for enhanced links to major transport and production centres including Palmerston North.
- 42 Capacity constraints and safety concerns on SH1 have been identified as longstanding issues in the Horowhenua District, with studies and investigations stretching back to the late 1980s. None of this work has progressed to identifying a preferred alternative for detailed investigation and option selection.

- 43 A major study of strategic transport networks in the Manawatu has been commissioned amongst the NZTA, Horizons Regional Council, Palmerston North City Council and Manawatu District Council. The study will include assessment of the quality of the links between the northern element of the WNCR and transport generators in the Manawatu, and will be integral to ensuring network wide solutions are developed as the WNCR elements are investigated.
- 44 Some observers have noted an increase in the amount of warehousing at Palmerston North, suggesting that the city is taking on greater importance as a freight logistics centre for the lower North Island. The fundamentals of location and relatively easy rail and road access tend to support this view, but there appears to be little in the way of hard evidence to back it up. It would be useful for the study discussed above to consider Palmerston North's current and future freight logistics role as this could have profound impacts on freight flows through the south of the North Island, including the WNCR.
- 45 Horowhenua District Council has introduced a district plan change that includes provision for route protection should the option of an eastern bypass of Levin proceed. We will continue to work with the council to as options for the Otaki to Levin package are identified and investigated.

Alternatives and options

- 46 As shown in the Description of project section above, the WNCR consists of 9 elements along its length from the airport to north of Levin. These are not just elements of the RONS, but are also elements of packages of transport activities, which are at varying stages of development and have differing levels of integration and coordination complexity.
- 47 The packages associated with the elements are summarised in the tables shown in Attachment 3. These tables intend to show:
- the key element in each package (as in the RONS);
 - the key strategy underpinning each package;
 - key transport issues for each package;
 - the preferred strategic alternative for the package – this ranges from predominantly a state highway solution maybe with ancillary local road or other modal activities to a solution comprising a full mix of passenger transport, state highway, local road, active modes, etc;
 - the status of the implementation package, i.e. what components have been defined and to what level;
 - the components that make up the package – classified by mode;

- the partners required to develop, construct and operate the package, e.g. NZTA, Wellington City Council, Greater Wellington Regional Council and Kapiti Coast District Council;
- what options have been defined for package components and whether a preferred option has been selected at this stage;
- the impacts of the package, being:
 - at a local level – the predominant land use being affected and the level of visual and severance impacts;
 - at a wider level – potential impact on wider area and identified specific impacts; and
- the level of integration required to develop, implement and operate the package and a view of the level of risk around integration based on the consequences of unsuccessful integration.

Scope of activity under funding request

- 48 The funding requested is intended to take all elements of the WNCR through to the end of the design phase. The scope of activities is:
- determining the form and function of WNCR elements;
 - identification and investigation of options;
 - the selection of a preferred option for each element;
 - consultation on the preferred element;
 - geotechnical investigations;
 - preliminary and detailed design;
 - social and environmental assessments to support lodging of NORs;
 - lodging of NORs and completion of other consenting processes, e.g. Environment Court or Board of Inquiry Hearings;
 - documentation and drawings preparation for procurement of construction services; and
 - property purchase.

Assessment

- 49 We have assessed the activity using the NZTA's assessment framework and have determined the following assessment profile:

Readiness for funding this phase	<p>Ready</p> <ul style="list-style-type: none"> the WNCR is included in the 2009-12 NLTP parts of the WNCR are committed activities with funding already approved, while the activities included in this funding application are shown in the NLTP either as Cat2 with a probable funding priority or as Reserve with a Res.B funding priority, meaning that they have been indicatively programmed to start beyond 2011/12 but would be considered for funding during 2009-12 should circumstances warrant, considering their funding priority and availability of funding. a funding application has been provided via LTP online and all sections required for funding have been completed
Strategic fit	<p>High</p> <ul style="list-style-type: none"> the WNCR is identified as a RONS in the GPS issued May 2009 it is recognised as a freight route under the NZTA's assessment framework, which would result in it having a High strategic fit given that it has potential for improvements that would make a major contribution to the national economy
Effectiveness	<p>High</p> <ul style="list-style-type: none"> the WNCR is integrated into 9 packages of activities that provide a solution to the entire Northern Corridor from Wellington Airport to north of Levin and will contribute to NZTA's Investment & Revenue Strategy, which intends to give effect to the GPS these packages contribute mainly to LTMA objectives of economic development and safety, but also to sustainability and access & mobility objectives

	<ul style="list-style-type: none"> • in particular, travel time savings over the overall route are predicted for 2026 at around 33 minutes southbound in the am peak, and about 30 minutes northbound in the pm peak • network integration will be achieved through the development and implementation of the WNCR in conjunction with local authority roading activities • modal integration will be achieved through the investment underway in public transport infrastructure, the coordinated development and construction of the WNCR and local infrastructure and the implementation and funding of PT services • land use integration is of fundamental concern in the development of the WNCR, with particular focus required on the different needs for each package along its length. It will support WCC's plans for urban intensification and green-fields development as well as other authorities' development plans. • organisational integration will be underpinned by MOUs amongst the NZTA and appropriate local and regional authorities for each of the packages • the WNCR aligns well with Wellington's and Horizon's RLTSs • a relatively small, positive contribution to the National Energy Efficiency Conservation Strategy has been modelled • network resilience is improved along the Northern Corridor, with more options available to users to continue travelling when crashes or other events block roads • the impact of road transport is reduced through some of the townships, e.g. Mana, due to lower traffic volumes relative to the do-minimum. However, it would be unrealistic to expect that traffic will be reduced to levels where community severance is no longer an issue, e.g. Mana AADT still remains high at 24,000 in 2026 albeit lower than the current 33,000 vehicles per day. • a negative impact of lower travel times could be encouragement of longer distance commuting as people choose to live further from Wellington and travel to work. While people are likely to take advantage of the easier access to live further afield for life-style reasons, the negative impact would be mitigated to a large extent by:
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	<ul style="list-style-type: none"> ○ provision of improved public transport services in the corridor (new electric multiple units (EMUs) and increased frequencies) – overall public transport use is projected to increase from 45% in 2006 to 53% in 2026 with the implementation of the full Linden to MacKay's package. If the roading improvement element of the package was removed, it could be argued that the increase in patronage would be greater. However, this is an unrealistic argument as the level of growth and rail constraints requires all elements of the package to be implemented to achieve the overall benefits of the strategy. ○ continuation of WCC's TDM measures, particularly its parking strategy, which discourages private vehicle use ○ development of Kapiti Coast townships is planned to promote greater self-containment, i.e. with greater scale, more intensive land use and more employment opportunities there will be less need to travel long distances for work • analysis of HCVs shows that use of Transmission Gully will reduce travel times for freight transport but that HCV vehicle operation costs (VOCs) are likely to be higher than for the existing coastal route due to adverse gradients, i.e. some VOC disbenefits accrue to the project. The analysis is at a high level at this stage and will be considered in greater detail during construction. Freight truck associations have indicated that they will use Transmission Gully. • a caveat on the high rating is the affordability of the WNCR – as discussed in the Funding plan and source section
Efficiency	<p>Low</p> <ul style="list-style-type: none"> • the BCR for the WNCR has been determined at 1.2 • this includes agglomeration benefits as allowed under the NZTA's Economic Evaluation Manual, which increase the BCR from 1.1 to 1.2, but not any other wider economic benefits • the economics have been peer reviewed and material issues either closed off or covered with a satisfactory response from the NZTA's Highway & Network Operations Group

	<ul style="list-style-type: none"> • sensitivity testing has been undertaken based on discount rates lower than the prescribed 8% (see discussion in following section): <ul style="list-style-type: none"> ○ 6% discount rate – BCR = 1.4 ○ 4% discount rate – BCR = 1.8 • other sensitivity testing includes (see discussion in following section): <ul style="list-style-type: none"> ○ capping of benefits from 2026 for RONS elements within Wellington City – BCR = 1.0 ○ wider economic benefits additional to agglomeration – BCR = 1.4
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Economic efficiency issues

- 50 Sensitivity testing included the use of lower discount rates (4% and 6%) to determine the WNCR BCR, based on a viewpoint that the 8% discount rate set, required by Treasury to be applied to transport infrastructure projects, does not indicate the very long term, strategic nature of the assets proposed under the RONS. This was discussed in detail in the Board papers for the Waikato Expressway and Puhoi to Wellsford RONS (Board papers 09/04/0173 and 09/10/0278).
- 51 Capping of benefits from 2026 for the WNCR elements within Wellington City has been undertaken to test an argument that, from 2026, congestion in the city would reach a level that would preclude any further traffic growth in the do minimum, i.e. an LOS of F would restrain growth. The argument is that modelling of traffic growth under such circumstance may exaggerate the benefits of the improvements.
- 52 An evaluation of wider economic benefits (WEBs) has been provided as part of the WNCR business case. The WEBs evaluated for the WNCR comprise:
- agglomeration benefits that arise from intensification of economic activity as a result of better access and reduced travel times from transport improvements; and
 - increased employment resulting from the RONS.
- 53 The procedure for evaluating agglomeration benefits has been incorporated into NZTA's Economic Evaluation Manual (EEM) and has been included in determining the BCR for the WNCR. The impact is relatively small, increasing the BCR from 1.1 to 1.2.

- 54 As discussed in the Puhoi to Wellsford RONS Board paper, the evaluation of wider economic benefits of employment associated with the RONS has generated substantial debate within the NZTA. Part of this debate centres on the methodology employed for both Puhoi to Wellsford and the WNCR, which uses increases in employment observed in a limited number of UK transport examples and applies them to NZ, as this is seen by some as a credibility stretch. Debate also centres on whether the WEBs have already been captured in the land use and traffic growth assumptions that are part and parcel of calculating the normal transport BCR.
- 55 At a national level, the transformational impact of the 7 RONS can be considered to generate economic benefits over and above traditional transport benefits captured under EEM procedures. It is possible to demonstrate the WEBs generated through use of a General Equilibrium model, albeit that these are sensitive to the assumptions underpinning the model, mainly that the savings from reduced vehicle operating costs will be realised in increased investment activity rather than retained as profit. While there are difficulties in recognising the national benefits on a regional basis, this does not mean that they do not exist. There is some logic to consider regional benefits from RONS such as the WNCR, even though the indication of WEBs provided in the business case is a rough estimate at best.

Cost estimate and cash-flow

Phase cash-flow

- 56 The cash-flows (excluding previously approved funding) for the phases are forecast below:

Year	Investigation ⁸ (\$ million)	Design (\$ million)	Property (\$ million)	NZTA cost (\$ million)
2009/10	8.14	0	15.69	23.83
2010/11	25.71	1.10	17.60	44.41
2011/12	16.01	10.19	38.91	65.11
2012/13	3.74	13.71	47.70	65.15
2013/14	5.58	46.41	60.48	112.47
2014/15	2.78	22.32	10.83	35.93
2015/16	2.44	17.82	10.42	30.68
2016/17	2.44	2.26	3.79	8.49

⁸ Includes internal NZTA resources (people costs) of \$2.44 million p.a. from 2009/10 to 2016/17 inclusive capitalised to the WNCR – see LTP online for detail.

- 59 Construction/implementation cost estimates are shown in the table below. They include property and escalation.

Year	Cost estimate – this application (\$ billion)
Expected	3.237
95%ile	3.925
5%ile	2.238

- 60 Parallel cost estimates for each element will be undertaken in accordance with the NZTA's Planning, programming and funding manual.

Function, form and standards

- 61 Traffic volumes along the corridor currently vary from around 10,000 vehicles per day (vpd) at the northern end to approximately 85,000 vpd after the SH1 /SH2 merge, reducing to 39,000 vpd at Mt Victoria Tunnel. In 2026, after WNCR is constructed, these volumes are predicted to increase to around 14,000 vpd at the northern end, 96,000 vpd after the SH1 /SH2 merge and 56,000 vpd at the Tunnel. Clearly the scope and standards applied to the WNCR will need to reflect these differing traffic volumes, the impact of peak period distribution and integration requirements. These will be clarified during investigation when the form and function of each element will be considered and preferred options selected.

Risk and opportunity assessment and management

- 62 The delivery of the RoNS is a high priority for NZTA and will require close liaison with our partner organisations. NZTA will use its standard risk management methods to identify, assess, apportion and control risks relating to the delivery of the Wellington RoNS.
- 63 Risk groups identified so far are:
- cost estimating
 - economic benefits calculations
 - delivery
 - political
 - stakeholders

- 64 For each project within the programme, risk registers will be established and monitored by the Programme Management Office (PMO). Risk mitigation plans will be agreed with the project managers, and monitored by the PMO.
- 65 The Programme Governance Board will receive risk reports as part of the normal reporting regime and a clear and robust escalation process will be developed to ensure that risks are managed at the most appropriate level, and that there is sufficient visibility of risk across the NZTA.
- 66 Specific risks identified in respect of the WNCR, include:
- 67 All cost estimates are based upon PFR or scoping level assessments (except Transmission Gully for the Linden to MacKays section) and definition of the project and associated cost estimates are therefore limited, especially in environmental areas, services and geological conditions. As a result the contingency for these items is significant. Historically, cost estimates increase as projects are progressed; however current economic conditions have been pushing down prices. Certainty around this in the future is unknown.
- 68 The uncertainty around the planning process and public acceptability is significant; however this can be mitigated through strong public engagement and statutory processes.
- 69 Resources to undertake work and fulfil the proposed programme – this is the case across the investigation, design and construction phases. Early dialogue will be opened up with the supply chain, and supply chain management at a programme level will be a key role of the PMO.
- 70 Maintenance and ownership of existing SH1 – this proposal assumes limited costs associated with the existing SH1 network as part of the handover of ownership to the local authorities. It is likely that they would accept the handover, due to the local accessibility and development benefits. However, until this process is commenced, the actual cost implications and project demands are difficult to quantify. Dialogue will be maintained with the local authorities throughout the development of the WNCR projects.
- 71 Another key risk to constructing the WNCR is funding availability, which is discussed further in the Funding plan and source section.

Procurement

- 72 The NZTA, through the Wellington Business Unit PMO, will develop procurement and supply chain management strategy for the programme. The strategy will assess the procurement options available for each element of the WNCR programme, and will be the foundation for managing supply chain performance.

- 73 By taking a proactive approach to managing the whole supply chain, NZTA can expect to:
- improve risk identification and management;
 - create and maintain a supply base map of core services weighted for risk and demand;
 - achieve greater efficiency and hence value for money;
 - optimise the programme based on predictable resource capability and capacity knowledge;
 - improve engagement with the supply chain and hence create and maintain programme level relationships; and
 - establish programme level performance metrics for all suppliers which will enable targeted reporting across all project elements.
- 74 We anticipate that a range of procurement methods will be used for the programme elements including Early Contractor Involvement, Design and Construct and Alliances. The option chosen for each element will be dependant on the detailed nature of the project and will be assessed during the investigation phase.
- 75 Should any procurement methods be identified that are not specifically provided for in the Competitive Pricing Procedures Manual and the NZTA Procurement Manual, an application to use a special procurement procedure will be submitted to the appropriate NZTA delegated authority.
- 76 The Wellington PMO will have the responsibility for oversight of all procurement and supply chain management in support of the project managers. This centralisation will bring consistency and will develop a core of skills and expertise that will itself lead to efficiency and effectiveness gains.

Case management

- 77 Case management describes the functions performed by the NZTA in working with activity sponsors to progress activities, programmes and packages from inception through to implementation. The purpose of these functions is to:
- facilitate projects, programmes and packages that are consistent with the objectives of the LTMA and GPS;
 - ensure that projects, programmes and packages are aligned with the Investment and Revenue Strategy as embedded in the Planning, Programming and Funding Manual; and

- undertake projects, programmes and packages in a cost effective way.

- 78 The core role of the case manager is to maintain an awareness and understanding of the project's issues and risks; its progression against stated time frames and how and why decisions are being made.
- 79 The functions will include:
- a coordinating role to ensure that appropriate input is provided in a timely manner
 - providing advice on problem definition, scope, costs, risk and funding
 - monitoring programme progress
 - facilitating access to expert knowledge to develop and implement best practice principles are applied
 - informing the sponsor of the policies and requirements of the NZTA
 - communicating information to relevant internal officers; and
 - assessing and advising whether the NZTA's policies, procedures and information requirements are appropriate using the information gained from their application in a live environment.
- 80 The WNCR is a major programme of activities with very substantive design and construction costs. The regional Programmes and Funding Manager has been appointed as the case manager, reporting directly to the Regional Director. The Regional Partnerships and Planning programmes and funding team is currently engaged with the Highway and Network Operations Group (HNO) on the Basin Reserve Investigation and will continue to be involved with all aspects of the package as they develop.

Funding plan and source

- 81 The investigation and property phases of the WNCR are incorporated in the 2009–12 NLTP either as committed activities or with Cat2 status and probable funding priority. The design phases are included in the NLTP with a Reserve status and Res.B funding priority, meaning that they have been indicatively programmed to start beyond 2011/12 but would be considered for funding during 2009–12 should circumstances warrant, considering their funding priority and availability of funding.

- 82 Given the WNCR's assessment profile of HHL, which denotes a funding priority class of 4, we recommend that the investigation, property and design phases be funded from N funds, other than Transmission Gully where all funds required after current approved allocations are exhausted are to come from C3 funds. The C3 funds are a Crown appropriation specifically directed for the roading solution in the Western Corridor and the selection of Transmission gully as the preferred roading solution means that these funds should be directed to its development and construction.
- 83 We confirm there are sufficient funds available from the recommended source to allocate as requested, although we have included a noting recommendation to the effect that the HNO Group is expected to purchase and manage the activities within the funds allocated in the 2009-12 NLTP.
- 84 Funding for construction of the WNCR is more problematic and is linked to funding for the entire national RONS programme. Unless further funding is made available, it is highly unlikely that there will be sufficient revenue and therefore funding in the NLTP to cover construction of the entire RONS programme in an aspirational timeframe.

Reasons for recommendation

- 85 The assessment profile for the Wellington Northern corridor RONS (WNCR) has been determined as being of High strategic fit, High effectiveness and Low economic efficiency.
- 86 The WNCR contributes to the NZTA's Investment and Revenue Strategy, which is intended to give effect to the GPS issued May 2009, and contributes to the economic development and safety objectives of the LTMA.
- 87 The WNCR is an integral component in a series of transport packages along the Northern Corridor that integrate transport with networks and land use across modes and organisations.
- 88 We confirm that the matters in sections 20(2) and 20 (5) of the LTMA have been satisfied, and that the matters in section 20(3) have been taken into account.

Conclusion

- 89 Funding for the investigation, design and property phases of the WNCR is warranted based on the funding profile of HHL and the project's contribution to the NZTA's Investment and Revenue Strategy and to the economic development and safety objectives of the LTMA, and we recommend that the Board approves its funding from N and C3 funds.

90 Conditions are recommended for:

- hold points to enable the Board to confirm the preferred option for each element of the WNCR;
- hold points to enable the Board to consider the scheme assessment and confirm design funding for each element;
- approval of any special procurement procedures by the Group manager regional Partnerships and Planning; and
- ensuring completion of conditions of funding and outcomes from previous Board funding approvals.

Communications plan

91 A communications plan is in preparation involving NZTA national and regional staffs who is liaising with staff from the Minister's office.

In Committee status

92 Board paper 09/11/0292 is In-Committee to allow the Board free and frank discussion of the issues and we recommend that it be taken out of Committee when the Board has published its decision.

Attachments

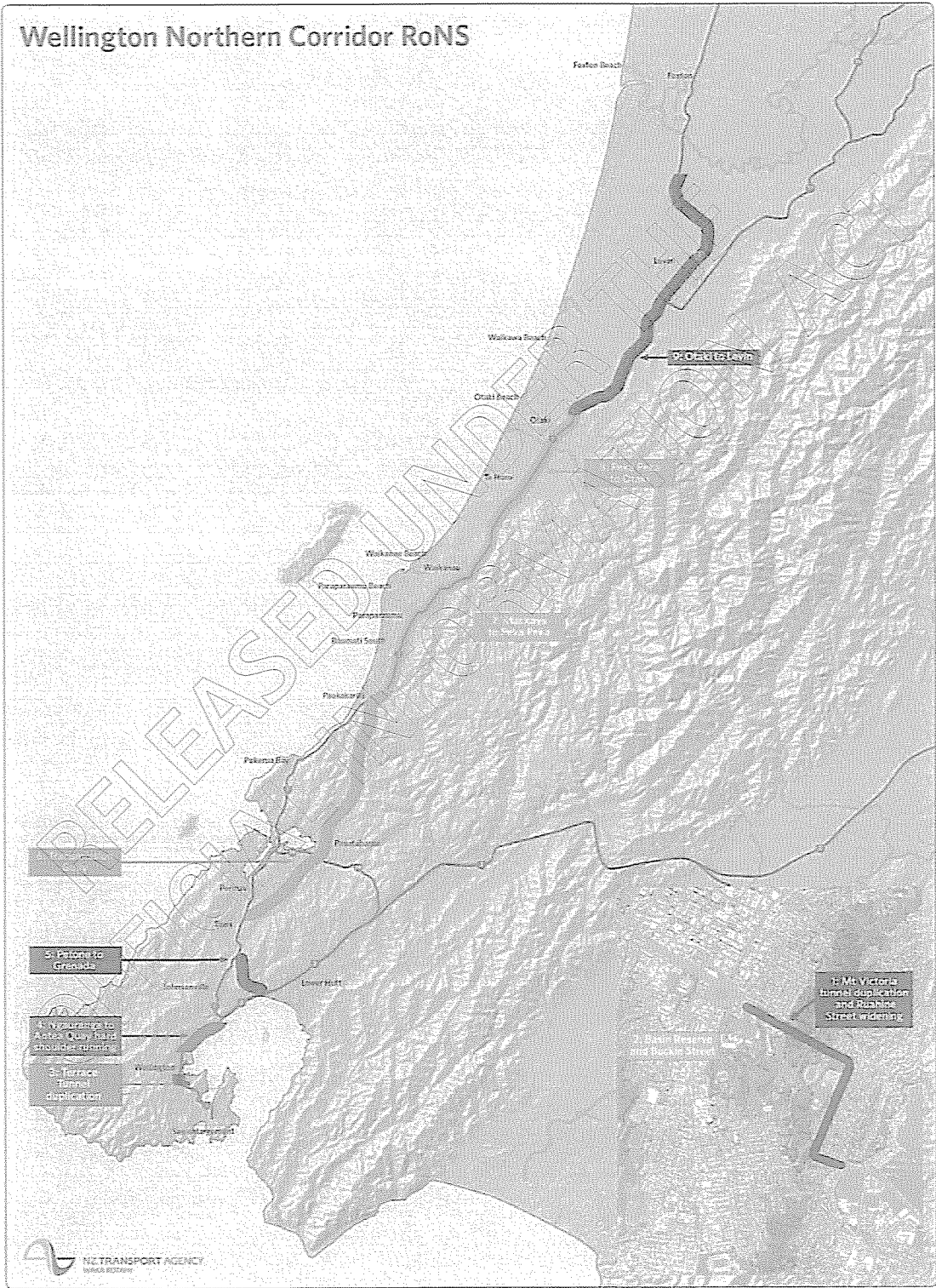
93 Attachments to this paper:

Attachment 1: Map of WNCR and elements

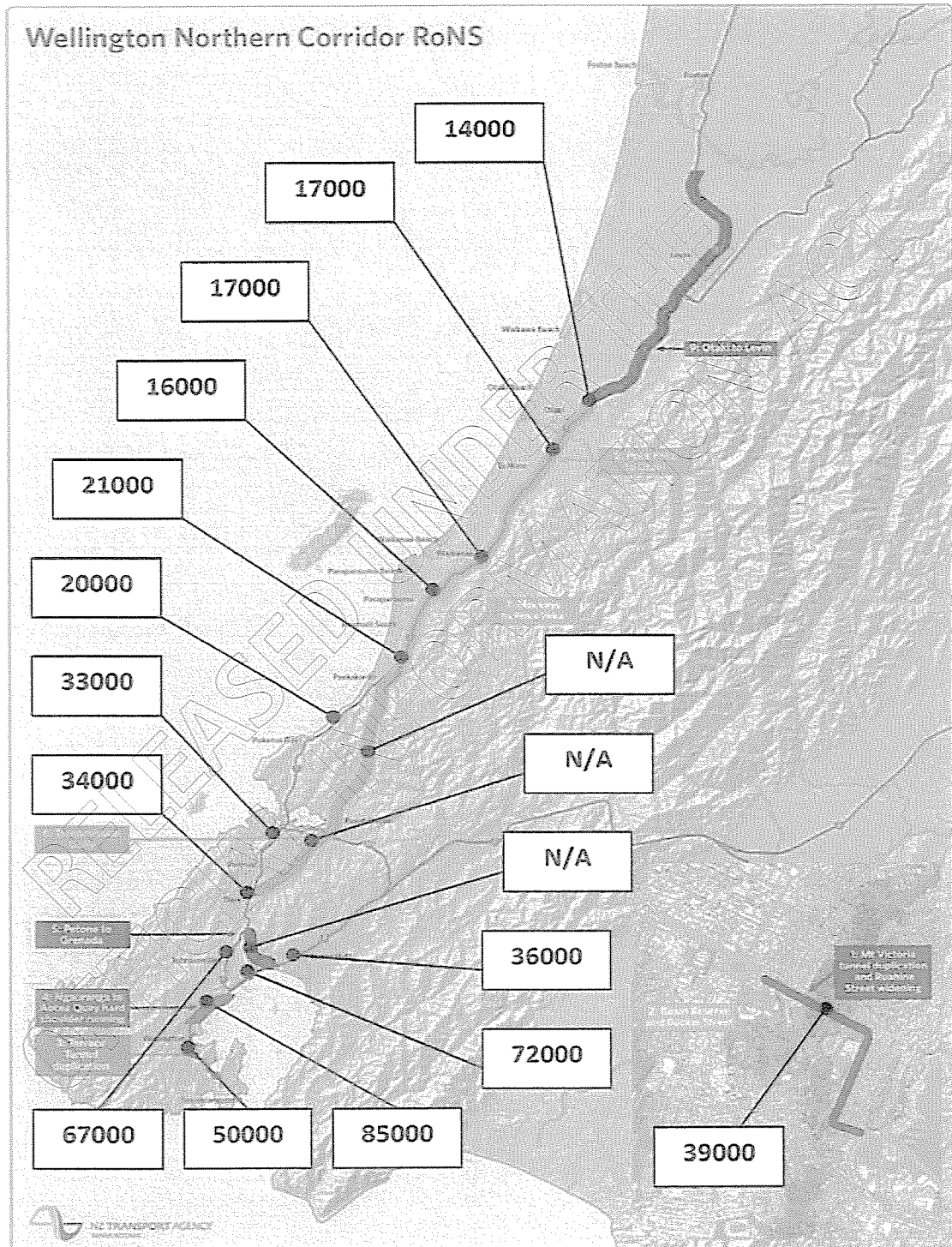
Attachment 2: Maps of AADT 2006, do minimum 2026 and option 2026

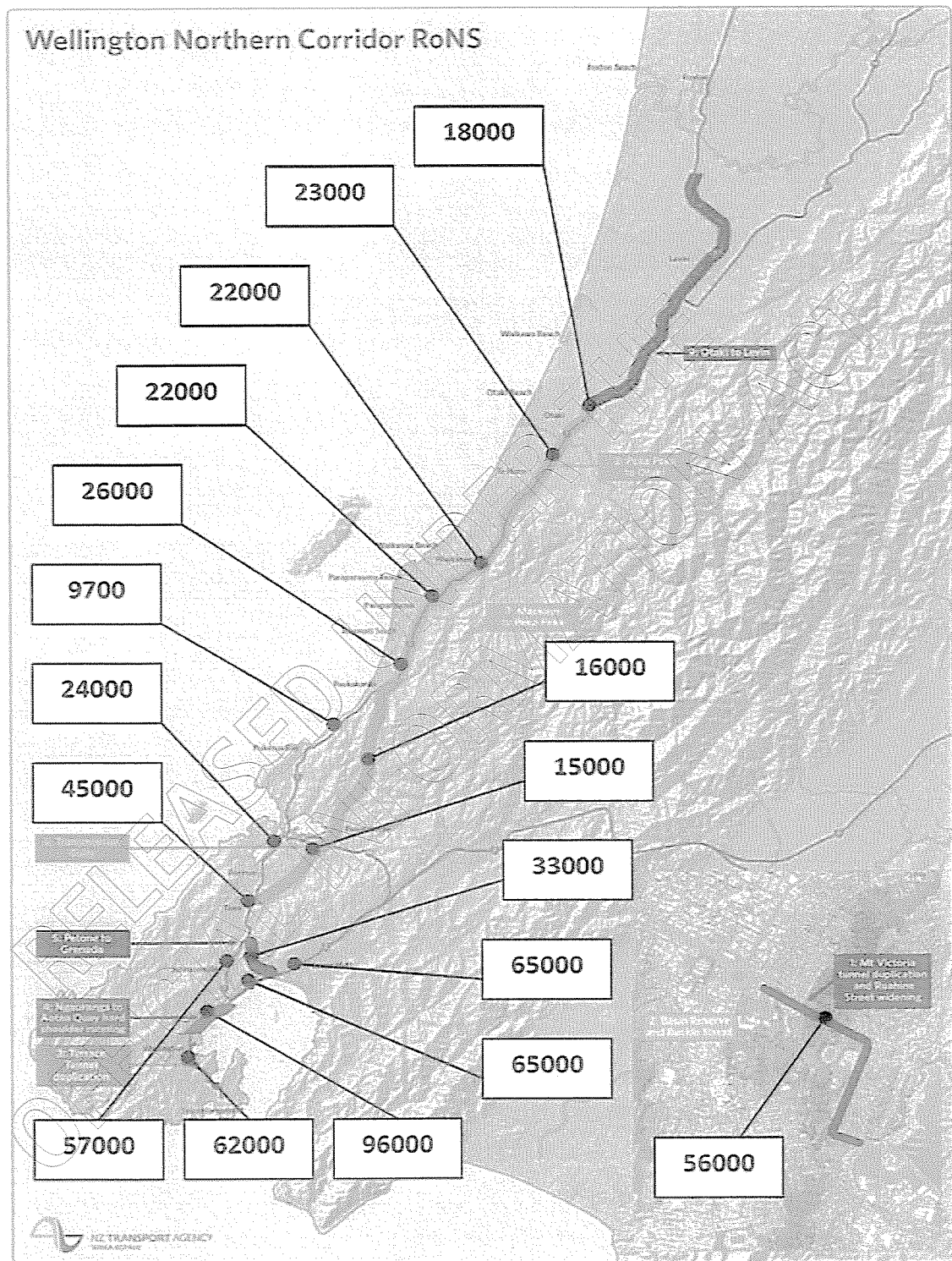
Attachment 3: Summary tables of WNCR transport packages

Map of WNCR and elements



Attachment 2
 Maps of AADT 2006, do minimum 2026 and option 2026





2026 Option (two-way AADT flows)

(Note: Flows in central Kapiti include trips on the expressway and the existing local road)

Attachment 3 Summary tables of WNCR transport packages

These tables intend to show:

- the key element in each package (as in the RONS);
- the key strategy underpinning each package;
- key transport issues for each package;
- the preferred strategic alternative chosen for the package – this ranges from predominantly a state highway solution, maybe with ancillary local road or other modal activities, to a solution comprising a full mix of passenger transport, state highway, local road, active modes, etc;
- the status of the implementation package, i.e. what components have been defined and to what level;
- the components that make up the package – classified by mode;
- the partners required to develop, construct and operate the package, e.g. NZTA, Wellington City Council, Greater Wellington Regional Council and Kapiti Coast District Council;
- what options have been defined for package components and whether a preferred option has been selected at this stage;
- the impacts of the package, being:
 - at a local level – the predominant land use being affected and the level of visual and severance impacts;
 - at a wider level – potential impact on wider area and identified specific impacts; and
- The level of integration required to develop, implement and operate the package and a view of the level of risk around integration based on the consequences of unsuccessful integration.

Element	Airport to Mt Victoria Tunnel
Strategy/Plan	Ngauranga to Airport Corridor Plan
Issues & opportunities	Congestion; journey time reliability; access to CBD, airport and hospital; economic growth of eastern suburbs;
Selected strategic alternative	Predominantly a roading (state highway) solution, with ancillary local road, PT and walking and cycling activities as appropriate.
Implementation package definition	Major state highway components defined – local road and other components not fully defined at this stage.
Package components	<p><u>Roading</u></p> <ul style="list-style-type: none"> • duplication of Mt Victoria Tunnel • Ruahine Street improvements – widening and intersection signalisation • closing/restriction of some local accesses and improvement of key local road connections <p><u>Passenger transport</u></p> <ul style="list-style-type: none"> • not defined at this stage <p><u>Walking & cycling</u></p> <ul style="list-style-type: none"> • opportunities to improve walking and cycling will be investigated
Package partners	NZTA; Wellington City Council (WCC); possibly Greater Wellington Regional Council (GWRC).
Options	Not fully defined at this early stage of development (Only preliminary option analysis has been undertaken as part of the Ngauranga to Wellington Airport Corridor Plan).
Impacts	<p>Local – largely suburban and recreational land use – some visual & severance impact – urban design important to enhance roading improvements</p> <p>Wider – improved access and employment growth potential for eastern suburbs – potential to enhance existing sporting and creative arts activity – improved access to airport</p>
Integration	Need for high level of coordination, especially between state highway and local roads and between road and active modes. Integration risk is relatively high.

Element	Basin Reserve
Strategy/Plan	Ngauranga to Airport Corridor Plan
Issues & opportunities	Congestion; journey time reliability; access to airport, eastern suburbs, education/commercial facilities and to urban motorway; public transport efficiency; economic growth from improved access and intensification; improved walking & cycling access.
Selected strategic alternative	Solution involves a mix of state highway, local roading, PT and active modes.
Implementation package definition	Major state highway components under investigation. Local road and PT components defined to some extent.
Package components	<p><u>Roading</u></p> <ul style="list-style-type: none"> options for separating traffic flows under investigation, particularly local and state highway traffic <p><u>Passenger transport</u></p> <ul style="list-style-type: none"> improved PT efficiency – potential to enhance further through bus priority measures and increased services – to be defined <p><u>Walking & cycling</u></p> <ul style="list-style-type: none"> improved cyclist and pedestrian safety around the Basin Reserve
Package partners	NZTA; WCC; GWRC
Options	At grade and grade separated options currently under investigation. Options for local road, PT and active modes need to be considered in tandem with state highway options.
Impacts	<p>Local – urban/light industrial land use alongside Basin Reserve – visual impacts will require careful management.</p> <p>Wider – improved access particularly for PT to support planned growth through urban intensification</p>
Integration	Extremely important that land use, modal and network integration is planned, coordinated and implemented cohesively. Urban design will be a critical factor in assisting integration, mitigating adverse impacts and capturing opportunities. Potential Buckle Street memorial park project with Ministry of Culture and Heritage needs to be considered as part of design and the consenting strategy.

Element	Terrace Tunnel
Strategy/Plan	Ngauranga to Airport Corridor Plan
Issues & opportunities	Congestion; journey time reliability; access to airport and to urban motorway; potential to reallocate road space in CBD (by enhancing transport hierarchy).
Selected strategic alternative	Predominantly roading (state highway) solution.
Package definition	Major state highway components defined to some extent. Local road, PT and other components, if any, not defined at this stage.
Package components	<p><u>Roading</u></p> <ul style="list-style-type: none"> • duplication of Terrace Tunnel <p><u>Passenger transport</u></p> <ul style="list-style-type: none"> • to be defined – may be negligible <p><u>Walking & cycling</u></p> <ul style="list-style-type: none"> • not defined at this stage
Package partners	NZTA; WCC; GWRC
Options	<p>Options identified for investigation are:</p> <ul style="list-style-type: none"> • tidal flow in existing tunnel • duplicate 2 lane tunnel • additional 1 lane tunnel • restricted height additional single lane tunnel
Impacts	<p>Local – limited impact if in existing roading corridor – limited (possibly negligible) visual & severance impact</p> <p>Wider – improved linkage between urban motorway and airport – increasing capacity may divert traffic from parts of the CBD, enhancing PT and pedestrian connections – potential to reduce severance between city and waterfront</p>
Integration	At early stage of development so integration requirements and risks are not clear at this stage. Could be significant impact on local urban roading network.

Element	Ngauranga to Aotea Quay
Strategy/Plan	Ngauranga to Airport Corridor Plan
Issues & opportunities	Congestion; journey time reliability; public transport efficiency; HOV and/or freight transport efficiency.
Selected strategic alternative	Solution involves a mix of roading (including Intelligent Transport Systems) and PT improvements.
Implementation package definition	Major state highway components defined. Local road and PT components defined.
Package components	<p><u>Roading</u></p> <ul style="list-style-type: none"> peak period hard shoulder running on SH1 <p><u>Passenger transport</u></p> <ul style="list-style-type: none"> bus lane proposed for Hutt Road as some traffic diverts to "widened" SH1 <p><u>Walking & cycling</u></p> <ul style="list-style-type: none"> not defined at this stage - maybe opportunity to enhance on Hutt Road <p><u>Network management</u></p> <ul style="list-style-type: none"> employment of intelligent transport systems (ITS) to optimise capacity utilisation
Package partners	NZTA; WCC; GWRC
Options	Not fully defined at this early stage of development.
Impacts	<p>Local - limited impact as in existing roading corridor - negligible visual & severance impact - no adverse effects anticipated on rail operation</p> <p>Wider - increasing SH1 capacity should divert traffic from the local roading system, which provides the opportunity to improve PT efficiency and possibly improve active modes</p>
Integration	Very important that modal and network integration is planned, coordinated and implemented cohesively. Opportunity to target increased peak time capacity (HOV &/or freight) needs to be investigated. Obvious need to integrate operation through ITS.

Element	Ngauranga to Linden
Strategy/Plan	Ngauranga Triangle Strategy Study & Western Corridor Plan
Issues & opportunities	Congestion; journey time reliability; freight transport efficiency; network resilience.
Selected strategic alternative	Predominantly a roading (recommended as a state highway) solution.
Implementation package definition	Major state highway components defined. Possible local road, PT and other components, if any, not fully defined at this stage.
Package components	<p><u>Roading</u></p> <ul style="list-style-type: none"> construction of a new Petone to Grenada link road to relieve congestion on SH1 & SH2 <p><u>Passenger transport</u></p> <ul style="list-style-type: none"> not defined at this stage <p><u>Walking & cycling</u></p> <ul style="list-style-type: none"> not defined at this stage
Package partners	NZTA; WCC; GWRC, Hutt City Council
Options	Defined to some extent and will be refined during investigation.
Impacts	<p>Local – generally rural area – probably limited severance impact but potential environmental/amenity issues from resident groups – also some areas may have historical sensitivity with local iwi, e.g. Korokoro settlement area</p> <p>Wider – improves access to identified green-fields growth area at Lincolnshire Farm/Grenada North – reduced congestion on SH1 & SH2 will generally support growth in the wider region</p>
Integration	At early stage of development so integration requirements and risks are not clear at this stage. Could impact on local roading network.

Element	Linden to MacKay's Crossing
Strategy/Plan	Western Corridor Plan
Issues & opportunities	Congestion; journey time reliability; freight transport efficiency; network resilience; public transport patronage; adverse transport impacts.
Selected strategic alternative	Involves a mix of passenger transport and roading solutions.
Implementation package definition	PT components defined. Major state highway components defined.
Package components	<p><u>Roading</u></p> <ul style="list-style-type: none"> improved state highway and links to local roading system <p><u>Passenger transport</u></p> <ul style="list-style-type: none"> significant investment in rail infrastructure approved for funding assistance and activities being progressed, e.g. double tracking, electrification, new rolling stock <p><u>Walking & cycling</u></p> <ul style="list-style-type: none"> not defined at this stage
Package partners	NZTA; WCC; GWRC; Porirua City Council; Kapiti Coast District Council (KCDC).
Options	<p>Preferred options for PT infrastructure selected as set out in the Wellington Rail Business Case.</p> <p>Transmission Gully confirmed as the preferred state highway option.</p>
Impacts	<p>Local – generally rural area – probably limited visual & severance impact</p> <p>Wider – improved connections between Porirua, Kapiti and Wellington City will support growth, particularly on the Kapiti Coast</p>
Integration	Critical that the package is planned, coordinated and progressed in an integrated manner. The strategy gives priority to PT and substantial investment in rail to date reflects this. Modelling suggests that PT mode share to/from Kapiti will be 5% to 10% higher in peak travel direction in 2026 after the full package is implemented (including rail, then road improvements) than at present (2006 base model).

Element	MacKay's Crossing to Peka Peka
Strategy/Plan	Western Corridor Plan
Issues & opportunities	Safety; congestion; journey time reliability; network resilience.
Selected strategic alternative	Involves a mix of passenger transport and roading solutions.
Implementation package definition	PT components defined. Options for state highway and supporting local roading components are under consultation.
Package components	<p><u>Roading</u></p> <ul style="list-style-type: none"> improvement of state highway through this part of corridor extent to which Western Link Road required to support the RONS subject to decision on preferred option and further consultation with KCDC <p><u>Passenger transport</u></p> <ul style="list-style-type: none"> significant investment in rail infrastructure approved for funding assistance <p><u>Walking & cycling</u></p> <ul style="list-style-type: none"> not defined at this stage
Package partners	NZTA; KCDC; GWRC.
Options	<p>Preferred options for PT infrastructure selected (Wellington Rail Business Case).</p> <p>Options for the state highway component are under consultation.</p>
Impacts	<p>Local – suburban/rural land use –potential for severance and visual amenity impacts, to be mitigated through design</p> <p>Wider – improved connections between Porirua, Kapiti and Wellington City will support planned growth. Further work may be required to ensure growth edges in Kapiti are supported where appropriate.</p>
Integration	Very important that the package is planned, coordinated and progressed in an integrated manner. The strategy gave priority to PT and substantial investment in rail to date reflects this

Element	Peka Peka to Otaki
Strategy/Plan	Western Corridor Plan
Issues & opportunities	Safety; holiday/weekend congestion; journey time reliability; freight transport efficiency.
Selected strategic alternative	Predominantly roading (state highway) solution.
Implementation package definition	State highway component defined in concept. Local road and other components (if any) not defined at this stage.
Package components	<p><u>Roading</u></p> <ul style="list-style-type: none"> • SH1 capacity and intersection improvements • SH1 bypass of Otaki • local roading components not defined at this stage. <p><u>Passenger transport</u></p> <ul style="list-style-type: none"> • not defined at this stage <p><u>Walking & cycling</u></p> <ul style="list-style-type: none"> • not defined at this stage
Package partners	NZTA; KCDC
Options	Options for the state highway component are under consultation.
Impacts	<p>Local – suburban/rural land use – limited visual impact but possible severance impact in Otaki</p> <p>Wider – improved connection to south will support economic growth in relatively low per capita income district. Further work may be required to ensure growth edges in Kapiti are supported where appropriate.</p>
Integration	Integration of improved SH1 with local roads and with land use, particularly urban land use, of importance.

Element	Otaki to Levin
Strategy/Plan	Waikanae to Himatangi Strategy
Issues & opportunities	Safety; holiday/weekend congestion; journey time reliability; freight transport efficiency.
Selected strategic alternative	Predominantly roading (state highway) solution.
Implementation package definition	State highway component defined in concept. Local road and other components (if any) not defined at this stage.
Package components	<p><u>Roading</u></p> <ul style="list-style-type: none"> • SH1 capacity and intersection improvements • SH1 bypass of Levin • local roading components not defined at this stage. <p><u>Passenger transport</u></p> <ul style="list-style-type: none"> • not defined at this stage <p><u>Walking & cycling</u></p> <ul style="list-style-type: none"> • not defined at this stage
Package partners	NZTA; KCDC; Horowhenua District Council
Options	Options for the state highway component are under consultation.
Impacts	<p>Local – suburban/rural land use – limited visual impact but possible severance impact in Levin township</p> <p>Wider – improved connection to south will support economic growth in relatively low per capita income district</p>
Integration	Integration of improved SH1 with local roads and with land use, particularly urban land use, of importance.