
Nelson Southern Link Investigation

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Programme Business Case



Photo 1 Nelson viewed from Grampians



Photo 2 Nelson viewed from the air

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SUPPORTING DOCUMENTS

Nelson Southern Link Investigation: Future Forecasting Report, New Zealand Transport Agency, March 2016;

Nelson Southern Link Investigation (SH6 Annesbrook Roundabout to SH6 Haven Rd Roundabout), Strategic Case, October 2015;

SH6 Rocks Road Walk / Cycle Facility Options Update Report, March 2016;

Bluetooth Data provided by Araflow Ltd – Oct 2014 to March 2016;

Rocks Road Walking and Cycling Investigation Report – July 2014

Arterial Traffic Study, June 2011;

North Nelson to Brightwater Strategic Study, April 2008.

EXECUTIVE SUMMARY

NELSON SOUTHERN LINK INVESTIGATION PROGRAMME BUSINESS CASE

EXECUTIVE SUMMARY RECOMMENDATIONS

The Nelson Southern Link Investigation (NSLI) programme business case (PBC) recommends:

- A range of interim measures that optimise traffic flow on SH6 and Waimea Rd, followed by
- Development of a new arterial route, and
- Further consideration of improvements to Rocks Road.

The recommended programme is shown graphically in Figure 1.

The recommended programme will achieve the following key stakeholder objectives for this project:

- eased congestion
- fewer walking and cycling deaths and serious injuries
- increased active transport and recreational activities on Rocks Road

Nelson's key arterial routes are experiencing longer than acceptable peak period journey times. As the region's population grows, traffic volumes are also likely to grow, making it a challenge to access and cross these arterials. The New Zealand Transport Agency (Transport Agency) is recommending a range of interim measures over the next few years to reduce peak period journey times until a new route is needed. These measures aim to make the most of the existing traffic network in the short and medium terms.

These interim measures includes:

- adding a northbound clearway between Annesbrook roundabout and Bisley Avenue
- having two southbound lanes through the Bisley Avenue lights to increase traffic capacity on the state highway
- clearways and intersection changes between The Ridgeway and Motueka Street to increase traffic capacity along Waimea Road.
- enhanced public transport, and
- further encouragement of peak hour walking and cycling, land use controls, and travel demand management measures such as parking restrictions to reduce demand on arterials.



Figure 1 – NSLI Recommended Programme

The timing for a new route depends on many factors. The scale of the efforts to optimise the network, the speed of regional growth and new technologies can all affect the timeline. For example, if optimisation measures perform better than expected, a new route could be delayed. If they perform worse than expected, a new route will be needed sooner. Preliminary modelling of some of the optimisation options suggests a new route will be needed early 2030s, although modelling is only one tool to guide decision making. Refer to Figure 2 for a graphical representation showing the timing considerations for a new route.

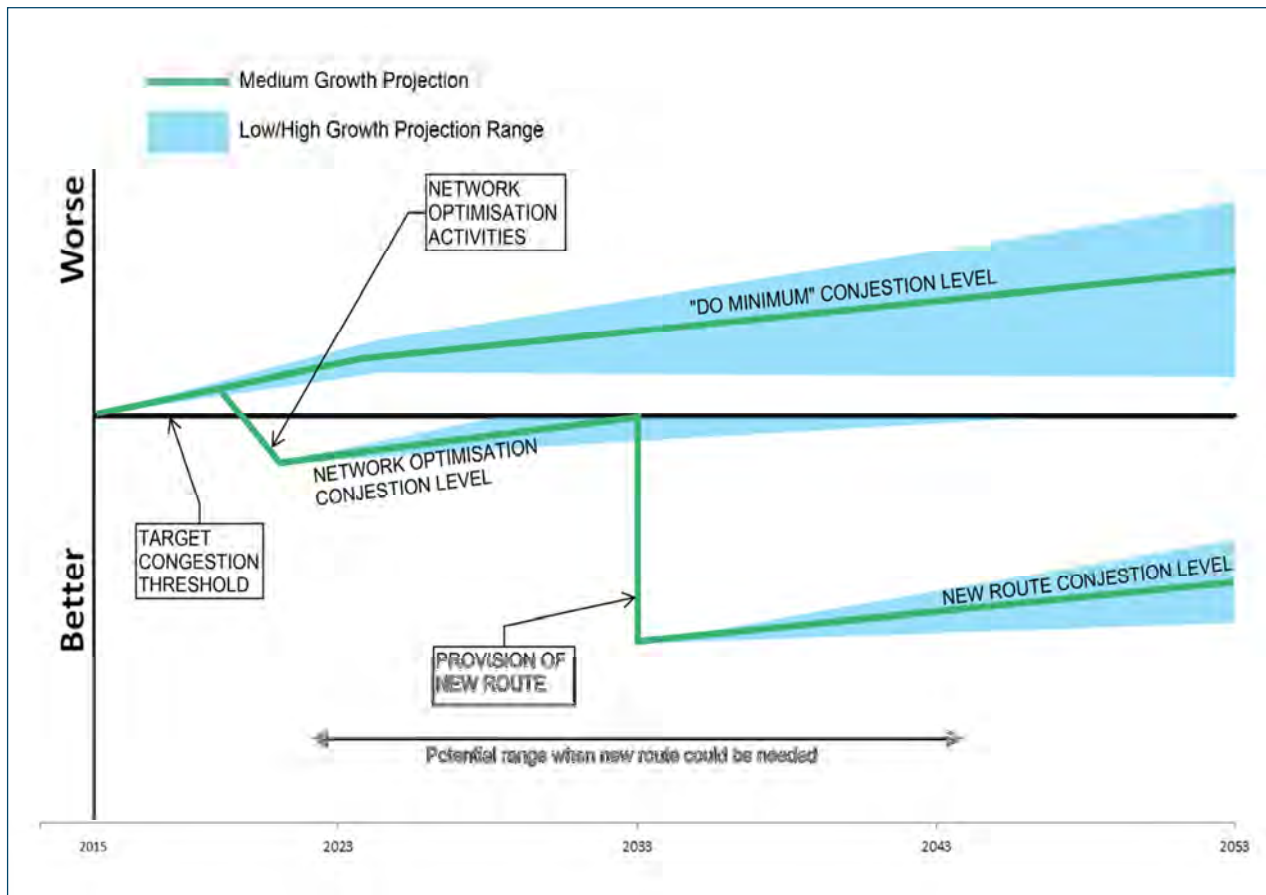


Figure 2 – Recommended Programme in relation to congestion objective target

Before a new route is planned, key stakeholders need to make some fundamental decisions regarding the route’s optimum location, alignment and its classification as either a state highway or local arterial. The Transport Agency and the Nelson City Council (NCC) will also have to consider the issues and opportunities for reverting the existing state highway to local authority ownership should the new route be classified as state highway.

Improvements on State Highway 6 (SH6) Rocks Road have also been proposed to increase the use of active transport modes and recreational activities. The recommended programme includes a range of options for improvements. Before any decisions can be made, the Transport Agency has to finalise the location of SH6, which now runs along Rocks Road but may change to the new route in the future. Firm recommendations for improvements to Rocks Road are expected during the next phase of the investigation, the Detailed Business Case (DBC).

Community feedback in March 2016 indicated 61% of respondents preferred a new route option, 21% preferred optimising the existing arterial routes, and 10% preferred widening the existing arterial routes.

At this stage in the investigation, the recommended programme has an estimated cost range of \$45m to \$300m. Network optimisation measures range from \$20m to \$40m and new arterial options from \$70m to \$300m. The range is wide because the options within it have not been investigated in detail. They will be narrowed down in the next phase of the investigation, (the DBC), and the cost range refined. The indicative

benefit cost ratio for the recommended programme is between 0 and 2.2 and it has an investment assessment profile of M/M/L.

This initial economic analysis has only considered traditional transport benefits. The next phase of the project will also consider the potential wider economic benefits.

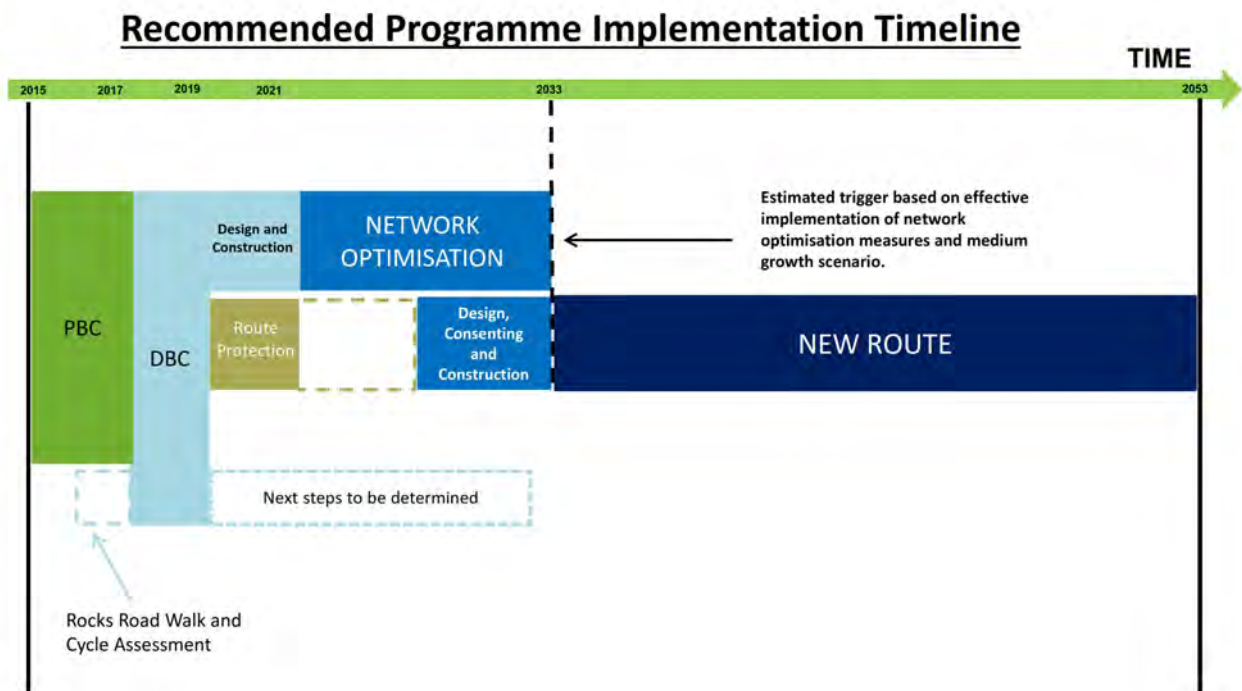


Figure 3 – Recommended Programme Implementation Timeline

The additional information from the DBC phase of the investigation will enable Government, the Transport Agency and NCC to make robust, evidence based and community supported decisions that will meet regulatory approval, if required.

During the DBC we will clarify:

- The effectiveness of the various network optimisation options, which will guide when a new route will be needed.
- Options for a new arterial route including any environmental effects that will inform decisions regarding alignment and classification.
- Route protection options such as land purchase, regulatory controls, planning activities by NCC and possibly designation of a new route.
- Options for improvements on Rocks Road, dependent on the final location of the state highway.
- An assessment of the wider economic benefits of the preferred new route option.

The timeline for the next phase of the investigation is shown graphically in Figure 3.

BACKGROUND

(SH6 is classified as a regional strategic state highway. It travels through Nelson City from Queen Elizabeth II (QEII) Drive onto Rocks Road and along the waterfront. It progresses into the Tahunanui suburb until it meets Whakatu Drive at the Annesbrook Roundabout and continues south towards Richmond.

Improvements to SH6 to the north and south of the project area have been completed, resulting in mostly free-flow conditions with travel speeds between 80 to 100km/h. However, for the central section (i.e. the investigation area), traffic travels within 50km/hr posted speed limits and 40km/hr variable school speed zones along roads characterised as two lane urban arterials.

Since the 1960s Nelson has been considering an additional Southern Link highway (shown as a blue dashed line in the Figure 4 below) to accommodate traffic growth. A number of significant infrastructure investments have been undertaken toward this end such as the upgrading of St. Vincent Street, and the relocation of the Fire Station. The 2004 Environment Court declined the Southern Link Notice of Requirement and since then two further investigations found that there wasn't an immediate need for a new route. Both investigations, however, recommended monitoring of arterial traffic volumes and consideration of interventions when the arterial network required congestion relief.

There are currently approximately 45,000 vehicles a day across the two main north/south routes within the study area (SH6 Rocks Road and Waimea Rd). Traffic volumes have remained relatively constant over the past 10 years, possibly due to increases in walking, cycling and public transport investment and a period of slow growth. On SH6 the proportion of HCV's is 6% which equates to approximately 1,300 HCV's per day.



Figure 4 – Extract from the Nelson Resource Management Plan (original “Southern Link” alignment dashed blue)

THE ROCKS ROAD WALK/CYCLE INVESTIGATION

Prior to commencement of the NSLI a NCC/Transport Agency SH6 Rocks Road walk/cycle investigation was underway. That investigation supported a range of options costing up to \$25m, some widening into the Coastal Marine Area. The NSLI problem statements confirm the NSLI and the Rocks Road investigation are linked, with the outcome of the NSLI being critical to any investment decisions we make on the Rocks Road. Rocks Road forms a crucial 2km section of four sections of the 7.2km coastal cycle route being progressed as part of the Governments \$3m urban cycleway funding contribution for Nelson.

Contained within the March 2016 public engagement documentation there were four options for improving walking and cycling infrastructure along SH6 Rocks Road:

- **Option 1 – Minor improvements**

This option includes committed improvements identified by the Transport Agency and NCC, such as resurfacing work to the road and footpath. It also involves incremental improvements to existing on-road facilities and the footpath. There is no widening on the seabed, the existing footpath, or cycle facilities. Cost is \$4.9 Million.

- **Option 2 – Safety enhancements with reduced lane widths**

This includes the improvements outlined in Option 1 above and creates additional cycle and footpath width through narrowing the traffic lanes to 3m. This option can only be pursued if the state highway is relocated and large trucks are banned. Cost is \$8.2 Million.

- **Option 3 – On-road cycle lanes in both directions, shared path and reduced parking**

This option involves widening the on-road cycle lanes in both directions and creating a 2.9m shared walking and cycling path on the seaward side. Parking between Victoria Road and Richardson Street would be removed. There would be significant seawall widening. Cost \$21.3 Million.

- **Option 4 – On-road cycle lanes and shared path**

This option involves widening on-road cycle lanes in both directions and creating a 2.9m shared walking and cycling path on the seaward side as in Option 3. Parking between Victoria Road and Richardson Street would be retained. This will require significant seawall widening. Cost is \$25.1 Million

PROBLEMS

The NSLI strategic case transport problems were reviewed and updated at the start of this PBC to (along with their weightings in brackets):

Problem 1 (70%): The form and function of Nelson’s two arterial corridors results in congestion and delays.

Problem 2 (30%): Substandard infrastructure Rocks Road, which is part of the Coastal Path, is constraining the growth in walking and cycling activities.

The evidence to support Problem 1 is principally based on the Bluetooth data collected from the third quarter in 2014 onwards. The data indicates:

- Average 15-minute travel time delays in the peak periods range between 2 and 8 minutes on SH6 and between 1 and 14 minutes on Waimea Road; and
- Peak hour volume to capacity ratios on Nelson’s two arterials range from 83% to 95%.

This information is shown graphically in Figures 3 and 4 for the SH6 route and Figures 5 and 6 for the Waimea Road route for a typical period. The solid lines indicate school term weeks and the dashed lines indicate holiday periods. Blue lines are for second quarter of 2015 and red lines are for second quarter 2016. Throughout most of 2016 there was significant traffic management on Waimea Road as Council made stormwater improvements, which increased traffic delays. The graphs indicate, with the exception of the southbound evening peak on SH6, that traffic delays are less significant in the holiday periods.

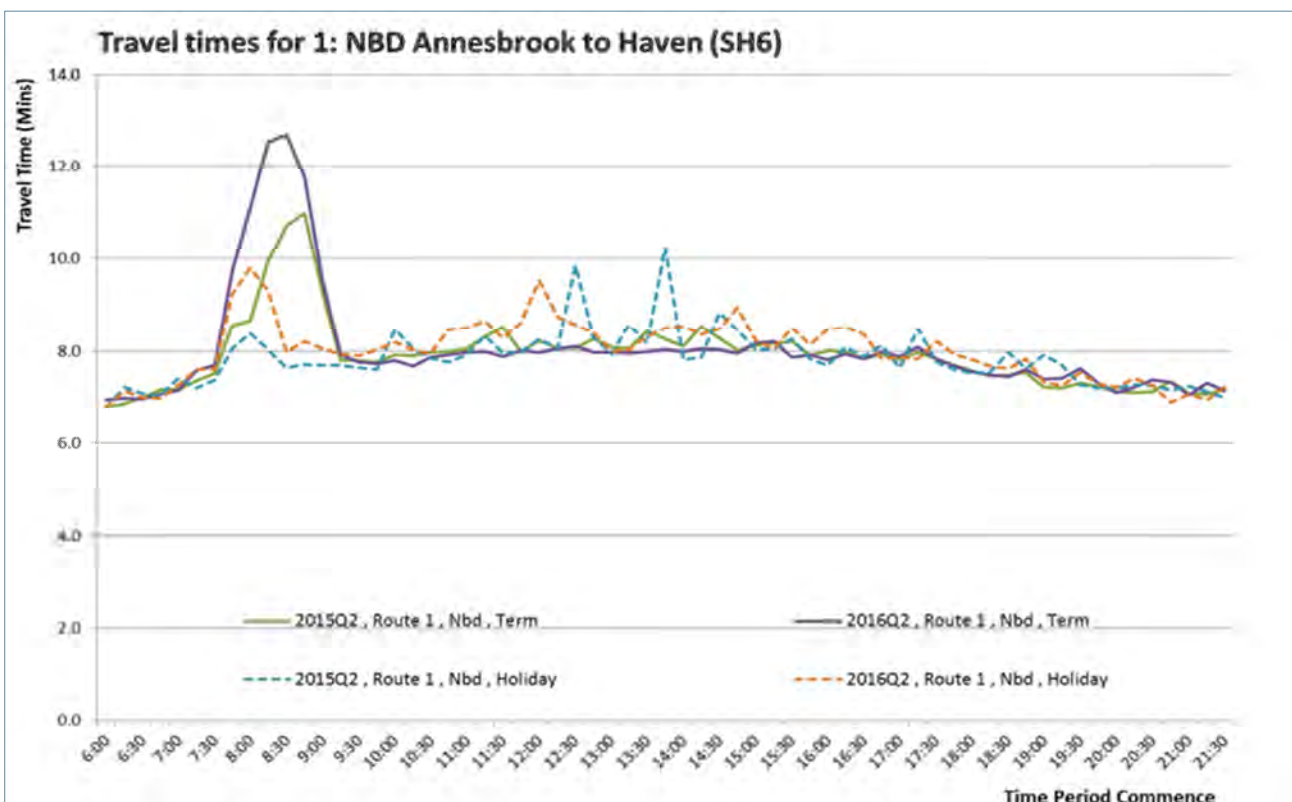


Figure 5 – 15min travel times on SH6 northbound

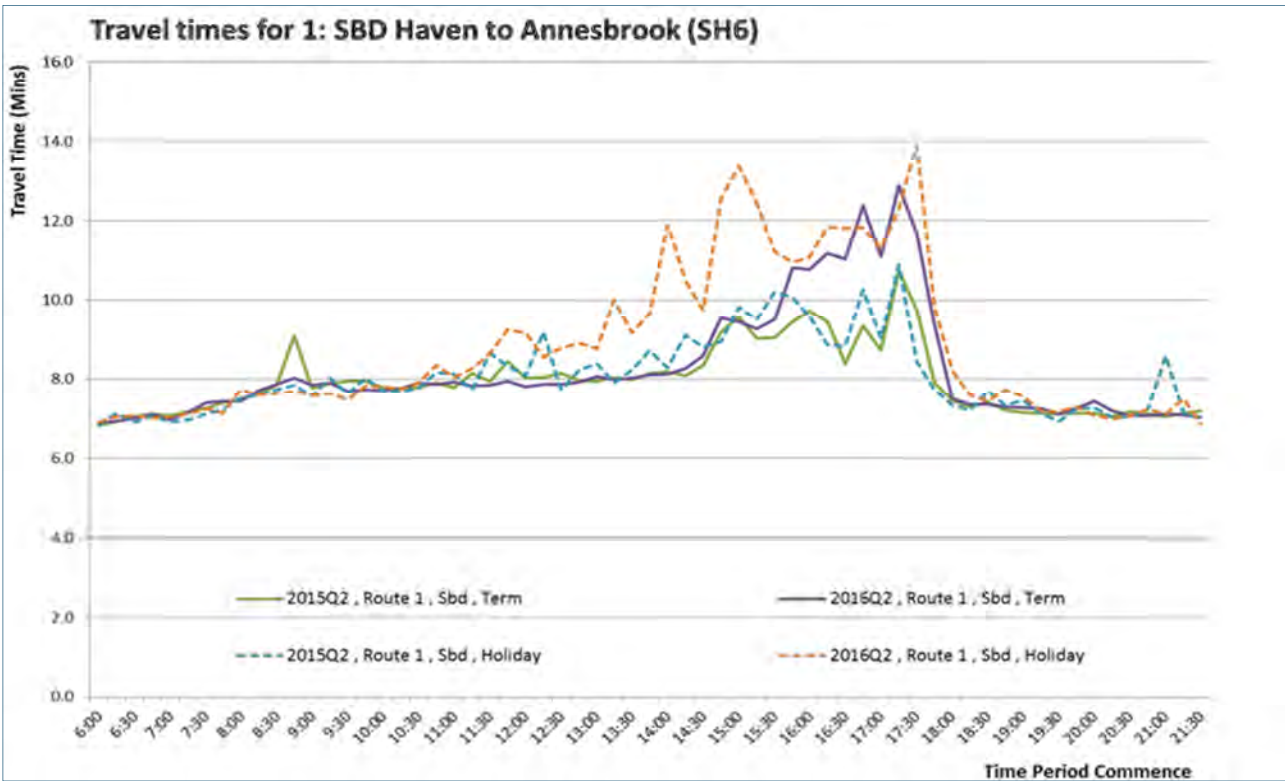


Figure 6 - 15min travel times on SH6 southbound

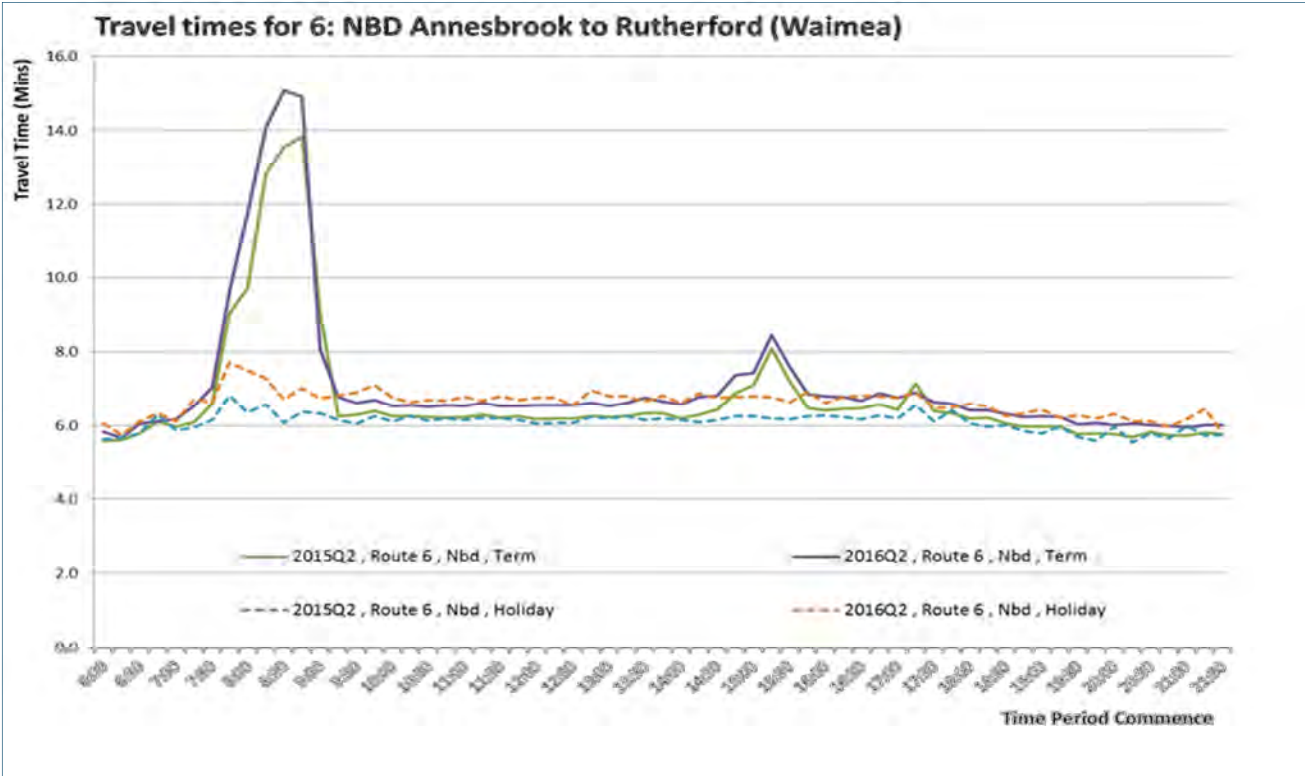


Figure 7 - 15min travel times on Waimea Road northbound

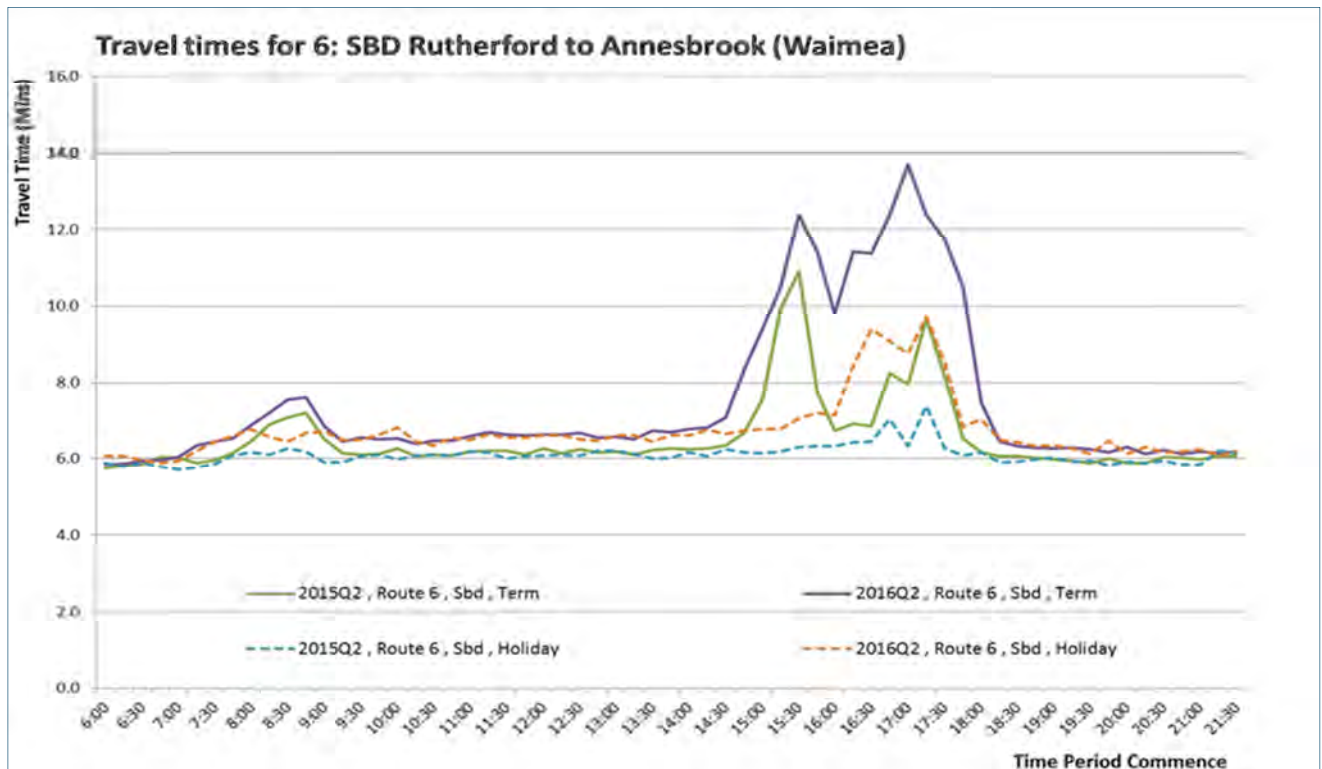


Figure 8 – 15min travel times on Waimea Road southbound

The evidence relating to the second problem is from NCC walking and cycling data and a comparison of the walking and cycling infrastructure on Rocks Road compared to current design standards. The growth in walking and cycling numbers along Rocks Road is less than half the overall growth for Nelson. When compared to the NCC Land Development Manual minimum standards, 60% of the seaward footpath is below the desired 2m width and 50% of existing cycle lanes meet the minimum 1.5m width. None of the existing cycle lanes met the desired width of 1.8m for cycling past parked cars.

The evidence indicates substandard infrastructure on SH6 Rocks Rd is a deterrent to walking and cycling growth.

BENEFITS

The benefits of investing in solving the identified problems are:

- Benefit A (70%): Reduced journey times.
- Benefit B (15%): Improved safety for walking and cycling modes of travel.
- Benefit C (15%): Improved tourism, active transport and recreational activities on Rocks Road.

INVESTMENT OBJECTIVES

The project's key stakeholders identified four Investment Objectives (IOs) and their targets are:

- **Investment Objective 1:** Travel times on the two arterials no worse than 2015 for the life of the programme (40 years).
- **Investment Objective 2:** Peak hour volume to available capacity ratio of no more than 0.8 on the two arterials.
- **Investment Objective 3:** Zero walking and cycling crashes on the two arterials; and continuous decline in walking and cycling deaths and serious injuries on the two arterials for the life of the programme.
- **Investment Objective 4:** Five years after implementing an option on Rocks Road, double walking and cycling numbers per day and thereafter the growth rate is greater than elsewhere in Nelson.

Options, activities, approaches and strategic responses to address the problems, achieve the benefits and meet the investment objectives were determined through a collaborative process involving the Transport Agency, key stakeholders and the public.

PUBLIC ENGAGEMENT

Community feedback in March 2016 indicated 61% preferred a new route option, 21% preferred optimisation the existing arterial routes and 10% preferred widening the existing arterial routes, although those who supported a new route option reduced to 46% in a statistically evaluated telephone survey.

PROGRAMME DEVELOPMENT AND ASSESSMENT

Nine programmes were developed and tested against the investment objectives to see which would address the identified problems. These included:

- Network optimisation activities such as intersection improvements, clearways on sections of Waimea Road and Tahunanui and Annesbrook Drive, enhanced public transport, active transport and travel demand management measures on the state highway and local arterial roads
- Widening the existing state highway and local arterials, rather than clearways
- A new arterial route, such as a Southern Link type route or tunnel options, and
- Combinations of the above, with enhanced public transport and four options to improve walking and cycling on SH6 Rocks Road

A range of enhancements for walking and cycling on Rocks Road were included in all programmes from programme 2 onwards, and these options can be revisited again when there is a greater understanding around the classification and timing of the new route.

Table 1 – Programme Assessment Summary

Approach	Programme	Brief description	Key reason for rejection
Making the most of the existing network	1	Do minimum.	Doesn't address the identified problems.
	2	Network optimisation only.	Doesn't address the walking and cycling investment objectives.
	3	Network optimisation (as above) plus Rocks Road options.	Uncertain performance over the longer term.
	4	The same as Programme 3 with clearways options for public transport (PT) only.	Insufficient PT demand to justify clearways for PT only.
Widening the existing arterials	5	The same as Programme 3 (excluding clearways) plus road widening options on both arterials for use by public transport only.	Implementation impacts and PT demand could not justify this programme.
	6	The same as Programme 3 (excluding clearways) plus road widening options on both arterials for use by all traffic.	Implementation impacts and poor stakeholder support.
	6a	The same as Programme 3 (excluding clearways) plus road widening options for use by all traffic on Waimea Road and Rutherford Street only.	Less effective than Option 7 and with similar impacts as Programme 6.
Creating a new arterial	7	The same as Programme 3 (excluding clearways) plus a new route.	Recommended programme.
	8	The same as Programme 7 but the new route is for public transport only.	Insufficient PT demand to justify.

Key stakeholders held mixed views on the recommended programme, with some willing to trade off local access (i.e. local access and egress to side roads and accesses) along the two arterials to reduce congestion. The majority view was less traffic on Rocks Road, Waimea Road, and Rutherford Street was desirable and should be pursued.

Initial assessments of the programmes identified long term optimisation, widening and options solely relying on public transport were less effective at addressing the identified problems.

The project team requested additional traffic modelling related to clearways and a new route. After assessing this new information, the project team decided the recommended programme (Programme 7) should consist of two activities:

- Network optimisation activities that change the current transport network to accommodate and manage the projected traffic growth, followed by;
- A new route to accommodate the projected traffic growth. The new route could include tunnels and alignments similar to the Southern Link, and could be classified either state highway or local road.

A summary of the programmes assessment along with the key reason for rejection is shown in Table 1 above.

THE RECOMMENDED PROGRAMME

Many options are still contained within the recommended programme, including improved public transport, more travel demand management and new route tunnel alignments. The next stage of the investigation will assess the options within the recommended programme in further detail, and select and refine those best to progress.

The recommended programme assessment is shown in Table 2 below.

The performance of the recommended programme against the project IO's is summarised in Table 3 below.

Table 2 – NSLI Recommended Programme Assessment

Programme / Activity		Programme
Programme Description		RECOMMENDED PROGRAMME
Investment Objectives		
Investment Objective 1	Travel times on the two arterials no worse than 2015 for the life of the programme.	High
Investment Objective 2	Volume to available capacity ratio on the two arterials no worse than 80% for the life of the programme.	High
Investment Objective 3	Zero walking and cycling crashes on the two arterials; Continuous decline in death and serious injuries (DSI's) for the life of the programme.	Medium
Investment Objective 4	Double walking and cycling numbers per day within 5 years of implementing a walking / cycling option on Rocks Road and thereafter the growth rate is greater than elsewhere in Nelson.	Medium
Investment Cost		\$45M – \$300M
Time to Implement		1–15 yrs
Difficulty to Implement (low, medium, high)		Medium – high
Public and Stakeholder Risk of Acceptance		Medium
Risks (Impacts using seven point scale) +3 = major benefit +2 = moderate benefit + 1 = minor benefit 0 = no impact or benefit -3 = major impact -2 = moderate impact -1 = minor impact		
Accessibility – to what extent does the programme affect accessibility for all modes of travel		+2 to +3
Safety – to what extent does the programme address safety of travellers for all modes of		-2 to +2
Economic – to what extent will the programme impact the Regional economy		-3 to +2
Environmental – to what extent will the programme affect water resources, resource efficiency and ecology		-2 to +1
Environmental – what will be the likely impact of the programme on noise and vibration levels if implemented		-1 to +3
Environmental – what will be the likely impact of the programme on air quality levels if implemented		-1 to +1
Social – what will be the likely impact of the programme on social outcomes if implemented		-3 to +2
Landscape / Urban design – what will be the likely impact of the programme on urban character, landscape character and visual amenity if implemented		-2 to +1
Culture – what will be the likely impact of the programme on areas of significance to Maori and known archaeological sites if implemented		-2 to 0
Built Heritage – what will be the likely impact of the programme on listed or other important heritage buildings/structures if implemented		-2 to 0
Indicative BCR		0 – 2.2
Indicative Programme Profile:		MML

Table 3 – Performance ratings of the recommended programme against the IO's

Investment Objectives		Recommended Programme (over the life of the programme)
1	Travel times on the two arterials no worse than 2015 for the life of the programme	greater than 70%
2	Peak hour volume to available capacity ratio of no more than 0.8 on the two arterials	greater than 70%
3	Zero walking and cycling crashes on the two arterials; and continuous decline in walking and cycling deaths and serious injuries on the two arterials for the life of the programme	30% to 70%
4	Five years after implementing an option on Rocks Road, double walking and cycling numbers per day and thereafter the growth rate is greater than elsewhere in Nelson	30% to 70%

NB: The range of values in Table 3 illustrates the variability of the performance of the options within the recommended programme against the targets of each investment objective, whether singularly or in multiple different combinations. The work to find the optimal combination of options that achieves the highest performance across all investment objectives over time is to be undertaken in the DBC phase.

UNCERTAINTIES

The recommended programme contains a number of uncertainties and work to address these will take place in the DBC phase:

- traffic growth modelling;
- the classification and alignment of a new route;
- micro-modelling work to better determine locations and configurations of clearways and the new route;
- costs associated with clearways and a new route.

Traffic modelling shows that expected traffic delays and travel speeds on the two arterials will deteriorate under the medium growth scenario, shown in Figure 9. The scale of efforts to optimise the network, the speed of regional growth and new technologies, will determine when a new route is required.

- The recommended programme is based on a medium growth scenario, which projects that network optimisation activities will become less effective at reducing travel delays and make it a challenge to access and cross the arterials sometime in the early 2030s.
- Under a low growth scenario, traffic modelling indicates that a new route will not be required for another 40 years, but under a high growth scenario it will be required in the mid to late 2020s.

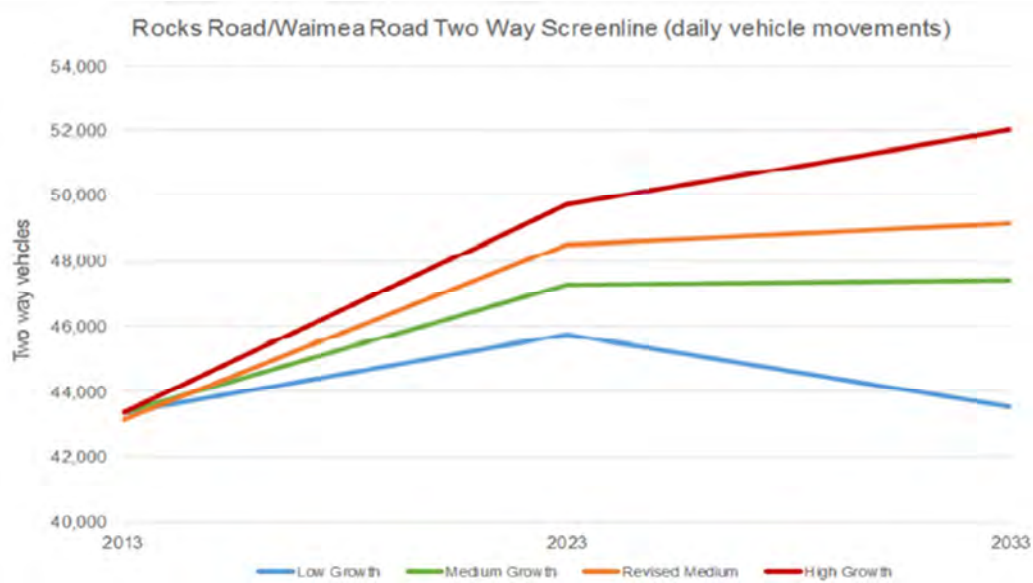


Figure 9 – Traffic Growth Scenarios

RISKS

The project team identified the following critical risks associated with the implementation of the activities and options within the recommended programme:

- Organisational risk – The Transport Agency needs NCC's support for some of the activities and options within the recommended programme to enable implementation;
- Affordability – Detailed preferred option costs and assessments are required before they can be considered for inclusion in the National Land Transport Programme;
- Rocks Road consents – Obtaining permission for a Rocks Road option that requires reclamation into the coastal area presents significant, but manageable challenges;
- New route consents – Obtaining permission for a new route, which includes designating it as a state highway or a local road – presents significant manageable challenges;
- Operational risks include:
 - physical operation of the network
 - the integration with and operation of additional PT services
 - policy and systems operational aspects (eg traffic signal optimisation, parking charges).

Some of the operation risks will fall outside of the Transport Agency's sphere of responsibility (e.g. changing land use or changing school hours) and will need to be integrated across the delivery of the programme with the wider land use and transport system.

NEXT STEPS

The next step in the investigation is the DBC. In the next phase the network optimisation activities and the new route will be investigated further. During the DBC more detail on options within the recommended programme will be available and the best options to progress further will be selected.

The timeline for the next phase of the investigation is shown graphically in Figure 3.

PART A – THE STRATEGIC CASE

This Programme Business Case (PBC) report was written over a period of time between early 2016 and June 2017 based on the New Zealand Transport Agency's (Transport Agency's) procedures for the development of projects using the better business case approach. This better business case procedure encompassed four stages – the Strategic Case, the Programme Business Case, the Indicative Business Case and the Detailed Business Case. In mid June 2017, the Transport Agency advised a change to its procedures to adopt a single phase combining the work traditionally undertaken in the Indicative Business Case and the Detailed Business Case into one phase and named this combination of work as the Detailed Business Case.

This PBC report was written prior to the change. Any references to the Indicative Business Case phase within this report are to be read as occurring within the Detailed Business Case.

1 INTRODUCTION

The Nelson Southern Link Investigation (NSLI) forms part of the Government's Accelerated Regional Roding Package for the State Highway¹, and covers the area between Whakatu Drive and Queen Elizabeth II (QEII) Drive.

1.1 BACKGROUND

The main Project study area is between State Highway 6 (SH6) Annesbrook Roundabout to SH6 Haven Rd Roundabout, as illustrated in Figure 1.

¹ <http://www.transport.govt.nz/land/accelerated-regional-roding-package/#nsl>

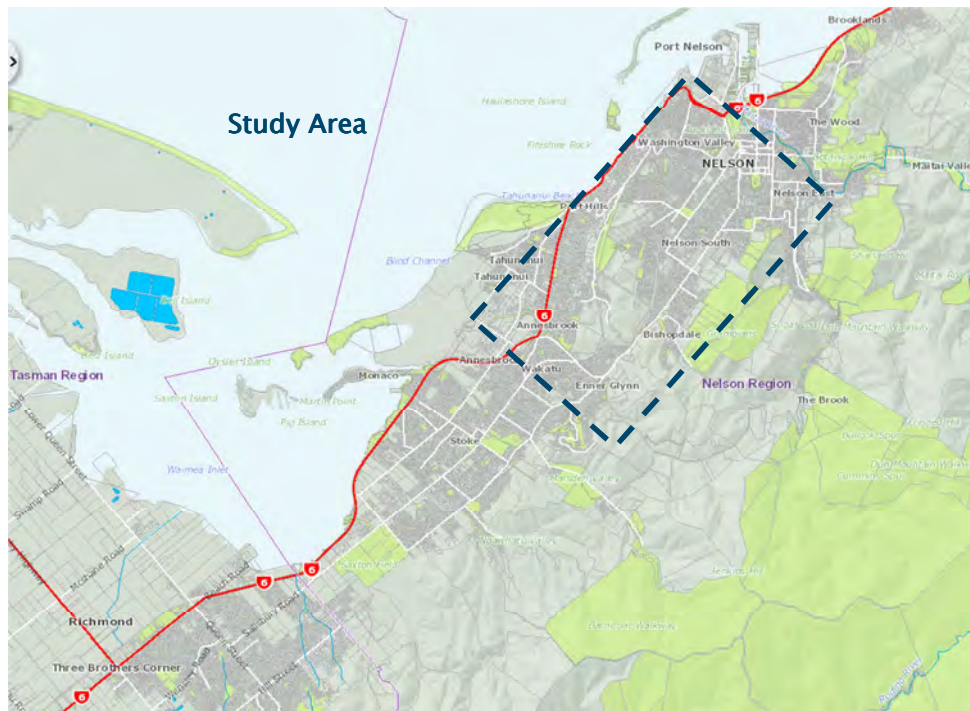


Figure 1 : Location of Study Area

SH 6 is classified as a Regional State Highway under the One Network Road Classification² because:

- The average daily traffic volume is greater than 15,000 vehicles per day in an urban area³;
- Freight volume is greater than 400 heavy commercial vehicles per day⁴;
- It services population centres greater than 30,000; and
- There are more than 20,000 international travellers on the route annually⁵.

State Highway 6 traverses around Nelson City from QEII Drive onto Rocks Road and along the waterfront. It progresses into the Tahunanui suburb until it meets Whakatu Drive at the Annesbrook Roundabout and continues south towards Richmond. Improvements to State Highway 6 from QEII Drive to the north and Whakatu Drive to the south have been completed, resulting in mostly free-flow conditions with travel speeds between 80 to 100km/h.

With reference to Figure 2, between the SH6 Haven Road roundabout and the SH6 Annesbrook roundabout, traffic travels within 50km/hr posted speed limits and 40km/hr variable school speed zones along roads characterised as two lane urban arterials.

² <https://www.nzta.govt.nz/roads-and-rail/road-efficiency-group/one-network-road-classification/key-documents/>

³ NZTA Site 00600118 has approximately 22,350 vehicles per day, 6% HCV in 2014, <https://www.nzta.govt.nz/assets/resources/state-highway-traffic-volumes/docs/SHTV-2010-2014.pdf>

⁴ HCVs are around 6% of the AADT, approximately 1,340 heavy vehicles per day

⁵ International guest nights approximately 460,000 between March 2014 and March 2015. <http://www.stuff.co.nz/nelson-mail/news/68518973/tourism-hits-record-breaking-levels-in-nelson>

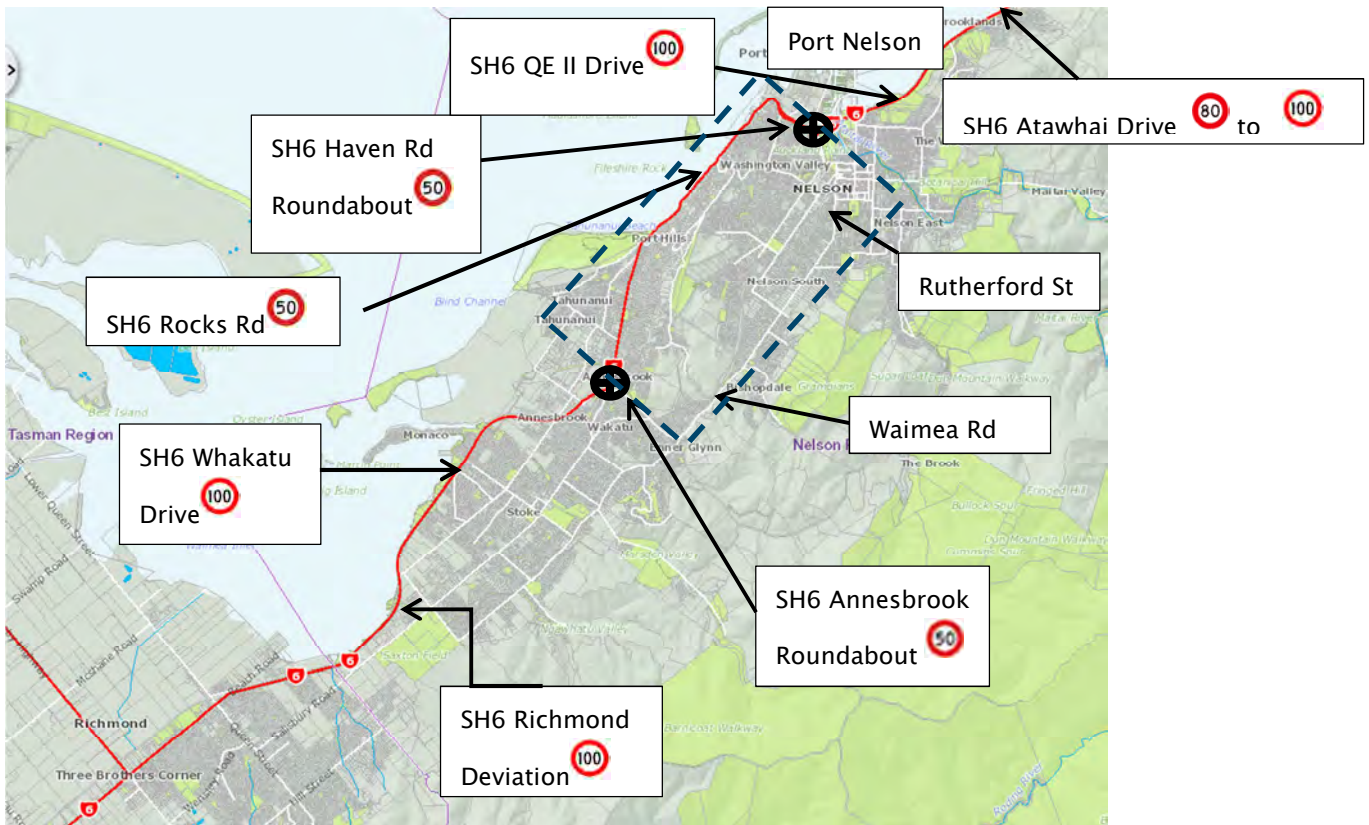


Figure 2 : Investigation Location, Road Names and State Highway Speed Limits

Traffic volumes on SH6 Rocks Road were approximately 22,300⁶ with 6% Heavy Commercial Vehicles (HCV) in 2015.

1.2 FOCUS OF THE NELSON ARTERIAL PBC

The NSLI (SH6 Annesbrook Roundabout to SH6 Haven Rd Roundabout), **Strategic Case** (October 2015) outlined the need for investment and the case for change. The focus of this Programme Business Case (PBC) is to address the identified problems from the Strategic Case of:

- **Congestion** (70%): Congestion in peak hours on Nelson's two arterial routes result in travel delays.
- **Accessibility** (30%): SH6 Rocks Road is a key walking and cycling route constrained by substandard infrastructure.

1.2.1 Programme Business Case

The programme business case (PBC) identifies programmes of work and / or activities that deliver on the Strategic Case through to identifying a preferred programme with an optimal mix of options, which most

⁶ NZTA Site 00600118 <https://www.nzta.govt.nz/assets/resources/state-highway-traffic-volumes/docs/SHTV-2010-2014.pdf> and <https://www.nzta.govt.nz/assets/resources/state-highway-traffic-volumes/docs/2011-2015-AADT-Booklet2.pdf>

effectively addresses the problems identified for the arterial corridors and delivers on the transport benefits sought.

This PBC has sought:

- To provide an evidence based assessment of the problems identified in the Strategic Case, as refined during the PBC phase, affecting transport within the arterial corridors, together with the benefits of solving them;
- To define clear and achievable SMART⁷ investment objectives to enable an assessment of programmes to be undertaken;
- To recommend a preferred programme for further investigation; and
- To define the scope for the next stage of the business case process.

⁷ Specific, Measurable, Achievable, Relevant, Time-bound

2 PROGRAMME CONTEXT

2.1 BACKGROUND

Improving southern corridor access has a long history dating back over 40 years. In that time, projects to improve QEII Drive to the north and Whakatu Drive to the south have been completed, leaving the section between QEII Drive and Whakatu Drive as the remaining section yet to be addressed.

The Strategic Case summarises previous related studies in the following sections. As all of these studies concern the study area, they provide important background and context to the PBC.

2.1.1 The Southern Link

In July 2000 Transit New Zealand, the predecessor of the New Zealand Transport Agency (Transport Agency), lodged a Notice of Requirement stating *“the designation for the Southern Link is needed...to complete the final link between Queen Elizabeth II Drive and the northern end of the Whakatu Drive (Stoke Bypass).”*⁸ The location and Nelson Resource Management Plan status of the “Southern Link” is shown in Figure 3 as a dashed blue line, which highlights a “proposed principal route.”⁹

In 2004, the Environment Court declined the Notice of Requirement for reasons including social severance, the proximity of the route to schools, air quality degradation and a lack of evidence that the route would improve safety and efficiency.



2.1.2 The Nelson North to Brightwater Strategic Study, April 2008

The purpose of this combined Nelson City Council (NCC), Tasman District Council (TDC) and Transport Agency study was to identify present and future transport needs along the wider Nelson – Richmond urban area. The subsequent 2009 Nelson Regional Land Transport Strategy, however, stated that the future need for the Southern Link be monitored.

2.1.3 The Arterial Traffic Study, June 2011

The Arterial Traffic Study was commissioned by NCC and the Transport Agency to *“determine the best transport configuration between Annesbrook and the QEII / Haven Road roundabouts that would improve the city as a*

⁸ Southern Link Environment Court decision, clauses 6, 7 & 14, 2004

⁹ Extract from The Nelson Resource Management Plan Urban Road Hierarchy Map, ref A2.1

whole'. The study determined that no options would qualify for National Land Transport Fund (NLTF) funding at that time, and that the existing arterial transport configuration should be retained. NCC subsequently decided not to support further developing peak hour clearways on the existing arterials as a future option, and also agreed that the Southern Link should be protected as a future transport corridor. The study recommended further investigation be undertaken to improve walking and cycling along Rocks Road.

2.1.4 SH6 Rocks Road Walk / Cycle Facility Options Report, 2016

The SH6 Rocks Road walk / cycle investigation started in 2014, however a preferred option has yet to be determined. Given this project's interdependency with the NSLI PBC, the Transport Agency decided that its next steps, with regard to a walk / cycle option on Rocks Road, would be best determined once the PBC is completed.

2.2 GEOGRAPHIC AND ENVIRONMENTAL CONTEXT

Nelson's central city area is bounded by the sea and low foothills as shown in Figure 4 below. The Maitai River, Brook Stream and York Stream flow through this area. Substantial parts of the city are built on land reclaimed from the sea and historical foreshore. Because of the close proximity of the Nelson foothills and the encroachment of development on the flood plains and riparian margins, the stream and river catchments are relatively short, narrow and steep leading to rapid storm water runoff and a risk of flash flooding in higher intensity rain events. These events cause storm surges and rock fall along Rocks Road (SH6) leading to occasional road closures. Waimea Road has experienced road closures as a result of high winds toppling trees, and culverts on York Stream have occasionally blocked leading to flooding closing the road (although Council is currently upgrading the Waimea Road culverts).

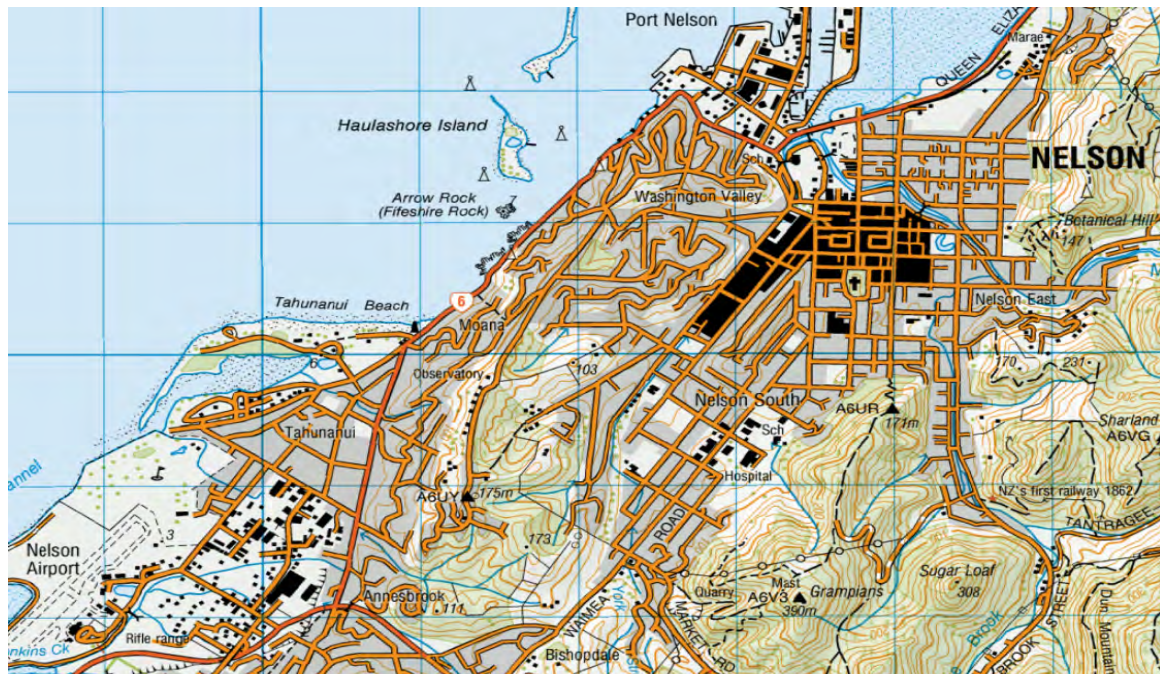


Figure 4 : Nelson Topography

Much of Nelson's coastal communities including the Central City area, Tahunanui and Airport will be affected by sea level rise in the future. Most of the community's critical infrastructure is located within the coastal

environment, including arterial road links, the Port and Airport. According to Ministry for Environment predictions for sea level rise, no NCC assets require urgent consideration before 2018.

2.3 SOCIAL CONTEXT

Nelson's usually resident population is 46,437 (2013), which is 1.1% of New Zealand's population¹⁰. Between 2006 and 2013 Nelson's population increased by 8.3 percent, an average annual growth rate of 1.1 percent. Over half of Nelson's population growth was in Stoke.

The median age increased to 42.5 years compared with 39.4 years in 2006, and New Zealand's median age of 38 years. Nelson has a high proportion of residents aged over 65 at 17.5%, compared with 14.3% nationally. There was a big increase in employment for people aged over 65 years and over, up 5.5 percent to 17.6 percent between 2006 and 2013.

Tasman's usually resident population is 47,154 (2013), which is also 1.1% of New Zealand's population. This is an increase of 2,526 people, or 5.7 percent, since the 2006 Census.

The median age increased to 44.2 years compared with 40.3 years in 2006 Richmond also has a high proportion of residents aged over 65 at 17.9%.

2.4 ECONOMIC CONTEXT

Based on regional Gross Domestic Product (GDP) growth¹⁰, the Nelson / Tasman region grew by 19.1% between 2010 and 2015.

Visitors continue to increase their contribution, with international visitor expenditure up by 18.6 percent to \$159 million and guest nights increasing to 565,700 in the year to March 2015, up 8.7 percent over the year to March 2014. The majority of Nelson's tourist accommodation is located in and around the central business district (CBD) and adjacent to the state highway and arterial roads, including Waimea Road.

The Ministry of Primary Industry's analysis of "Future Capability Needs for the Primary Industries in New Zealand" (April 2014) indicates that successful implementation of the primary industries strategies is likely to create an additional 7,000 jobs in Nelson, Marlborough and Tasman by 2025. This job generation is likely to result in increased traffic generation around Nelson's CBD, Port and Airport.

Looking into the future, the Regional Economic Development Strategy 2014, identifies economic opportunities for the region including the development of mussel farms, increased wood processing as volumes of harvested wood increase, and an increase in the use of digital technology across all sectors.

¹⁰ http://www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/RegionalGDP_HOTPYeMar15.aspx

2.5 TRANSPORT CONTEXT

As summarised in Section 1.1, SH6 is classified as a Regional route. Daily traffic volumes on SH6 Rocks Road in 2015 were approximately 20,300¹¹ with 6% Heavy Commercial Vehicles (HCV).

2.5.1 Historical Traffic Growth

Using data from Transport Agency Site 00600118 and NCC count stations, the combined screenline volumes for SH6 and Waimea Road route¹² through the study area are shown in Figure 5.

Figure 5 indicates that traffic volumes on SH6 have remained relatively constant over the last six years.

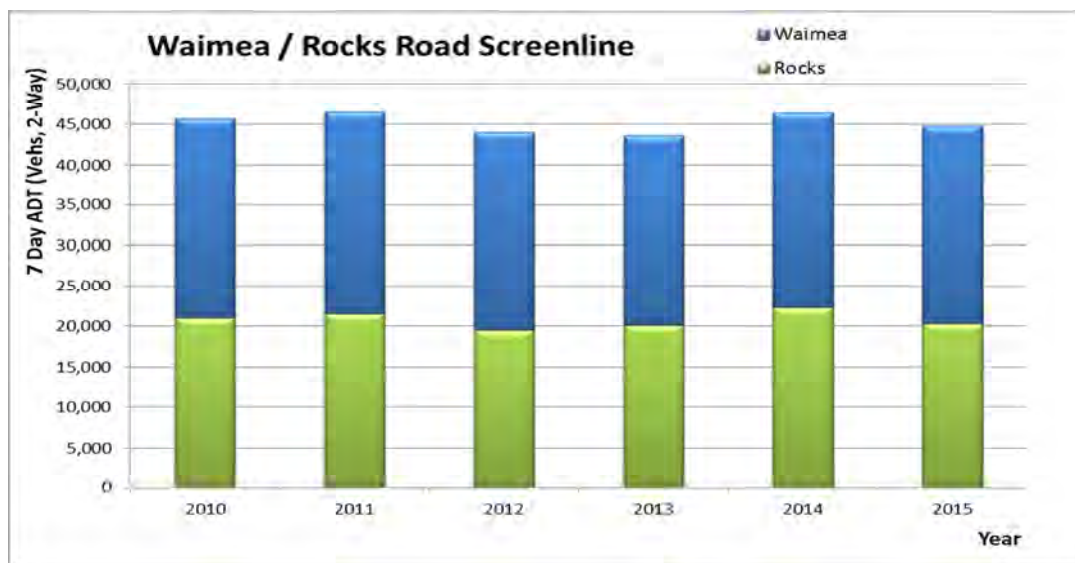


Figure 5 : SH6 Rocks Road / Waimea Road Screenline Traffic Volumes

2.5.2 Freight Volumes

Port Nelson freight tonnages are provided in Figure 6¹³ for import and export respectively. Freight growth has remained stable for the past 10 years.

The relationship between the port and the state highway is a key aspect in terms of the movement of freight. The state highway is currently the only road providing access to and from the port. The movement of export goods from the Nelson / Tasman Region to destinations beyond the South Island, and the movement of import goods in and around the Nelson / Tasman region, are wholly reliant in the first instance, on the connection to the state highway.

¹¹ NZTA Site 00600118 <https://www.nzta.govt.nz/assets/resources/state-highway-traffic-volumes/docs/SHTV-2010-2014.pdf> and <https://www.nzta.govt.nz/assets/resources/state-highway-traffic-volumes/docs/2011-2015-AADT-Booklet2.pdf>

¹² The Waimea Rd route travels from the SH6 Haven Rd roundabout, along Haven Rd, Halifax St, Rutherford St and Waimea Rd before joining the State Highway at the SH6 Annesbrook roundabout.

¹³ Data provided by Nelson Port, 11 March 2016. Tonnage includes bulk and containerised freight.

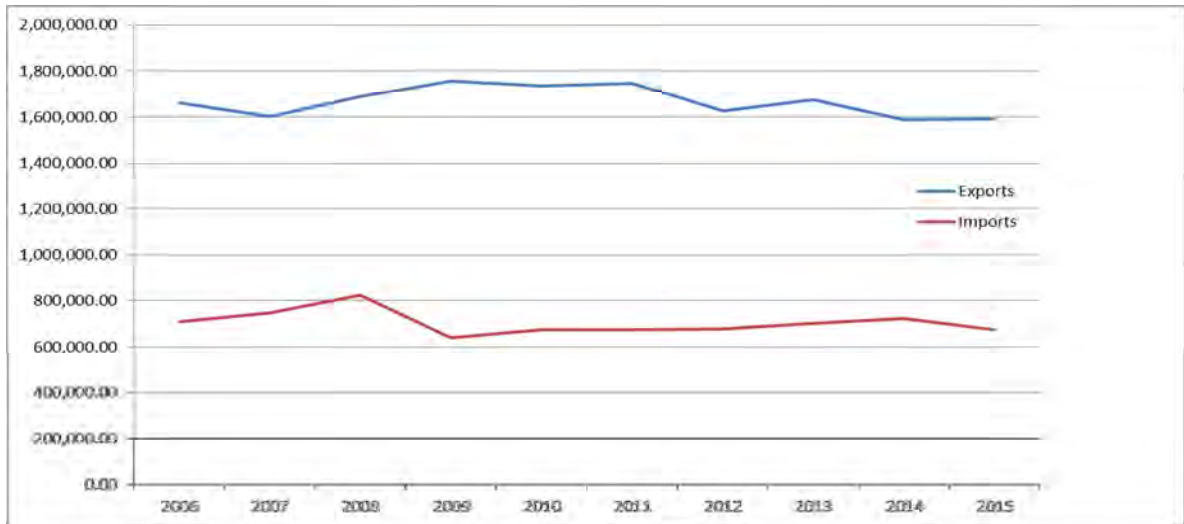


Figure 6 : Port Nelson Import / Export Freight Tonnages, 2006–2015

2.5.3 Walking and Cycling

NCC has been collecting cycle count data for the last 15 years at various locations on the strategic cycle network. The growth in Rocks Road users over that period can be seen in Figure 7. This growth is lower than the growth on the other key cycle routes, such as the Stoke railway reserve and the Bishopdale railway reserve, which have been upgraded to have higher standard facilities in recent years. Overall there is 3.4% growth per annum for the 15 years of data, yet growth on Rocks Road has been tracking at approximately 2.1%.

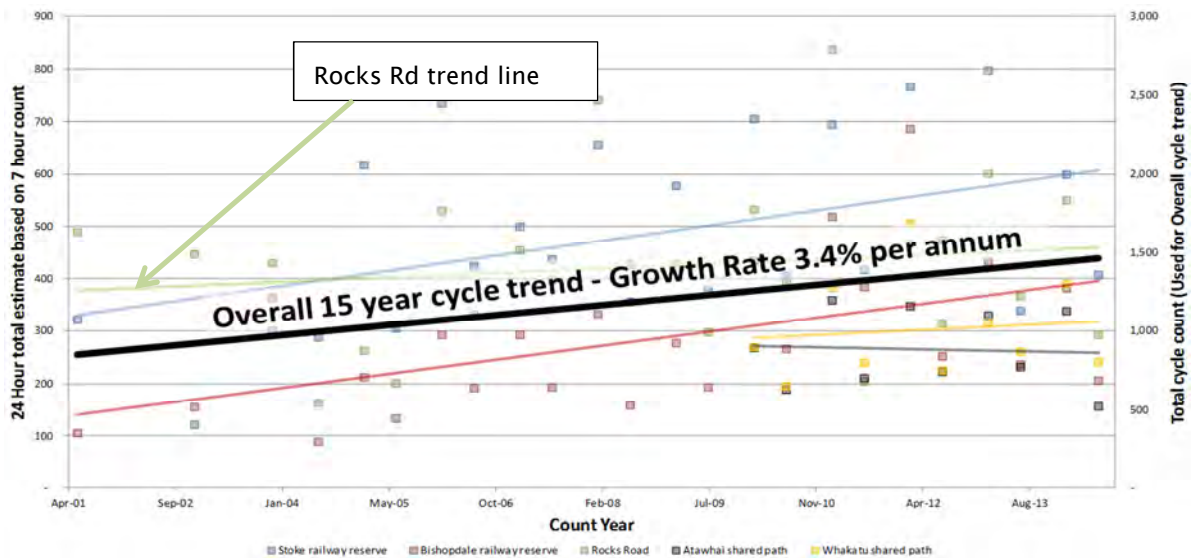


Figure 7 : Nelson's Historic Cycle Growth in Nelson¹⁴

In June 2015 the Transport Agency announced support for Nelson's Coastal Route as part of the Government's Urban Cycleway Programme, announced in 2014. The 7.2km route is shown in Figure 8 and includes the Haven Rd, Wakefield Quay and Rocks Rd sections of SH6. When completed, the coastal route could duplicate or replace the current inland route alignment of the Great Taste Trail, linking Nelson to Richmond.

¹⁴ Graph from NCC's submission for UCF funding, June 2015

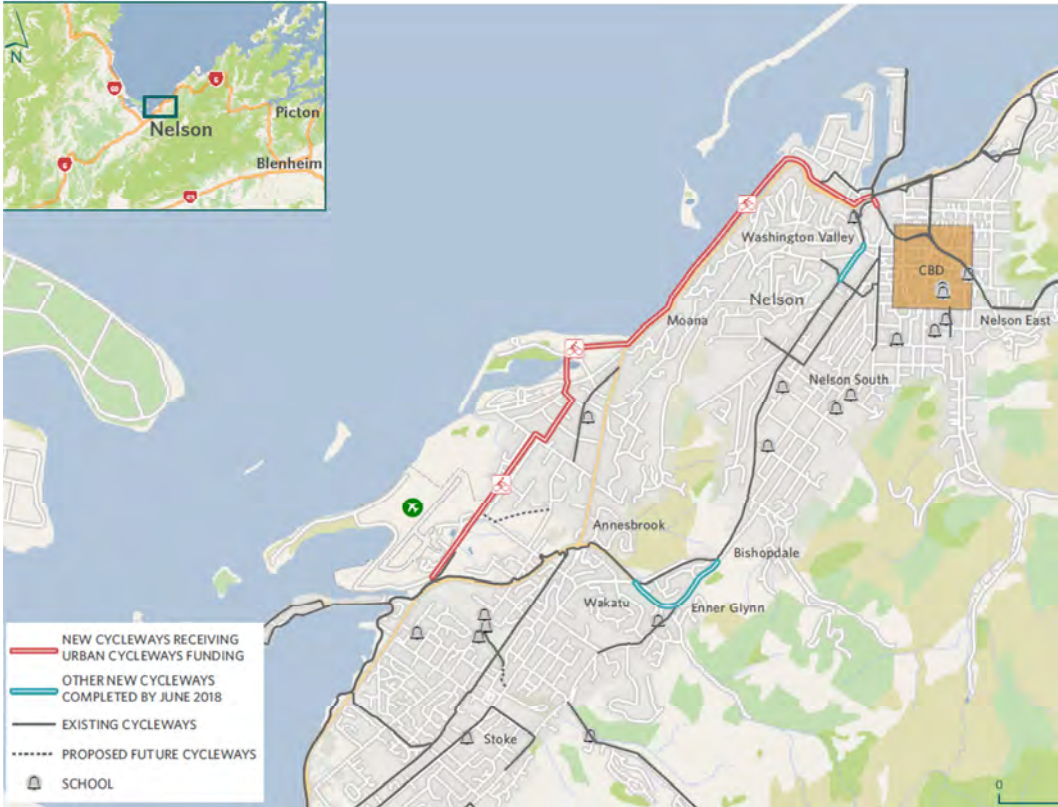


Figure 8 : Nelson's Coastal Route

3 KEY ORGANISATIONS, STAKEHOLDERS AND PUBLIC

This section outlines the key organisations and stakeholders participating in the development of the PBC. Each could either have a responsibility for developing the preferred programme or have been identified as groups representing the wider Nelson / Tasman region that have a physical and strategic influence on the transport network.

3.1 KEY ORGANISATIONS

3.1.1 New Zealand Transport Agency (Transport Agency)

The Transport Agency is responsible for managing, operating, planning and improving state highways and funding local roads to some extent. This is done by the Highways and Network Operations group on behalf of the Transport Agency who are leading the development of the Investigation. The Planning and Investment group is responsible for allocation of funding for transport investment throughout New Zealand.

As the key organisation in the development of this business case on behalf of the Government, the Transport Agency is fundamentally concerned with the ongoing safe and efficient operation of SH6.

3.1.2 Key Organisations

A number of key organisations external to the Transport Agency, identified as historically having a direct physical and strategic influence on the transport network and/or the majority of network users, have viewpoints that need to be taken into account when developing this PBC as shown in Table 1.

Table 1: Key Organisations

Key Organisations	Focus Area
NCC, represented by the Mayor (who is also a Regional Transport Committee member), Works and Infrastructure Committee Chair and Regional Transport Committee Chair	<ul style="list-style-type: none"> Investigation's study area is within NCC unitary territory Strategic transport planning for the region Provision and operation of local road network Unitary authority – plans for and manages the effects of the use and development of land
TDC represented by Engineering Services Chair and Regional Transport Committee Chair	<ul style="list-style-type: none"> Transport linkages between Tasman District, Nelson's central business district, and Port Nelson Strategic transport planning for the Tasman region Provision and operation of local road network Unitary authority – plans for and manages the effects of the use and development of land
Automobile Association (AA), represented by Nelson District AA Council Chair.	<ul style="list-style-type: none"> Promoting, facilitating and protecting the interests of motor vehicle owners
Road Transport Association NZ (RTA), represented by a nominee	<ul style="list-style-type: none"> Association representing road transport operators and the Heavy Haulage Association
NZ Police, represented by Team Leader	<ul style="list-style-type: none"> Road safety and enforcement of the traffic laws

Key Organisations	Focus Area
Road Policing, Tasman	<ul style="list-style-type: none"> Contributes towards the Government's Safer Journeys Strategy and safe system approach
Nelson Chamber of Commerce, represented by Chief Executive Officer	<ul style="list-style-type: none"> Advocate for businesses in the Nelson region

3.2 KEY STAKEHOLDERS

Key stakeholders, external to the Transport Agency (and their key organisations), whose viewpoints have been taken into account through PBC stakeholder workshops are shown in Table 2.

Table 2: Key Stakeholders

Key Stakeholders
NCC Representative from the Planning and Regulatory Committee
Port Nelson Ltd
Bicycle Nelson Bays
Walk Nelson Tasman
A Public Transport User Representative
NCC Representative from the Transport and Roding Division

3.3 PUBLIC

The Public were involved in the development of the PBC through the feedback they provided during the Public Engagement period that ran between 23 March and 24 April 2016. Refer to Section 6.2 and Appendix F of this report for information related to public engagement.

4 STRATEGIC ASSESSMENTS – OUTLINING THE NEED FOR INVESTMENT

4.1 DEFINING THE PROBLEM

As summarised in the Strategic Case, a facilitated Investment Logic Mapping workshop was held on 7 October 2015 with key organisations to gain a better understanding of current issues and business needs. The following two key problems were agreed at the workshop:

Problem 1 (70%): Congestion in peak hours on Nelson’s two arterial routes result in travel delays.

Problem 2 (30%): SH6 Rocks Road is a key walking and cycling route constrained by substandard infrastructure.

The Investment Logic Map from the Strategic Case is attached as Appendix A.

4.1.1 Problem Refinement

The PBC Options Workshop on 18 December 2015 (minutes are provided in Appendix C) reviewed the problem statements from the Strategic Case. After discussion of the problems that took into account the root causes and the issues and constraints, the attendees unanimously agreed to change the problem statements to:

Problem 1 (70%): The form and function¹⁵ of Nelson’s two arterial corridors results in congestion and delays.

Problem 2 (30%): Substandard infrastructure on Rocks Road, which is part of the Coastal Path, is constraining the growth in walking and cycling activities.

The weightings of the problems were maintained at 70% and 30% respectively by the majority of attendees.

Further analyses of these problems and development of SMART (Specific, Measurable, Agreed, Realistic, Time-based) investment objectives are explored in Sections 4.5, 4.6 and 4.7.

4.2 THE BENEFITS OF INVESTMENT

The potential benefits of successfully investing to address the problems were identified at the investment logic mapping session in October 2015. The panel identified and agreed the following potential benefits:

Benefit 1 (35%): Reduced journey times.

Benefit 2 (35%): Contribute to Nelson and regional economic growth and productivity.

Benefit 3 (15%): Improved community safety and wellbeing.

Benefit 4 (15%): Improved tourism and recreational activities.

The benefit map from the Strategic Case is attached as Appendix B.

¹⁵ ‘Form and function’ were used to describe route configurations and accessibility for all modes of travel.

4.2.1 Benefit Refinement

The PBC Options Workshop on 18 December 2015 reviewed the benefit map from the Strategic Case, and agreed the following changes to the benefits. Appendix D contains the meeting minutes:

- Benefit 2 *“Contribute to Nelson and Regional economic growth and productivity”* would occur as a consequence of achieving Benefit 1 *“Reduced journey times”* and therefore Benefit 2 is not required;
- The workshop attendees agreed that Benefit 3 *“Improved community safety and well-being”* should be re-worded as *“Improved safety for walking and cycling modes of travel”*.
- The workshop attendees agreed that Benefit 4 was related to the section of SH6 known as Rocks Road, which runs from the intersection of Bisley Avenue through to the Wakefield Quay and should be re-worded as *“Improved tourism and recreational activities on Rocks Road”*. Following further feedback to the Transport Agency from the workshop attendees, *“active transport”* was added to the description to encompass walking and cycling as well as tourism and recreational activities and the Benefit 4 description was finalised as *“Improved tourism, active transport and recreational activities on Rocks Road”*.
- The Investment KPI for Benefit 4 (refer to the ILM Logic Map in Appendix B) titled *“Increase spatial coverage for cyclists and paths”* was deleted following feedback to the Transport Agency as it was deemed to be an option to the Investment KPIs *“Decrease walk/cycle crashes”* and *“Increased cycle and walker numbers”* and not an objective in its own right.

The Benefit weightings from the Strategic Case have been reassigned to give 70% for Benefit 1 and 15% each for Benefits 3 and 4. The rationale for this change is that Benefit 2 would occur as a result of Benefit 1 being achieved (as acknowledged by the workshop attendees), so Benefit 2’s weighting of 35% is reassigned to Benefit 1.

The removal of Benefit 2 has the potential to create confusion in future correspondence through re-numbering of the benefits from the Strategic Case. To mitigate that risk the Benefits will be described from here on as:

Benefit A (70%): Reduced journey times.

Benefit B (15%): Improved safety for walking and cycling modes of travel.

Benefit C (15%): Improved tourism, active transport and recreational activities on Rocks Road.

4.3 ALIGNMENT TO EXISTING STRATEGIES/ORGANISATIONAL GOALS

4.3.1 The Transport Agency

- The Transport Agency is responsible for operating, maintaining, renewing and improving the state highway network. The state highway within the study area has been highlighted by the Government as being of particular regional importance to contributing to the Government’s strategic direction¹⁶ which is:

¹⁶ Accelerated Regional Rooding Package, Ministry of Transport, July 2014

“To drive improved performance from the land transport system by focusing on:

- *Economic growth and productivity;*
- *Road safety; and*
- *Value for money.”*

The Government Policy Statement¹⁷ (GPS) expects the Transport Agency to take a lead role in securing integrated land transport planning that contributes to the government’s overarching goal of *“growing the New Zealand economy to deliver greater prosperity, security and opportunities for all New Zealanders.”*

The Transport Agency’s Statement of Intent¹⁸ sets out its purpose, which is to *“create transport solutions for a thriving New Zealand.”* The desired outcomes are consistent with the proposed investment, being:

- Effective – Move people and freight where they need to go in a timely manner;
- Efficient – Deliver the right infrastructure and services to the right level at the best cost;
- Safe and Responsible – Reduce the harms from transport; and
- Resilient – Meet future needs and endure shocks.

One of the Transport Agency’s Statement of Intent key goals for the transport network involves integrating land uses, transport networks, and the various modes, services and systems to deliver a seamless and safe ‘one network’. Consequently, it is important when considering any state highway transport network improvements that the region’s policy objectives are taken into account. The long term organisation goals and medium term objectives that relate to this Strategic Case are identified in Table 3.

Table 3: Transport Agency Long-term (2013–32) Goals and Medium-term (2013–2022) Objectives

Long Term (2013–32) Goals	Medium Term (2013–2022) Objectives
Integrate one effective and resilient network for customers	Integrate land uses and transport networks to shape demand at national, regional and local levels.
	Integrate national and local transport networks to support strategic connections and travel choices.
	Improve freight supply chain efficiency.
Deliver efficient, safe and responsible highway solutions for customers	Greater resilience of the state highway network.
	Deliver consistent levels of customer service that meet current expectations and anticipate future demand.
	Provide significant transport infrastructure.
Maximise effective, efficient and strategic returns for New Zealand	Align investment to agreed national, regional and local outcomes and improve value for money in all we invest in and deliver.

¹⁷ Government Policy Statement on Land Transport 2015/16–2024/25

¹⁸ <https://www.nzta.govt.nz/assets/resources/statement-of-intent/docs/soi-2015-2019.pdf>

The Transport Agency's role includes promoting integrated land use and multi-modal transport planning with local government, for an increasingly optimised transport network that runs well and reliably. The Transport Agency needs to negotiate the right balance between transport outcomes and other social, community and economic outcomes.

4.3.2 Relevant Strategies and Plans

Table 4 below identifies the high level organisational strategies of the Government, the NZ Transport Agency and Nelson City Council that relate to this investigation project and are inputs for consideration when moving through the Business Case phases.

Table 4: Relevant Organisational Strategies and Plans

Organisation	Organisational Strategies
Government	Government Accelerated Regional Rooding Package, Government Policy Statement on Land Transport 2015/16 – 2024/25
Transport Agency	Statement of Intent June 2015, draft South Island Freight Plan 2014, National Business Cases, National Infrastructure Plan 2015, National Land Transport Plan 2015 – 2018
NCC	Long Term Plan 2015 – 25, Heart of Nelson – Central City Strategy 2009, Nelson 2060 – Framing our Future
NCC (Regulatory Authority Objectives)	Nelson Resource Management Policy Statement and Plan (under review as the “Nelson Plan”)
NCC (Regional Transport Objectives)	Transportation Asset Management Plan 2015 – 2025, Regional Land Transport Plan 2015 – 2018

4.4 ISSUES AND CONSTRAINTS

When undertaking a study to address the identified problems, the issues and constraints must be considered to ensure that programme and option development takes these into account. ‘Issues’ are uncertainties that the study may not be in a position to resolve, but must work within the context of. ‘Constraints’ represent the bounds within which a study is being undertaken. These are both captured in an “Uncertainty Log”.

For clarification purposes:

- Issues generally relate to something that is occurring for which a decision is yet to be made. For example, a study in a neighbouring area may lead to a proposal that results in significant changes to through trips along the two arterials or for example, the impact of a major new land-use development scheme has yet to become clear; and
- Constraints are known and generally provide the context about which programmes and options are

generated and assessed against. For example, the built-up areas of Nelson will have implications on the ability to build a particular option.

- Table 5 provides the definitions related to the probability of an issue occurring.

Table 5: Probability Definitions

Probability
Near certain: The outcome will happen or there is a high probability that it will happen
More than likely: The outcome is likely to happen but there is some uncertainty
Reasonably foreseeable: The outcome may happen, but there is significant uncertainty
Hypothetical: There is considerable uncertainty whether the outcome will ever happen

The Uncertainty Log is shown in Table 6.

Table 6: Uncertainty Log

Factor	Probability	Impact on programme
Factors affecting demand		
Land use changes occur at a different rate than currently envisaged eg the inclusion of Special Housing Areas	More than likely	High
Higher volumes may mean that transport investment for a particular treatment is required earlier than envisaged or a different treatment than programmed is required. Lower traffic volumes may mean a treatment may have been unnecessary or required at a later date.		
Job numbers increase or decrease at a different rate than currently envisaged	Reasonably foreseeable	High
A faster rate may mean a different treatment is required. A slower rate may mean a treatment can be deferred to a future date or a treatment may not be required.		

Factor affecting supply		
Road space unavailable for some options	More than likely	High
Using the existing transport corridor and optimising the available width has the potential to limit the ability to implement certain options		

Richmond becomes a significant Regional hub and travel patterns alter.	Hypothetical	Low – medium
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Factor affecting cost		
Higher travel costs to individuals	Reasonably foreseeable	Medium
Discretionary journeys likely to decrease. Possibility of higher vehicle occupancy rates.		

Cheaper travel costs to individuals through a change in propulsion system and / or technology	More than likely	High
Traffic volumes during interpeak and weekend periods may increase due to more personal funds being available, a proportion of which could be spent on more recreational journeys.		

Constraints
<ul style="list-style-type: none"> • The statutory powers of an authority to implement change –Transport Agency for SH6, NCC for local roads; • The funding levels that can realistically be obtained; • Topographical constraints that may make implementation risky and / or expensive; • The impacts on the existing as-built and natural environments may constrain the ability to implement particular options;

4.5 EVIDENCE TO SUPPORT PROBLEM 1 (70%): THE FORM AND FUNCTION OF NELSON’S TWO ARTERIAL CORRIDORS RESULTS IN CONGESTION AND DELAYS.

The statement is broken down into cause, effect and consequence as follows:

- **Cause:** Outlines the key causation / contributing factors of the problem:
 - *“The form and function of Nelson’s two arterial corridors”*
- **Effect:** Outlines the effects of both the singular and combined contributing factors:
 - *“results in congestion”*

- **Consequence:** Focusses on the outcomes of the cause and effect relationships and the consequences of not investing:
 - “and delays”

The following sections summarise the evidence that supports the problem statement, and the implications of this information.

4.5.1 The Evidence

Form and Function

PBC Workshop attendees reviewed the traffic model outputs related to the location of congestion points along the two arterials and the cumulative effect of congestion in comparison to free flow speeds. The information presented to the attendees at the two workshops in December 2015, and attached in Appendix C, provides the evidence for the Problem 1 statement (as amended in December 2015).

Traffic Model

The existing Nelson – Tasman Tracks Strategic Transportation Model (Tracks Model) was updated in 2015 to reflect the 2013 census data, validated and independently peer reviewed. The model’s purpose is to enable the existing transport network, in and around the study area, to be replicated to enable modelling of future years to occur to understand the changes to the transport network over time using a particular growth scenario. The model has helped to obtain a better understanding of where transport problems on the transport network are likely to occur, when they will occur and to better understand the extent of the problem of congestion (Problem 1) into the future using different growth scenarios.

The traffic model study area incorporates the Nelson City and Tasman District urban areas, from Hira in the east, Tophouse in the south and Motueka to the north–west as shown in Figure 9.

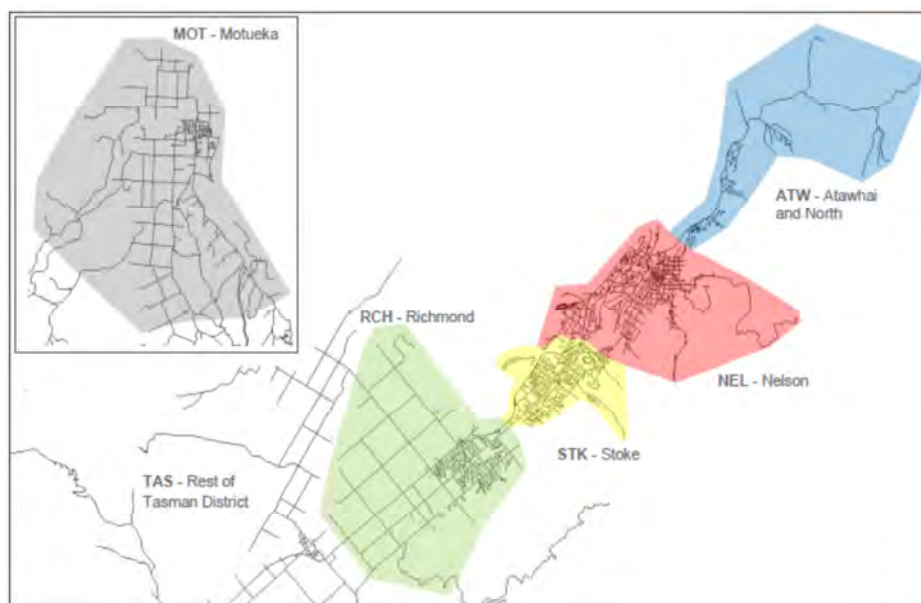


Figure 9: Traffic Model Extents

The Tracks Model projected the do minimum (2013 model) scenario into the future using models developed for 2023 and 2033 with land use input assumptions¹⁹ agreed with NCC and TDC officers. The quantum of population growth in the future baseline models aligned with Statistics New Zealand (SNZ) medium growth projections published in 2015 and household occupancy rates sourced from technical analysis by Rationale planning consultants. Key employment assumptions take into consideration likely changes in age profiles resulting in lower levels of future workforce participation. The assumptions are also informed through consultation with major employers within the study area to incorporate their growth expectations.

Sensitivity testing on the future models was undertaken to understand the likely level of uncertainty (range) as part of the Uncertainty Log (see Table 6 above) to different land use growth forecasts and how these may affect the model outputs. The sensitivity scenarios are centred on the current SNZ range of population projections as follows:

- Low Growth;
- Revised Medium Growth; and
- High Growth.

Low Growth – assumes SNZ published low growth population forecasts to understand the impacts of development occurring at a slower rate than the base forecast model. This test retains the same household occupancy assumptions as the base model. Employment growth is adjusted based on the change in household numbers from the slower development rate. The base school and tertiary roles are determined as a function of population growth so the school and tertiary roles have been factored back accordingly.

Revised Medium Growth – The revised medium scenario is a variant of the medium growth used in the main models, making adjustments to household numbers to align with SNZ household occupancy forecasts but retaining the same quantity of population growth. The future household occupancy rates adopted by NCC and TDC are higher than those predicted by SNZ and result in fewer households in the future relative to the population size. The revised medium growth scenario aligns with SNZ household occupancy rate predictions. When compared to the medium growth scenario, would add 1,794 households in the 2023 model and 2,579 households in the 2033 model with a corresponding increase in the number of jobs using the same 1.083 ratio. This in turn leads to a higher number of vehicles (using the same cars / household ratio of 1.68) and ultimately a higher number of home to work to home vehicle trips, which mostly occur in the peak period.

High Growth Scenario – The high growth scenario utilises the same methodology as that described for the low growth scenario and is developed to demonstrate the impacts of faster than expected growth on the model outputs by combining the SNZ high growth population forecasts with the base population per household ratio of the existing models.

Figure 10 below provides information with regard to the total number of vehicle kilometres travelled (VKT) within the study area under the different growth scenarios for the future. Figure 11 provides the range of traffic volumes per day to be expected on Waimea Road and SH6 combined.

¹⁹ Nelson Southern Link Investigation: Future Forecast Report March 2016

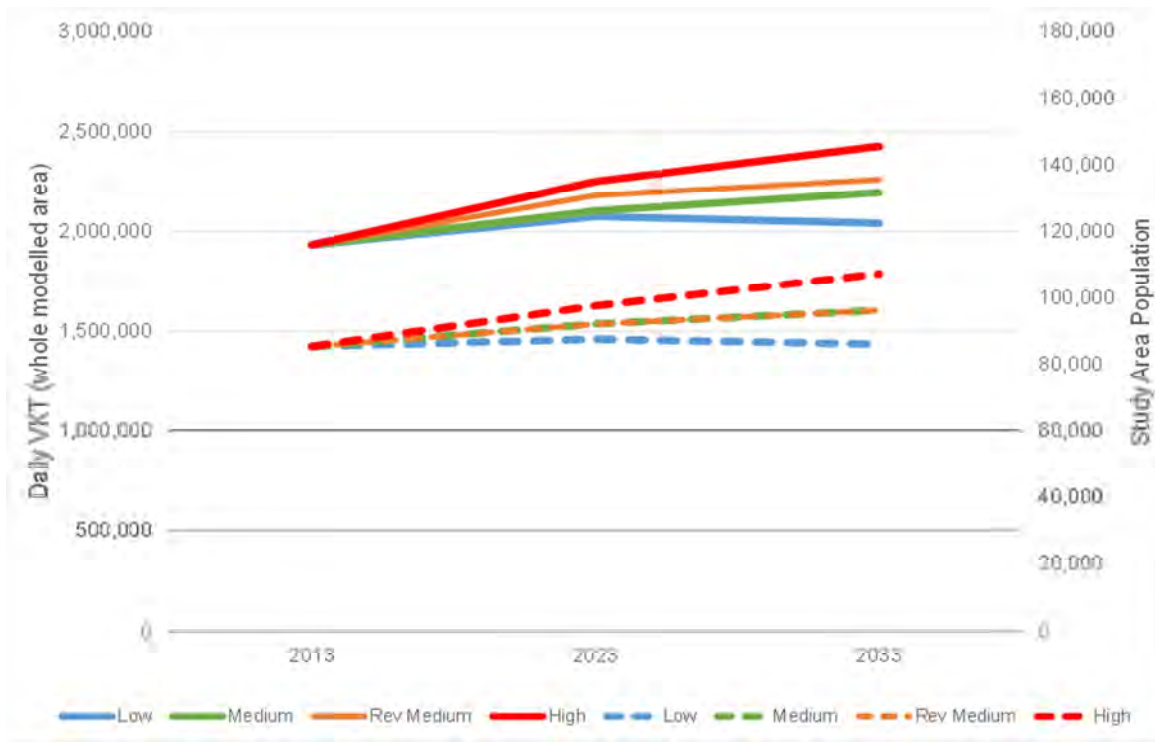


Figure 10: Comparison of Daily VKT and Model Area Population (dashed lines represent population numbers, solid lines represent VKT)

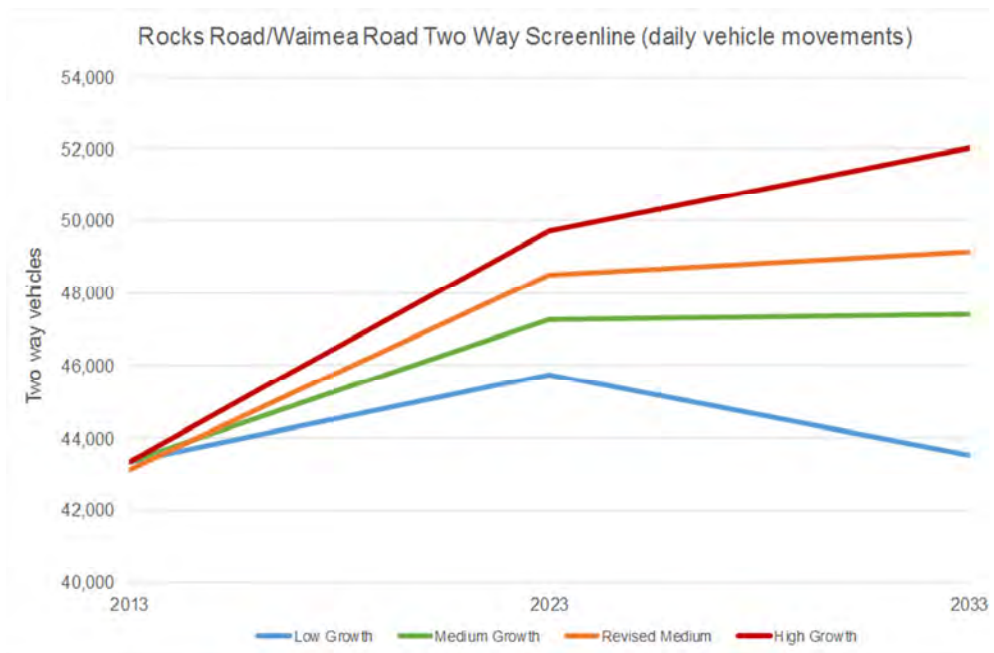


Figure 11: Comparison of Daily Traffic on Arterials Against Growth Scenarios

The primary outcome from the traffic modelling undertaken for the NSLI related to the two main arterial routes, demonstrates the level of uncertainty with regard to traffic volumes and travel times in the future under a range of different growth scenarios. Only the low growth scenario demonstrates that traffic volumes in 2033 will be

similar to 2015, with the other growth scenarios showing a range of higher traffic volumes in 2033 depending on the growth scenario.

Current Congestion

With reference to Problem 1, related to congestion, a Transport Agency definition²⁰ of congestion is *“where the volume to capacity ratio exceeds 80% for 5 days per week over at least a 1 hour time period that affects at least 1.5 km of a route”*.

For NSLI, the information collected to determine the current level of congestion was derived through the use of Bluetooth data. This data is captured through the positioning algorithm within mobile phone devices and together with the time data captured via sensors, enables the speed of a vehicle to be determined between known points along with the time taken to travel between those known points. For NSLI, Bluetooth data has been captured since the October 2014 and is presented in more detail in Appendix E. The Bluetooth data compares the travel times and travel speeds for each quarter for school term and holiday times. The Bluetooth data reports average travel times and average travel speeds within separate 15 minute intervals.

For Waimea Road, the Bluetooth data provided in the Strategic Case was between the Waimea Road/ Beatson Road roundabout and the intersection of Waimea Road / Rutherford Street – known as Route 2 in the Strategic Case. Appendix E provides Bluetooth data on Waimea Road between Annesbrook roundabout and the intersection of Waimea Road / Rutherford Street – known as Route 6 in Appendix E.

The Bluetooth data for both arterial routes, as shown in Appendix E, concurs with the evidence from the Strategic Case. In summary, the data provided in Appendix E shows the following:

- A comparison of Q4 2014 data and Q4 2015 data showed:
 - Delays on SH6 in both term and holiday times have increased by 1 minute in the northbound direction and by 2 minutes in the southbound direction for daytime time periods;
 - Delays to Waimea Road during term time have increased by approximately 2 minutes for the morning and evening peak periods correlated to direction;
- A comparison of Q1 2015 data and Q1 2016 data showed:
 - Delays to SH6 morning peak in the northbound direction during term time have increased by approximately 3 minutes and by approximately 1 minute during the other daytime time periods;
 - Delays to SH6 evening peak in the southbound direction during both term and holiday times have increased by approximately 2 minutes and by approximately 1.5 minutes during the other daytime time periods;
 - Delays to Waimea Road morning peak in the northbound direction during term time have increased by approximately 2 minutes with a small increase in delay during the other daytime time periods;
 - Delays to Waimea Road evening peak in the southbound direction during term and holiday times have increased by approximately 2 minutes.
- A comparison of Q2 2015 data and Q2 2016 data showed:

²⁰ Refer Glossary, NZTA Planning and Investment Knowledge Base

- Delays to SH6 morning peak in the northbound direction during term time have increased by approximately 2 minutes;
- Delays to SH6 evening peak in the southbound direction during both term and holiday times have increased by approximately 2 minutes;
- Delays to Waimea Road morning peak in the northbound direction during term time and holiday time have increased by approximately 1 minute;
- Delays to Waimea Road evening peak in the southbound direction during term and holiday times have increased by approximately 3 minutes.
- A comparison of Q3 2015 data and Q3 2016 data showed:
 - Delays to SH6 morning peak in the northbound direction during holiday time have increased by approximately 1 minute;
 - Delays to SH6 afternoon school peak in the southbound direction during term time have increased by approximately 1 minute. Delays in the evening peak during holiday time have increased by approximately 2 minutes;
 - Delays to Waimea Road morning peak in the northbound direction during term time and holiday time have increased by approximately 1 minute;

It is important to note that during 2016, there have been roadworks on Waimea Road, which could be a contributory factor in some of the increased delays when comparing 2016 travel times to 2015.

The evidence for congestion can be summarised as:

- Across the average 15 minute period, travel time delays in the peak periods on SH6 range between 2 and 8 minutes, and between 1 and 14 minutes on Waimea Road;
- Uncongested daytime travel speeds on SH6 are approximately 40km/hr, reducing to as low as 22km/hr in the southbound peak;
- Uncongested daytime travel speeds on Waimea Road are approximately 50km/hr, reducing to as low as 16km/hr in the northbound peak;
- During holiday periods, there are minimal delays northbound in the morning peak on Waimea Road;
- During holiday periods, there is approximately 2 – 4 minutes delay southbound in the evening peak on Waimea Road;
- During holiday periods, the delays in the peak on SH6 in the southbound direction are approximately 2 minutes greater than term time; and
- During holiday periods, there are minimal delays in the morning and evening peaks on SH6 in the northbound direction;

4.5.2 Implications of the Evidence

Taking into account the evidence for Problem 1, the implications are:

- Growth forecasts indicate that expected traffic delays and travel speeds on the two arterials will most likely get worse than 2015 levels under a range of 2023 and 2033 growth scenarios. Under the low growth scenario, traffic delays and travel speeds in 2033 are likely to be similar to 2015 levels.

4.6 EVIDENCE FOR PROBLEM 2 (30%): SUBSTANDARD INFRASTRUCTURE ON ROCKS ROAD, WHICH IS PART OF THE COASTAL PATH, IS CONSTRAINING THE GROWTH IN WALKING AND CYCLING ACTIVITIES.

The statement is broken down into cause, effect and consequence as follows:

- **Cause:** Outlines the key causation / contributing factors of the problem:
 - *“Substandard infrastructure on Rocks Road”*
- **Effect:** Outlines the effects of both the singular and combined contributing factors:
 - *“is constraining”*
- **Consequence:** Focusses on the outcomes of the cause and effect relationships and the consequences of not investing:
 - *“growth in walking and cycling ”*

The following sections summarise the evidence that supports the problem statement, and the implications of this information.

4.6.1 The Evidence

Constraining Growth in Walking and Cycling

Historical growth comparisons for walking and cycling on Rocks Road and the rest of Nelson was demonstrated in the evidence contained in the Strategic Case, reproduced in Figure 7 in Section 2.5.3 above. This comparison shows that the growth in walking and cycling numbers along Rocks Road is less than half the overall growth for Nelson.

Infrastructure Quality

An assessment of the pedestrian and cycling infrastructure along Rocks Rd was undertaken as part of the Rocks Rd walk / cycle path investigation²¹. When compared to the NCC Land Development Manual minimum standards, this investigation found that:

- 60% of the seaward footpath is below the desired 2m width²²; and
- Only 50% of existing cycle lanes met the minimum 1.5m width. None of the existing cycle lanes met the desired width of 1.8m for passing parked cars.

A review of the collective risk within Urban KiwiRap²³ indicates medium to high risk category for SH6 and the majority of Waimea Road (Annesbrook roundabout to Haven Road roundabout).

4.6.2 Implications of the evidence

- Compared to the historical 15 year average, growth in walking and cycling numbers on Rocks Road is lower than elsewhere in Nelson;

²¹ Rocks Road Cycle and Walking Project Investigation Report, July 2014

²² NCC Land Development Manual minimum standard

²³ <http://interpret.maps.arcgis.com/apps/PublicInformation/index.html?appid=d9713fc76168416cb9742f4d5d84fe31>

- Walking and cycling infrastructure on Rocks Road does not comply with current NCC standards;
- Public engagement undertaken in October 2014 as part of the Rocks Road Walking and Cycling Project Investigation identified substandard infrastructure as being a deterrent to walkers and cyclists accessing the hospitality and leisure industries, or the coastal amenity.

4.7 SMART INVESTMENT OBJECTIVES

At the PBC Workshop of 18 December 2015, the minutes of which are contained in Appendix D, attendees discussed the following SMART Investment Objectives (IOs) and their targets to be used to assess programmes and options developed during the PBC phase. The IOs serve as the basis for directing and guiding the entire study process, allow proper appraisal of options and alternatives, provide a clear line of site from the problems through to the benefits and key performance indicators (KPIs) and are focussed on the outcomes being sought

4.7.1 Investment Objective 1

Benefit:	Reduced travel times in the peak periods on the two arterial routes between Annesbrook and Haven Road roundabouts.
Investment KPI:	Decreased peak hour travel times.
Measure:	Travel speed.
Baseline:	Travel speeds on SH6 are averaging 29km/hr in the peaks. Travel speeds on Waimea Rd are averaging 22km/hr in the peaks.
Target:	Travel times on the two arterials no worse than 2015 for the life of the programme (40 years).

NB: It is noted that not all attendees were in agreement that travel times were a problem now and into the future.

4.7.2 Investment Objective 2

Benefit:	Reduced travel times in the peak periods on the two arterial routes between Annesbrook and Haven Road roundabouts.
Investment KPI:	Improve peak hour available capacity to move people and goods.
Measure:	Volume to available capacity ratio.
Baseline:	Peak hour volume to available capacity ratio on Nelson's two arterials (SH6 Rocks Road and Waimea Rd) range from 83% to 95%.
Target:	Peak hour volume to available capacity ratio of no more than 0.8.

4.7.3 Investment Objective 3

Benefit:	Improved safety for walking and cycling modes of travel.
Investment KPI:	Decrease in walking and cycling crash numbers on the two arterials.
Measure:	Crash numbers and death and serious injuries (DSIs).
Baseline:	In the last 5 years there have been 42 crashes involving cyclists and 13 involving pedestrians on the two arterials.

Targets: Zero walking and cycling crashes; and
Continuous decline in walk / cycle DSI's for the life of the programme.

4.7.4 Investment Objective 4

Benefit: Improved tourism, active transport and recreational activities on Rocks Road.
Investment KPI: Increase walking and cycling numbers on Rocks Road.
Measure: Walking and cycling numbers using Rocks Road.
Baseline: 500 cyclists per day, 250 pedestrians per day.
Target: Five years after implementing an option on Rocks Road, double walking and cycling numbers per day and thereafter the growth rate is greater than elsewhere in Nelson.

4.8 SUMMARY OF PROBLEMS, BENEFITS AND INVESTMENT OBJECTIVES

Figure 12 summarises the problems, benefits and investment objectives refined during the PBC phase and used to develop the programmes.

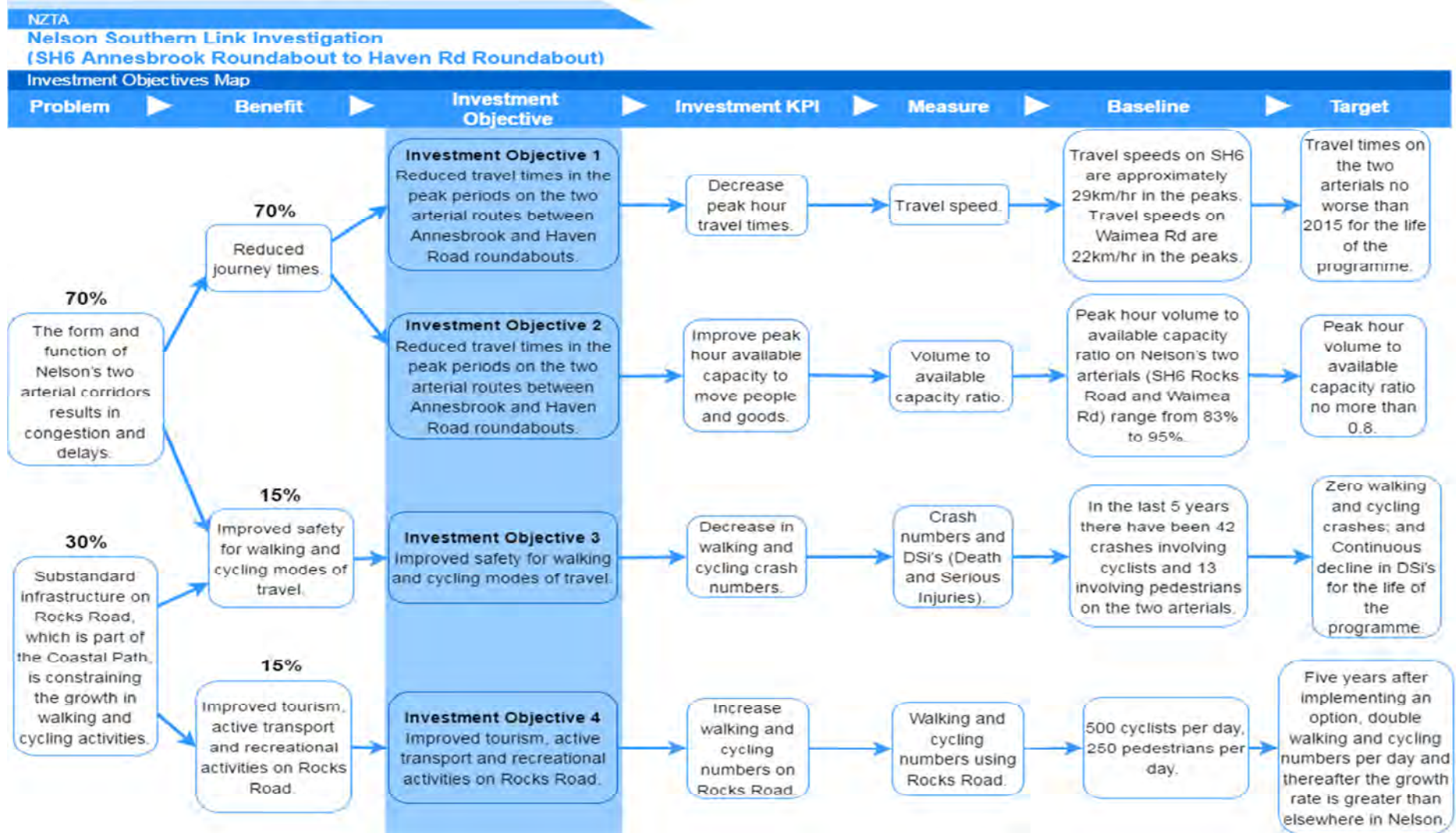


Figure 12: Summary of Problems, Benefits and Investment Objectives Refined for the PBC

PART B – DEVELOPING THE PROGRAMME

5 ALTERNATIVES AND OPTION DEVELOPMENT

5.1 OPTION GENERATION

During the second PBC Workshop held on 18 December 2015, workshop attendees identified options to address the problems and achieve the desired outcomes under the following three categories:

- A. Options to improve capacity / infrastructure quality;
- B. Options to improve efficiency; and
- C. Options to shape and influence demand.

A full list of the options tabled by the workshop attendees is attached in Appendix D.

Workshop attendees identified a total of 113 options. These ranged from light rail through to influencing travel behaviours. To capture the widest scope of possibilities, the philosophy of “no wrong answers” was adopted; therefore, no option was discarded at this early phase.

After the workshop, the options identified were filtered by the project team to remove duplicates. Options were then sifted by firstly grouping the options that were listed by the attendees as desired outcomes into actual options that could be implemented as shown in Table 7.

Table 7: Grouped Options

All Options	Grouped Options
<ul style="list-style-type: none"> • Remove traffic signage and road lanes • Pedestrianised inner city streets • Electric vehicle subsidy/charging ports. A subsidy to encourage a shift away from fossil fuel method of propulsion to electric vehicles and provide charging points at parking spaces. • Living arterials – trees, shade, seats • Survey to identify barriers for uptake/use of public transport (PT) / cycling. • Publicise / preach benefits of cycling / walking – • Reduce unnecessary travel (work on-line – shop on-line, etc.) • Combine journeys • Showers and secure cycle parking in workplace • Flexible start/finish times for school businesses employment • Ban and breath test cyclists • Park and Ride – Ambassador 	<p>These options were grouped into three options with a focus on incentivising use of other modes of transport and varied commute times:</p> <ul style="list-style-type: none"> • imposing restrictions on the existing roading network • imposing parking restrictions • using advertising campaigns

All Options	Grouped Options
<ul style="list-style-type: none"> • Remove parking • Re-distribute parking • Reduce parking capacity in CBD and increase parking fees • Remove parking from around schools • Parking management • Create disincentives • Invest in promoting options (increase attractiveness – make cycling sexy) • Preserve pedestrian-vehicle balance in CBD (don't flood CBD and periphery with additional vehicles) • Reduce cross traffic on both arterials • More walking and cycling uptake • A regional strategic highway SH6 • School educational and travel plans involving parental incentives • Driverless cars 	
<ul style="list-style-type: none"> • Apartment living in CBD/commercial retail centres • Focus on land use and implications: <ul style="list-style-type: none"> ○ walk, live, play ○ density of housing ○ economic development numbers • Tahuna intersection relocating shopping precinct • Reduce urban sprawl • Inner city living • Density of housing • Clarity around economic development areas 	<ul style="list-style-type: none"> • Changes to Land Use
<ul style="list-style-type: none"> • Incentivise higher occupancy vehicle use 	<ul style="list-style-type: none"> • Provision of High Occupancy Vehicles (HOV) lanes
<ul style="list-style-type: none"> • Bus lanes • PT options – rail and/or bus • Free PT • Prioritise PT • Better PT – bus lane • Trams • Expand P/T network into TDC • PT upgrades + promotion – bus and/or rail and park and ride clearways for PT lanes and car pool • Bus – express – dedicated route – possibility through railway reserve • Bus lane / dual occupancy lane • Rail link • Monorail • Rail shunt/shuttle • Improved PT – times/frequency 	<p>These options were grouped into the following options:</p> <ul style="list-style-type: none"> • Dedicated bus lanes • Additional bus services – fare paid by user • Additional bus services – free or partially subsidised • New commuter rail service – fare paid by user • New commuter rail service – free or partially subsidised • Dedicated busway on old rail reserve • Dedicated transit/freight route on old rail reserve

All Options	Grouped Options
<ul style="list-style-type: none"> • Priority PT and freight infrastructure and HOV • Free PT 3 year trial • Light rail to city • Better Public Transport (Fastlane for trucks/buses/multiple occupancy cars) • On-demand PT services (Uber etc.) 	

A large number of options provided at the workshop were brief in their description. Each of the remaining options were reviewed and a description added to understand how that option would be practically implemented. For example, the description for the option “Park and Ride” is *“This option involves the provision of parking facilities south of Annesbrook roundabout and the provision of public transport to enable commuters to access the CBD and vice versa”*. Another example was the option called “Wider sidewalks – mobility scooters/skate boards on the two arterials”, whose practical description became *“Widening sidewalks occurs by removing parking and other restrictions along the arterials which is assumed to create the required space.”*

Option descriptions were added to some of the options to ensure that assessment by individuals would be done on a like-for-like basis to minimise the risk of mis-interpretation of the option and therefore the assessment of that option.

In parallel to the NSLI, the Transport Agency has undertaken a separate study into improving walking and cycling facilities along Rocks Road. That study (SH6 Rocks Road Walking and Cycling Investigation) identified and investigated key options at a level of detail correlated to the Indicative Business Case (the business case phase immediately after the PBC) phase. Additionally, that study is directly correlated to Problem 2 of the PBC.

It is important that decisions on these two transport projects are informed by one another. At least one of the options identified for improved walking and cycling facilities along Rocks Road can only be implemented in conjunction with activities associated with the NSLI. For this reason, the Transport Agency requested that the Rocks Road walking and cycling improvement options from the Rocks Road Walk Cycle Facility Investigation be brought into the NSLI for consideration within programmes that are developed for NSLI.

Four options from the Rocks Road walking and cycling improvement study were incorporated into NSLI and publicly consulted on. These were:

- Option One:** **Minor safety enhancements:** This option includes committed improvements identified by the Transport Agency and NCC, such as resurfacing work to the road and footpath. It also involves incremental improvements to existing on-road facilities and the footpath. There is no widening on the seabed, the existing footpath, or cycle facilities. Rough order cost \$2.6 million.
- Option Two:** **Safety enhancements with reduced lane widths:** This includes the improvements outlined in Option 1 above, and creates additional cycle and footpath width through narrowing the traffic lanes to 3m. This option can only be pursued if the state highway is relocated (i.e. Rocks Rd becomes a local road and large trucks are banned). Rough order cost \$8.2 million.
- Option Three:** **On-road cycle lanes in both directions, shared path and reduced parking:** This option involves widening the on-road cycle lanes in both directions and creating a 2.9m shared walking and cycling path on the seaward side. Parking between Victoria Road and Richardson Street would be removed. There would be significant seawall widening. Rough order cost \$21.3 million.

Option Four: **On-road cycle lanes and shared path:** This option involves widening on-road cycle lanes in both directions and creating a 2.9m shared walking and cycling path on the seaward side as in Option 3 above. Parking between Victoria Road and Richardson Street would be kept. This will require significant seawall widening. Rough order cost \$25.1 million.

5.1.1 Summary of Option Generation

Overall, a total of 44 options were left after the filtering and sifting exercise and are listed in Appendix F and included in the in the public engagement material to help with the feedback provided on the proposed approaches (Section 6.2 below).

5.2 OPTIONS ASSESSMENT

During the period between Workshop 2 and the end of the public consultation, the options identified in Section 5.1 above were assessed and re-assessed individually by the project team's technical specialists at a qualitative level using the following criteria:

- Investment, operational and maintenance cost range;
- Estimated Benefit Cost Ratio (range);
- Timing of implementation after completion of the NSLI Investigation;
- Strategic Fit – high, medium or low;
- Effectiveness – high, medium or low;
- Efficiency – high, medium or low;
- An assessment against the Investment Objectives to describe to what extent (high, medium or low) the option is expected to meet the objective over the life of the programme;
- Implementability
 - Feasibility – technically how straightforward is the option to implement; any novel or leading edge technologies involved; property and consenting risks; and, any ongoing operation or maintenance implications;
 - Affordability – what are the funding risks, will non-traditional funding methods be needed, cash flow risks; ongoing operating risks and risk in obtaining operating subsidies;
 - Public / Stakeholder acceptance- what is the level of anticipated objections by the community or particular stakeholders
- Impacts
 - Safety – how will the option enhance safety for different types of transport users? Are there impacts on personal safety / security? What will be the impact on fatal and serious crashes;
 - Economy – how will option affect travel times, level of service (LoS), reliability of travel times and traffic volumes? Will there be gainers and losers; potential to enhance the development potential of adjacent land; attract new jobs; and, help existing businesses
 - Environmental – noise and vibration;
 - Environmental – air quality;
 - Environmental – water resources, resource efficiency, ecology;
 - Accessibility;

- Landscape – visual quality and urban design;
- Culture and Heritage; and
- Social – community cohesion, public health, severance.

5.2.1 Seven Point Scale

The scoring of each option utilised a ranking system of high, medium and low for the assessment against the investment objectives and assessment of implementability (as set out in the Transport Agency's PBC guidance).

Impacts were assessed using the Transport Agency's seven point scale based on the following criteria:

- **+3 Major benefit** – these are the benefits or positive impacts which, depending on the scale of benefit or severity of impact, are the principal consideration when assessing an option's eligibility for investment;
- **+2 Moderate benefit** – the option is anticipated to have only a moderate benefit or positive impact. Moderate benefits or impacts are those which taken in isolation may not determine an option's eligibility for investment, but taken together do so;
- **+1 Minor benefit** – the option is anticipated to have only a small benefit or positive impact. Small benefits or impacts are those which are worth noting, but the practitioner believes are not likely to contribute materially to determining whether an option is invested in or otherwise;
- **0 No benefit or impact** – the option is anticipated to have no or negligible benefit or negative impact;
- **-1 Minor cost or negative impact** – the option is anticipated to have only a minor cost or negative impact. Minor costs/ negative impacts are those which taken in isolation may not determine an option's eligibility for investment, but taken together could do so;
- **-2 Moderate cost or negative impact** – the option is anticipated to have only a moderate cost or negative impact. Moderate costs/negative impacts are those which taken in isolation may not determine an option's eligibility for investment, but taken together could do so;
- **-3 Major cost or negative impacts** – these are costs or negative impacts which, depending on the scale of cost or severity of impact, the practitioner should take into consideration when assessing an option's eligibility for investment.

The assessment for each option was recorded and can be found in Appendix G.

6 PROGRAMME DEVELOPMENT

Programmes were developed through consideration of the strategic responses to address the problems plus inputs from key stakeholders and from public engagement.

In January 2016, during a project team workshop, it was agreed that options that included passenger or light rail were discontinued from further analysis. However, it was noted that a dedicated busway, which would result in similar outcomes as a passenger or light rail system but at much lower investment costs (capital investment and operational costs, was to be retained.

As previously noted, the total number of individual options for grouping into programmes was 44.

6.1 STRATEGIC RESPONSE TO THE PROBLEMS

The first step undertaken by the project team was to determine that there were three strategic responses that could be utilised to address the problems, contribute towards the desired benefits and achieve the Investment Objectives. These were by:

- Changing land use to alter travel patterns to effectively reduce private motor vehicles travelling in the peak.
- Increasing capacity to facilitate increased traffic volumes;
- Reducing the volume of private motor vehicles travelling in the peak periods – making the most of the current network;

6.1.1 Strategic Response When Considering Problem 1

When considering the strategic response to Problem 1 there is direct correlation to existing land use patterns in the Nelson – Tasman area. However, the Transport Agency is not the responsible entity that decides the permitted land uses and is only able to make a submission on proposed land use changes during reviews of District Plans or through a Private Plan Change. The view was taken by the Project team that submissions to the District Plan process is an option that should be occurring on a regular basis and therefore higher residential intensification [higher than currently provided for in the current Nelson Resource Management Plan (NRMP)] within walking distance of the Nelson City CBD should be an option included in all programmes. This would potentially result in fewer home to/from work journeys by private vehicle provided there was an uptake in increased availability of residential housing.

The current NCC policy within the NRMP (IC4.3) states that the inner city’s “fundamental character is non-residential”. The project team took the view that the implementation of intensified inner city housing would take a significant amount of time to effect the required change to achieve IOs 1 and 2 and therefore concluded that although “changing land use” as a strategic response, along with options supporting that strategic response, could address Problem 1, the implementation timeframe would be long term and could not be pursued with confidence as a strategic response to Problem 1 at this stage in the Business Case process. This was also due to the overall uncertainty about whether NCC would adopt wide scale changes to the District Plan (via a Transport Agency submission) to effect the change necessary to achieve IOs 1 and 2. In summary “changing land use” is an option to be included in the programmes and not a standalone strategic response.

The project team then addressed the other strategic responses – increasing capacity and reducing the number of private motor vehicles travelling in the peak or a combination of both.

With regard to increasing capacity on the two arterials as a strategic response to solve problem 1, the project team determined that there were three measures to achieve this:

- Physically widening the existing road corridors (mid-block and / or intersections); or
- Creating a new route; or
- Combinations of the above.

With regard to reducing the volume of private vehicles travelling at peak times on the two arterials, the project team determined that this reduction could be achieved through the following travel demand measures (TDM):

- Implementation of restrictions to discourage private vehicle travel in the peak period eg parking restrictions / charges; or
- Provision of car sharing; or
- A switch to other modes of travel (public transport, walking, cycling); or
- Combinations of the above.

6.1.2 Strategic Response When Considering Problem 2

The “strategic response” to address the problem of sub-standard walking and cycling infrastructure on Rocks Road (Problem 2) is to “widen” the infrastructure so that it meets current standards. The existing footpath width is less than the current AustRoads and NCC standards, as are the existing on-road cycle lanes. Although there are sections along the route where parking could be removed to create width, the majority of the length would require physical widening. The project team concluded that physically widening the existing footpath and cycle facilities was the only strategic response that could provide infrastructure complying with current standards.

6.2 PUBLIC ENGAGEMENT

Taking into account the strategic responses to solve the two problems, three approaches were developed for public engagement. In summary, the Approaches used were developed from the strategic responses discussed above, a review of the outcomes of the North Nelson to Brightwater Corridor Study and the Arterial Traffic Study plus changes to legislation, technical standards and codes of practice (NCC and Transport Agency), strategic and long term plans that have occurred since. It was also acknowledged that the last time the public was consulted on significant improvements to the arterial network was in 2004 – 2006 as part of the North Nelson to Brightwater Strategic Study.

These approaches focus on the high level strategic alternatives that were considered appropriate for the area of study, taking into account:

- the refined Problem Statements and Investment Benefits (from Sections 4.1.1 and 4.2.1 above);
- the agreed Smart Investment Objectives (Section 4.7 above);
- the work done in the North Nelson to Brightwater Corridor Study 2008 and the Arterial Traffic Study 2011;
- changes to the Resource Management Act (RMA) and Land Transport Management Act (LTMA) since the last time full public engagement occurred in 2005;
- Strategic documents and Plans released by NCC, TDC and the Transport Agency since the Arterial Traffic Study in 2011;
- The timeframe for this study to find a solution to the problems;

- The discussions in Section 6.1 above.

The following three approaches were identified for public engagement as:

- **Approach A: Make the most of the existing network**

This approach focuses on improving the existing road network (and making the most of the current walking and cycling network), increasing bus services (public transport), and decreasing or limiting the volume of private travel during peak periods (travel demand management) by imposing restrictions without needing to widen or build new routes.

- **Approach B: Widen the existing arterial routes**

This approach focuses on options that would widen the existing arterial roads by at least one lane. It would also include walking and cycling, public transport, network optimisation and travel demand management activities that complement widening the arterial roads.

- **Approach C: Creating a new arterial route**

The focus of this approach is building of a new route that connects the Annesbrook Roundabout to the Haven Road Roundabout, such as but not limited to a Southern Link-type route. It would also include walking and cycling, public transport, network optimisation and travel demand management activities that complement the establishment of a new route.

A fourth Approach (Approach D) was added to the questionnaire, which provided the opportunity to provide feedback for any other approach.

Within each of the proposed approaches were one or more of the Rocks Road walking and cycling improvement options (refer to Section 5.1 above).

Public engagement occurred between 21 March to 24 April 2016. The public were asked to provide their views on the significance of the two problems and on their preferred approach to address those problems. Appendix F contains the Public Consultation Summary Report, which includes the feedback booklet and options descriptions that were consulted on.

6.2.1 Feedback From Public Engagement

The purpose of the public engagement programme was to obtain feedback from the public on the significance of two transport problems identified in the Strategic Case, on three approaches identified to address these problems, and any other approaches or options the public would like considered.

Appendix F contains the Consultation Summary Report and details the work undertaken for the public engagement exercise.

Submissions were received from individuals, stakeholders, organisations, societies and interest groups. A total of 2114 submissions were received during the consultation period. The main findings were:

- Of the 2056 responses received when answering the question about the significance of congestion (Problem 1), 16.1% said it was not significant, 15.3% said it was somewhat significant, 14.3% said it was moderately significant and 54.4% said it was very significant.
- Of the 1985 responses received when answering the question about the layout, look and feel of Rocks Road being a deterrent for walking and cycling (Problem 2), 64.0% said that it was a deterrent and 36.0% said it wasn't.

- Of the 2010 responses received when answering the question about a preferred approach to solve the problems, 24.0% preferred Approach A, 10.5% preferred Approach B, 61.4% preferred Approach C and 4.1% preferred Approach D.
- The majority of respondents who chose Approach D had a preference for Rocks Road options 3 and 4 to be part of Approaches B and C or to include widening (Approach B) of walking and cycling infrastructure within Approach A.
- Of the comments received by respondents, the most often mentioned was “just do something”. This comment was in relation to both problems.

A separate telephone survey was undertaken of 500 randomly selected people (400 in Nelson and 100 in Tasman) to provide an additional source of feedback. The questions asked were similar to the questions asked in the feedback form.

With regard to a preferred approach, 46% of telephone respondents favoured Approach C, with 34% favouring Approach B and 17% favouring Approach A.

7 PROGRAMME DEVELOPMENT

Programmes were developed during a workshop (Technical Workshop 1), involving the project team's technical specialists, through consideration of the work undertaken in Part A above, the strategic responses and approaches to address the identified problems and feedback from the public engagement.

Technical workshop 1 was divided into two parts, the first being identification of the programmes, with the second part being the draft assessment of the programmes.

A total of 8 programmes were developed by the project team to address the problems, and achieve the identified benefits and investment objectives. The key methodology for developing each of the programmes is summarised below

7.1 DO MINIMUM PROGRAMME

The do minimum scenario, against which the other programmes are assessed, is the existing transport network plus the following (which are identified projects from the annual and long term plans of NCC and the Transport Agency):

- SH6 southbound approach/merging lane reinstatement at Tahunanui Signals;
- The Princes Drive extension to Waimea Road will be included as a seagull intersection;
- Traffic signals at Queen St / Salisbury Road intersection;
- Capacity improvements to SH6 / Quarantine Road intersection;
- A weekday feeder loop bus service covering the Stoke area, operating half hourly during peak periods;
- A Richmond feeder bus service operating at half hourly frequencies during peak periods.

The traffic modelling²⁴ undertaken, included the do–minimum programme in the 2023 and 2033 models to identify the projected traffic volumes, delays and travel times in the future based on growth projections agreed with NCC and TDC.

7.2 NETWORK OPTIMISATION PROGRAMME

When further considering the strategic response of reducing the volume of peak hour traffic on the two arterials, the project team considered that this reduction could be achieved through the TDM measures, which were considered to be part of the “network optimisation” programme:

- Implementation of restrictions to discourage private vehicle travel in the peak period; or
- Provision of car sharing; or
- A switch to other modes of travel (public transport, walking, cycling); or
- Through combinations of the above.

²⁴ Nelson Southern Link Investigation: Future Forecasting Report, New Zealand Transport Agency, March 2016

The project team considered the timeframes to implement any particular option or measure and used the following to understand when an option could be implemented.

- At best, the Business Case process could take approximately 18 months, with a worst case taking a further 18 months;
- Permissions (eg Resource consent, changing school/retailing/port operation hours, NCC permissions / approvals etc) to implement a particular option could take between 18 months to 3 years.
- The detailed design and construction phases were assessed to take 1 to 3 years.

The point at which an option, that required permissions, could be operational is assessed as being between mid 2020 to the end of 2025. Therefore, to immediately address the problems beyond the end of the Business Case phase, a programme of measures called “Network Optimisation” was developed. The majority of options in this programme would most likely come from the options associated with Approach A in the public engagement documentation. The project team decided that this programme would form a sub-programme of other programmes whose options would take longer to gain the required permissions. This method is consistent with the “mix and match” concept promoted by the Transport Agency’s PBC guidance. The “Network optimisation” programme also includes options correlated to TDM measures and increased public transport services. This programme aligned with Approach A, one of the strategic responses – making the most of the current transport network.

7.3 PUBLIC TRANSPORT AS A STAND ALONE PROGRAMME

The project team then considered public transport (buses) as a sole activity utilising the existing transport network to address Problem 1 by reducing the amount of private motor vehicle travel in the peak period. The project team determined that it would be highly unlikely that there would be a shift from private motor vehicles onto buses during the peak period without a corresponding measure to restrict the amount of parking in and around the CBD and / or increase the cost of parking in the CBD and / or decrease the cost of fares. This is because without a reduction in the number of private motor vehicles travelling in the peak periods, buses would be operating in the same congested conditions. This was based on the 2013 census data which states that 708 people who travelled to work were a passenger in a vehicle compared to 12,834 people who drove to work²⁵ plus the following figures, as set out below, related to bus patronage for adults on Bus Routes 1 and 2 who are the most likely group to mode shift. Prior to October 2014, NCC had parking charges within the CBD for each hour. In October 2014, the Council trialled providing the first hour free after feedback from retailers citing concerns about a loss of customers in conjunction with Richmond providing free parking, which is still in place.

Bus Route 1 runs from Richmond to the Nelson CDB via Annesbrook roundabout, Waimea Road and Rutherford Street. Bus Route 2 runs from Richmond to the Nelson CDB via SH6. Average monthly bus patrons for adults were:

- 2012 average of 10855;
- 2013 average of 11561;

²⁵ http://www.stats.govt.nz/Census/2013-census/data-tables/tables-about-a-place.aspx?request_value=24481&reportid=14&tabname=Transport

- 2014 to end of October average of 12111;
- 2014 November (start of trial) and December average of 11063;
- 2015 average of 11258;
- 2016 to end of July average of 11156.

The project team determined that the success of a public transport programme for Nelson on its own would be directly correlated to the quantum of parking restrictions and charges in the CBD area and the cost of fares and are major dependencies for a public transport programme utilising the existing transport network.

The project team determined that additional public transport services should be part of all programmes and was therefore added to the “Network Optimisation” programme because additional services could be actioned immediately at the end of the Business Case process. The quantum and affordability / fundability of those additional services would need to be worked through with NCC during the next phase of the investigation (the IBC).

The project team acknowledged that dedicated public transport lanes could be a programme where additional capacity specifically for public transport was developed – refer to Sections 7.4 and 7.5 below.

7.4 CLEARWAYS AS A KEY ACTIVITY FOR NETWORK OPTIMISATION

A key option identified is the use of clearways²⁶. The project team determined that if there was sufficient width on the existing corridors to provide clearways for the morning and evening peaks with only minor works needed within the existing road designation. It was then determined that clearways would be part of the network optimisation programme as their implementation could commence at the end of the Business Case phase. Corridor widths will need to be assessed to determine the viability of this option further at the commencement of the IBC phase.

The project team acknowledged that clearway space could be used for public transport purposes during the peak periods and as such a programme utilising clearways for just public transport was determined.

7.5 INCREASE CAPACITY PROGRAMMES

With regard to increasing capacity as a strategic response to solve Problem 1, the project team determined that there were three measures to achieve this by:-

- Physically widening the existing road corridors (mid-block and / or intersections); or
- Creating a new route or
- Through combinations of the above.

Taking into account Section 7.3 above regarding dedicated lanes for public transport, the project team determined that increased capacity to address Problem 1 could accommodate increases in private motor vehicles

²⁶ A clearway is section of road used for traffic on which it is illegal to stop for any reason other than a breakdown or an obstruction to the road such as stationary traffic. Clearways may operate at all times or for limited times such as peak traffic flow times

in the peak (including using the extra capacity for clearways on the existing arterials) or for dedicated use by public transport but not both.

This resulted in the following programmes correlated to the “increase capacity” strategic response:

- Widening for public transport and Network Optimisation;
- Widening for more private motor vehicle traffic in the peak and Network Optimisation;
- New route and Network Optimisation;
- New route for public transport and Network Optimisation;

7.6 INVESTMENT OBJECTIVE 3

The project team also considered Investment Objective 3, which is to achieve an outcome that supports the safe travel of walkers and cyclists. As this outcome applies to all programmes, the project team determined that a separate walking and cycling programme was not required but that options associated with walking and cycling would be included in the “Network Optimisation” programme if they could be implemented at the end of the Business Case phase or within the other programmes where longer term permissions were needed depending on the particular walk/cycle option.

7.7 CONSIDERING PROBLEM 2 – INVESTMENT OBJECTIVE 4

The project team considered Problem 2 in the context of a “strategic response” to address the problem of sub-standard walking and cycling infrastructure on Rocks Road. The project team determined that physically widening the existing facilities was the only strategic response that could provide infrastructure complying with current standards. The project team reviewed the Rocks Road walking and cycling options publicly consulted on and considered that some of these options were incompatible to some of the programmes identified in the previous sections.

The project team determined that options that address the provision of parking, cycle lanes and pedestrian crossing points along Rocks Road, and the interaction of an option with the as-built and natural environments, would be dependent on the options within other programmes. Acknowledging that Option 2 from the Rocks Road Walk Cycle Facility Investigation could only be implemented if the State Highway was relocated, the project team included all the Rocks Road walking and cycling options, where not mutually exclusive, in all the programmes.

7.8 SELECTED PROGRAMMES

Taking all the above into account the final programmes for assessment were:

- Programme 1 Do minimum;
- Programme 2 Network optimisation (includes clearway options) and Rocks Road option 1 – a sub-programme to the other programmes (excluding Programme 1);
- Programme 3 Network optimisation and Rocks Road options 3 or 4;
- Programme 4 Clearways for public transport, network optimisation and Rocks Road options 3 or 4;

- Programme 5 Widening for public transport, network optimisation and Rocks Road options 3 or 4*;
- Programme 6 Widening for more traffic in the peak, network optimisation and Rocks Road options 3 or 4*;
- Programme 7 New route, network optimisation and Rocks Road options 2, 3 or 4;
- Programme 8 New route for public transport, network optimisation and Rocks Road Options 2, 3 or 4

* The quantum of widening required to address problems 1 and 2 together is greater than the quantum of widening required to address only Problem 1 or only Problem 2.

Appendix H contains a spreadsheet showing which options reside within each programme.

Figures 13 and 14 summarise the interaction of programmes that were developed with the anticipated timeframe for implementation. A key point to note is that some options are mutually exclusive to some programmes but not all, depending on the main theme of the programme

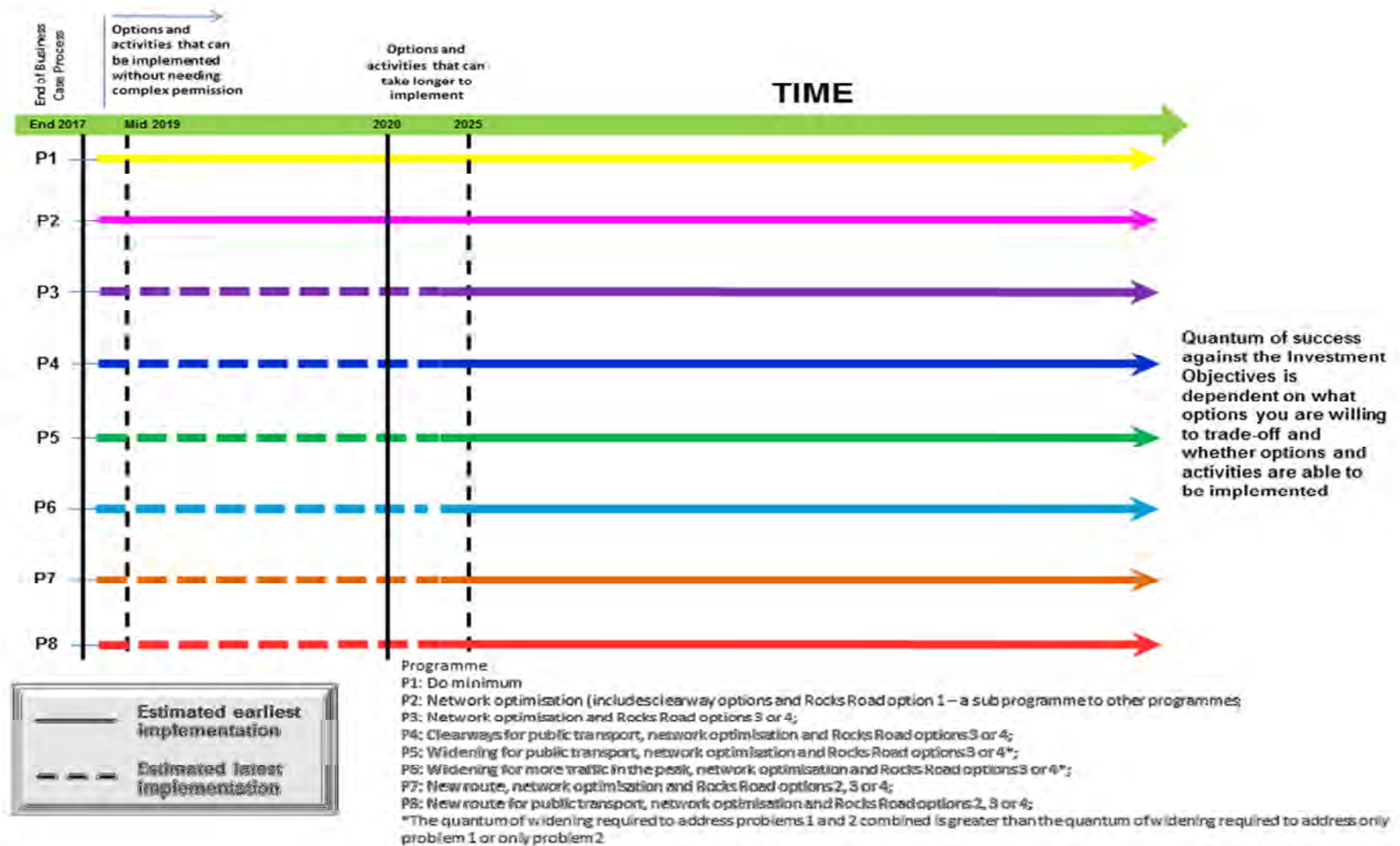


Figure 13: Interaction of Programmes vs Time

Mutually exclusive options (correlated to programme theme) that require complex permission

Option	Excluded From
1	P3, P4, P5, P7, P8
12	P3, P4, P5, P6, P7, P8
5	P3, P4, P5, P6, P8
5A	P3, P4, P5, P6, P8
13	P3, P4, P5, P6
17	P3, P4, P5, P6
47	P3, P4, P5, P6, P8
44	P3, P4, P5, P6, P8
3	P3, P4, P5, P6, P8
48	P3, P4, P5, P6, P7
20	P3, P6, P7
36	P3, P4, P5, P6
45	P3
46	P3, P4

NB: refer to Appendix H for option descriptions and programme details

Mutually exclusive options (correlated to programme theme) that do not require complex permission

Option	Excluded From
33	P3, P4, P5, P7, P8
35	P3, P4, P5, P6, P7, P8
4	P3, P4, P5, P6, P8

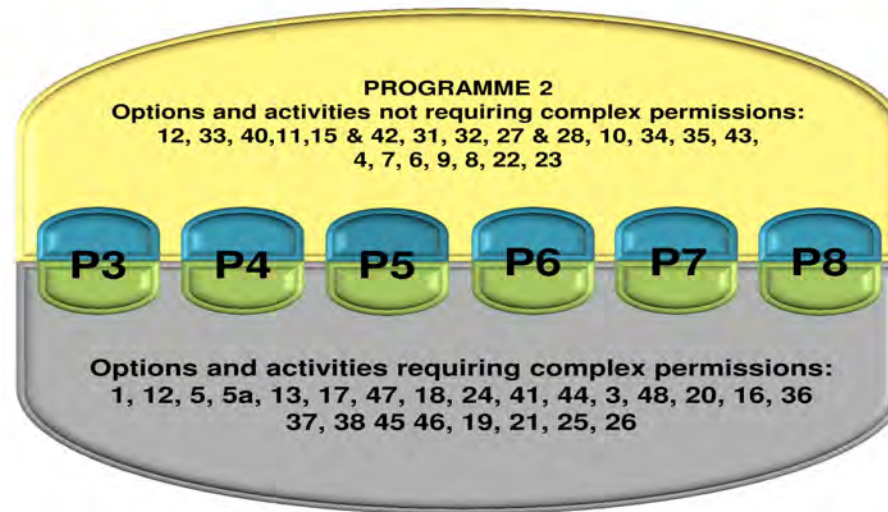


Figure 14: Summary of Options Within Programmes

8 PROGRAMME ASSESSMENT

8.1 WORKSHOPS

In addition to the workshops held in December 2015 to refine the problem statements and benefits and to determine the investment objectives for the study, a number of subsequent workshops involving either key stakeholders or technical specialists were held to help inform the assessment of the programmes. In summary, these were:

- Technical Workshop 1 – 4 May 2016;
- Workshop 3, 27 May 2016 – the third workshop with the key stakeholders;
- Workshop 4, 8 August 2016 – the fourth workshop with the key stakeholders; and
- Technical Workshop 2 – 30 August 2016 (see Section 9.1).

The outputs from 4th of May Technical Workshop were provided to Key Stakeholders in Workshop 3 for their feedback on the process and evaluation methodology. Workshop 4 was held to obtain feedback from the key stakeholders on the Public Engagement programme, to provide an update on the technical specialists initial scoring of the draft programmes (from Technical Workshop 1) and to seek their feedback the proposed scoring prior to undertaking Technical Workshop 2.

The second stage of assessment was undertaken within Technical Workshop 2 to assess the feedback from the public and Key Stakeholders, which was then used to help inform the decision making process for the recommended programme.

Appendix I contains the names of the technical specialists for each technical workshop.

8.1.1 Technical Workshop 1 (4th of May 2016)

Technical Workshop 1 was held on the 4th of May 2016 to undertake an initial assessment of the programmes defined in Section 7 above.

With regard to the do–minimum programme (Section 7.1 above), the project team determined that because the outcome of the traffic modelling done for the do–minimum scenario showed that congestion and delays would increase in the future, the do–minimum as a programme could not solve Problems 1 and 2. The do–minimum would be used in the PBC as the baseline for comparison of all other programmes to help assess the range of criteria as set out below. The do–minimum is still considered to be valid, particularly if no programmes proceed to the next phase.

The selected Programmes defined in Section 7 above were assessed by the technical specialists using a two–part methodology over a period of approximately 6 weeks. The first part assessed each programme as an outcome against:

- The broad contribution to the Investment Objectives (low, medium, high);
- The broad benefit range (low, medium, high);

- The main dis-benefits;

The second part utilised the previously assessed options (as in Section 5.2 above) within each programme to provide a range of scores for the following criteria within each programme:

- Broad investment and operational cost range;
- Difficult to implement (low, medium, high) for:
 - technical feasibility;
 - likely permissions;
 - financial affordability; and
 - stakeholder / public acceptance.
- Assessment of risks (Impacts using the same seven point scale as in Section 5.2.1 above) for:
 - Accessibility;
 - Safety;
 - Economic;
 - Water resources, resource efficiency and ecology;
 - Noise and vibration;
 - Air quality;
 - Social cohesion;
 - Landscape / Urban design;
 - Culture; and
 - Built Heritage
- Assessment of the indicative benefit cost ratio range;
- The likely phasing and implementation timeframe; and
- The primary dependencies of the programmes.

The draft evaluation of the initial Programmes is contained in Appendix J. This draft evaluation identified that all programmes (except the do-minimum) were given a “high” likelihood of achieving the targets for Investment Objectives 1 and 2, although programmes providing dedicated PT lanes were given a “medium-high” likelihood. The rationale being that not all private motorists would transfer to a different mode even if dedicated PT lanes were provided.

With regard to achieving the targets for Investment Objectives 3 and 4, the programmes associated with new routes or widening achieved a “high” likelihood, whilst the programmes associated with making the most of the existing corridor were given a “low” or “medium” likelihood. The rationale for the draft evaluation was centred around the existing road corridors having limited space to implement activities to meet the investment targets, whereas widening and the creation of a new route could provide that space.

8.2 WORKSHOP 3 (27 MAY 2016)

Key Stakeholder Workshop 3 was held on the 27th of May 2016 to update the attendees on progress and to advise them on the methodology that would be used for evaluating the programmes, which is detailed in Section 8.1.1 above.

The attendees discussed timeframes to implement options, noting that some could be implemented without requiring complex permission (eg optimising traffic signalled intersections), whilst some would take longer due to the requirement to get permission, some of which could be complex (eg consenting a reclamation into the foreshore).

Minutes of Workshop 3 are contained in Appendix K.

8.3 WORKSHOP 4 (30TH AUGUST 2016)

Key Stakeholder Workshop 4 was held on the 8th of August 2016 to obtain feedback from the Key Stakeholders on the public engagement undertaken and to update on them on the technical specialist scoring of the draft programmes. This feedback was then used to help inform the technical specialists' discussions at Technical Workshop 2 related to the trading-off of activities, dependencies and risks when considering the recommended programme.

The feedback from the Key Stakeholders, together with the public's feedback, was then used as one of the inputs into the final scoring of each of the programmes to help inform the determination of the recommended programme.

Minutes of Workshop 4 are contained in Appendix L

The attendees were asked for their views on whether the recommended programme should be a series of activities leading to a large intervention (option) or a series of activities to be implemented on an as and when needed basis (determined at the time of need). The majority view was that the former was preferable.

Attendees were asked a series of questions associated with what they want in terms of a transport network and what they would be willing to trade off to get that. There was unanimous agreement amongst the attendees that they wanted Rocks Road to have much higher amenity capabilities than present (as a consequence of relocating trucks elsewhere), the provision of wider footpaths, access to the foreshore and a cycle friendly environment. Although there was agreement around wanting these amenities, there was a minority of attendees who said that they would not have these amenities if it meant that other areas of the city would be affected by an option(s) that would result in an increase in traffic and truck volumes.

Attendees were asked if they would be willing to trade off local access (ie local access and egress to side roads and accesses) along the two arterials to improve congestion. There were mixed views from the attendees with some willing to trade off and some not. There was a majority view that less traffic on Rocks Road, Waimea Road and Rutherford Street would be a desirable outcome that should be pursued.

There was discussion around the programmes which provided for dedicated PT lanes and whether these should include High Occupancy Vehicles and/or freight. Attendees expressed their desire to have more people visiting the CBD of Nelson but less traffic coming to the CBD. Attendees were advised that the composition of what type

of vehicle(s) and/or mode of travel that would occupy additional lane capacity would be addressed in the IBC phase if additional capacity was an activity within the recommended programme.

9 RECOMMENDED PROGRAMME ASSESSMENT

9.1 TECHNICAL WORKSHOP 2 (30 AUGUST 2016)

The project team's technical specialists (refer Appendix I) and NZ Transport Agency representatives convened a technical workshop on the 30th of August 2016 (Technical Workshop 2) to consider the work done to date and the views from the attendees at Workshops 3 and 4 to enable the technical specialists to finalise the scoring of the initial programmes and develop a recommended programme of activities to be investigated in the next phase of investigations.

In evaluating the initial programmes (programmes 1 to 8 as defined in Section 7.1 above) and when defining the recommended programme, the technical specialists identified:

- The work that is needed with broad timelines including all that is able to be determined at this stage;
- The level of outcomes that will be achieved;
- The investment risk;
- The essential elements that must be successfully delivered;
- The desirable requirements that would add value and bring about additional benefits but are not essential to successful delivery;
- The optional requirements that might be delivered if sufficient budget was available;
- The elements that are specifically excluded from the programme and why they were excluded; and
- Identify key implementation activities by time.

Appendix M contains the minutes of the workshop and the discussions that took place. Utilising the information from previous Workshops, the key discussion points were centred about the public and Key Stakeholder risk around non-acceptance of programmes 1 to 8 based on the feedback from the Public Engagement. There was considerable discussion around clearways (location, acceptance and practical implementation), an option that resides in the Network Optimisation programme (programme 2), which is a sub-programme of all other programmes except the do-minimum.

There was considerable discussion around widening as an activity to achieve additional capacity on the network. The permission risk for widening programmes was raised from a "medium" score to a "high" score to recognise the high consenting hurdles faced by reclamation projects and significant property acquisition alongside SH6, Waimea Road and Rutherford Street. The technical specialists agreed that the "widening" programmes (for more private vehicle travel or for PT) have the highest impacts and risks overall across the assessment criteria and taken together with feedback from the public and stakeholders confirmed to the majority of technical specialists that "Widening" should not be the approach of the recommended programme but location specific widening options could be included within a recommended programme.

Discussion included additional network capacity for PT only, which has the potential to achieve the targets for Investment Objectives 1, 2 and 3 over 40 years. A significant mode shift would be needed and without any evidence that NCC would support (in the short, medium and long term) the implementation and ongoing commitment to activities that would achieve this mode shift, the technical specialists agreed that additional road space for PT could not form part of the recommended programme.

Taking the above into account, the programme descriptions were redefined by the technical specialists as:

- Programme 1 is the Do minimum;
- Programme 2 is Network Optimisation including peak hour clearway on Tahunanui Drive (one direction only) and Waimea Street (bi-directional between Motueka St and the proposed Princes Drive intersection) for private motor vehicles;
- Programme 3 is Network Optimisation (programme 2) plus Rocks Road Options 3 and 4 plus non-mutually exclusive longer timeframe options eg widening the arterials or creation of a new route;
- Programme 4 is Programme 3 but clearways are for PT (excludes clearways for other vehicles from assessment);
- Programme 5 is Programme 3 (excluding all clearways) plus widening on both arterials for PT;
- Programme 6 is Programme 3 (excluding all clearways) plus widening on both arterials for all traffic;
- Programme 6a is Programme 3 (excluding all clearways) plus widening on Waimea/Rutherford only;
- Programme 7 is P3 (excluding all clearways) plus a new route plus Rocks Road Option 2;
- Programme 8 is Programme 7 but for PT only.

The technical specialists scored and ranked the re-defined Programmes (refer to Appendix M) as follows:

- Programme 7 was ranked 1st by six technical specialists;
- Programme 3 was ranked 1st by two technical specialists;
- Programme 5 was ranked 1st by one Technical Specialist;
- Programme 6 was ranked 1st by one Technical Specialist;
- Programmes 1, 2, 4, 6a and 8 were not ranked 1st by any Technical Specialist;
- Programmes 1, 4, 6 and 8 were ranked equal lowest by two specialists each.

Programme 7 was ranked first by the majority of technical specialists primarily because it had the potential to achieve the targets of all the Investment objectives and aligned with the feedback provided by the public and stakeholders when compared to Programme 3, which was the next programme that was ranked first.

Programme 3 was the next first-ranked programme. The primary reason for the Technical Specialist not ranking this programme first was centred around not being able to achieve the targets of the investment objectives to the same degree as programme 7 (especially the target for investment objective 3) plus there was a level of uncertainty around how successful the programme would be if clearways were not supported by NCC, acknowledging that in previous studies NCC had not supported clearways.

The technical specialists acknowledged that there were challenges and difficulties to implement Programmes 7 and 3 and there are significant risks associated with individual options within these programmes. They determined that these challenges and difficulties could be addressed and the risks managed and mitigated to an acceptable level in subsequent phases of the business case process.

The technical specialists agreed that some initial traffic modelling should be done to ascertain whether clearways would meet the targets for Investment Objectives 1 and 2 over the next 40 years and if not, which year in the

future would the targets not be achieved. Understanding this timeframe, would inform the decision as to when or if a larger intervention (such as a new route, also to be traffic modelled) should be progressed.

Acknowledging that traffic modelling related to the clearways and a new route was to be undertaken, the technical specialists defined their draft recommended programme to include the following activities:

- i) Network optimisation options;
- ii) Clearways;
- iii) Widening options;
- iv) New route.

9.2 ADDITIONAL INFORMATION

The technical specialists agreed that traffic modelling for clearways on Waimea Road and Tahunanui Drive would help them understand their effectiveness over time. It was also agreed that traffic modelling for a new route should also be modelled to understand whether this activity would achieve the targets for Investment Objective 1 and 2 over 40 years. This knowledge is the first step in helping inform the decision and the timeframe to implement a new route (if needed) and the viability of clearways when assessed against the Transport Agency's procedures for receiving funding and subsequently guide the next steps for the Rocks Rd investigation. The new route that would be traffic modelled would be the alignment known as the Southern Link Road. The technical specialists agreed that the modelling should be undertaken for the medium and high growth scenarios, acknowledging that under a low growth scenario might not be necessary.

Details of the road configurations modelled are provided in Appendix N, along with the information requested by the technical specialists and the outcomes of the traffic modelling.

9.2.1 Summary of Traffic Modelling

Providing clearways would achieve the targets for IOs 1 and 2 on Waimea Road and SH6 for the medium growth scenario correlated to the direction of peak travel.

Providing clearways would not achieve the target for IO 1 on Waimea Road and SH6 correlated to the opposite direction of peak travel sometime between 2015 and 2023.

Provision of clearways is likely to result in traffic speeds on SH6 southbound between Haven and Annesbrook roundabouts and Waimea Road (Hardy to Motueka) falling below the target for IO 1 in the evening peak under the high growth scenario between 2023 and 2033.

Widening for southbound traffic between the proposed Princess Drive intersection and The Ridgeway in conjunction with clearways would most likely mean that the target for IO 2 would be met for the next 40 years for the stretch of Waimea Road between Motueka Street and The Ridgeway.

Widening for southbound traffic between Parker Street and Annesbrook roundabout in conjunction with clearways would most likely mean that the targets for IOs 1 and 2 would be met for the next 40 years for that stretch of SH6.

The modelling shows that providing clearways on Tahunanui Drive and Waimea Road will increase the AADT on SH6 for 2023 and 2033 traffic models when compared against the base model for both the medium and high growth scenarios. There is a reduction in AADT on Waimea Road when comparing the clearways to the base case for medium growth and an increase for the high growth scenario.

Installing clearways will mean that the targets for IOs 1 and 2 will not be met for side road access sometime between 2023 and 2033 for both growth scenarios. Side road delays for the high growth scenario are worse than for the medium growth scenario.

A new route would be likely to achieve the targets for IOs 1 and 2 (throughput and side road access) over the next 40 years.

No assessment against IOs 3 and 4 was undertaken as part of the traffic modelling undertaken.

9.3 FINAL RECOMMENDED PROGRAMME SCORING

The technical specialists were provided with the additional information (Section 9.2 above) and asked to score the recommended programme of activities. With the IBC phase of the business case in mind and for the purposes of defining costs, benefits, risks, timing and the implementation strategy, the project team divided the earlier recommended programme into the following sub-programmes and asked the technical specialists to separately score the sub-programmes and recommended programme:

- Sub-programme 7, which is similar to the original Programme 7 above (Section 7.8 above) but only contains those options directly associated with a new route (the other options were transferred to sub-programme 3);
- Sub-programme 3, which is the same as Programme 3 above (Section 7.8 above) plus the options transferred out of sub-programme 7.

Appendix O contains the assessment of the sub-programmes and a spreadsheet showing which options are within the recommended programme and sub-programmes. The technical specialists recommend that these sub-programmes should become two separate IBCs in the next phase.

Table 8 below shows the performance ratings of the recommended programme against the Investment Objectives.

Table 8: Performance ratings of the recommended programme against the IO's

Investment Objectives		Recommended Programme (over the life of the programme)
1	Travel times on the two arterials no worse than 2015 for the life of the programme	greater than 70%
2	Peak hour volume to available capacity ratio of no more than 0.8 on the two arterials	greater than 70%
3	Zero walking and cycling crashes on the two arterials; and continuous decline in walking and cycling deaths and serious injuries on the two arterials for the life of the programme	30% to 70%
4	Five years after implementing an option on Rocks Road, double walking and cycling numbers per day and thereafter the growth rate is greater than elsewhere in Nelson	30% to 70%

The technical specialists concluded that the identification of options that support clearways and a new route should be done at the start of the IBC phase as part of the overall review of the long list of options contained in Appendix G.

The technical specialists also concluded that the options that address IOs 3 and 4 would most likely be different within each sub-programme. Consideration must be made to ensure that options supporting clearways are in line with a new route, where possible.

9.3.1 Longevity of Programme Activities

The estimated timeframe for when the targets for IOs 1 and 2 are likely to be achieved using the medium growth scenario is set out below:

- Acknowledging that clearways are the options that have the most influence on achieving IOs 1 and 2 into the future, preliminary transport modelling suggests that under the medium growth scenario the implementation of network optimisation measures (specifically clearways) will achieve the targets for the congestion objectives (IOs 1 and 2) into the early 2030s; after which, a new arterial route will be necessary.
- Under the high growth scenario, network optimisation measures (specifically clearways) will achieve the targets for IOs 1 and 2 until the mid-2020s; after which, a new arterial route will be required.

- The installation of peak-hour clearways will mean increased delays for side road vehicles entering and exiting the arterials. Preliminary level-of-service calculations indicate that these delays should be acceptable until the mid-2020s.

The technical specialists noted that NCC will determine its community's level of service around side road delays on Waimea Road (a local authority road).

The technical specialists estimated longevity of the main activities within the recommended programme was wholly dependent on the growth in traffic that actually occurs.

9.3.2 Difficulty to Implement

The "time to implement" category of the assessment criteria were reviewed and the technical specialists determined that some options within the recommended programme could take up to 10 years to implement (eg "Port at Motueka", "Inland Port/Barge", "Rocks Road Options 3 and 4"). On the topic of the Rocks Road options, reclaiming land from the coastal environment was identified as a significant consenting challenge with the bar usually set around the "need" to reclaim. It was decided that further work would be necessary in the IBC and DBC phases to demonstrate this need in order to address Investment Objectives 3 and 4. The same issue is relevant for permissions; the recommended programme is rated "high" in terms of how difficult it would be to gain permission.

The score related to "technical feasibility" was given a "medium" difficulty rating. The technical specialists acknowledged that the recommended programme options could be implemented using standard New Zealand engineering resources and practices. Technical feasibility is broken down further into individual specialisations in Section 9.3.4.

With regard to "affordability", the Technical Specialists noted that there was no money within the National Land Transport Fund for any phases and money for the Investigation is currently coming directly from Government. Additionally, funding arrangements with NCC had not been discussed. Consequently, the "affordability" risk was scored "high".

The technical specialists considered the ideas that the public and stakeholders might not want or accept the activities and options within the recommended programme. All data from the public engagement exercise and the minutes of the workshops with the key stakeholders was reviewed. The comment most often submitted or heard during public engagement was "just do something." Therefore, the do-minimum scored "high" as a risk. Overall, the technical specialists scored the recommended programme as medium.

9.3.3 Programme Risks

Critical risks around the implementation of the activities and options within the recommended programme were identified:

- Organisational risk – The Transport Agency will need NCC's support for some of the activities and options within the recommended programme to enable implementation;
- Affordability – Detailed preferred option costs and assessments are required before they can be considered for inclusion in the National Land Transport Programme;
- Rocks Road consents – Obtaining permission for a Rocks Road option that requires reclamation into the coastal area presents significant challenges;
- New route consents – Obtaining permission for a new route, which includes designating it as a state highway or a local road – presents significant challenges;
- Operational risks:

- physical operation of the network
- the integration with and operation of additional PT services
- policy and systems operational aspects (eg traffic signal optimisation, parking charges).

Some of the operational risks will fall outside of the Transport Agency's sphere of responsibility (eg changing land use or changing school hours) and will need to be integrated across the delivery of the programme with the wider land use and transport system.

The other key risks identified to date for the options within the recommended programme are broken down into the following risk areas and summarised in Table 9:

Table 9: Seven Point Risk Scores of Recommended Programme and Sub-programmes

Programme Description	RECOMMENDED PROGRAMME
Accessibility – to what extent does the programme affect accessibility for all modes of travel	+2 to +3
Safety – to what extent does the programme address safety of travellers for all modes of travel	-2 to +2
Economic – to what extent will the programme impact the Regional economy	-3 to +2
Environmental – to what extent will the programme affect water resources, resource efficiency and ecology	-2 to +1
Environmental – what will be the likely impact of the programme on noise and vibration levels if implemented	-1 to +3
Environmental – what will be the likely impact of the programme on air quality levels if implemented	-1 to +1
Social – what will be the likely impact of the programme on social outcomes if implemented	-3 to +2
Landscape / Urban design – what will be the likely impact of the programme on urban character, landscape character and visual amenity if implemented	-2 to +1
Culture – what will be the likely impact of the programme on areas of significance to Maori and known archaeological sites if implemented	-2 to 0
Built Heritage – what will be the likely impact of the programme on listed or other important heritage buildings/structures if implemented	-2 to 0

There was consensus that the range of scores for each risk category would narrow as further study and investigation was undertaken in subsequent phases of the business case process.

The key risks of the recommended programme are centred around:

- Safety
- Economy
- Social
- Landscape / urban design
- Culture
- Built Heritage

These risks will require management and mitigation in subsequent phases.

Individual commentary on the scoring of the recommended programme or specific activities within the programme, are provided in sub-sections 9.3.3.1 through 9.3.3.9.

9.3.3.1 Accessibility

Overall positive benefit as the new route component will most likely be operating beyond 40 years.

9.3.3.2 Safety

Overall positive benefit as the new route component will most likely be operating beyond 40 years.

9.3.3.3 Economy

Large range of score is due to options within the programme. Plus 2 for tunnel and link road, -3 is for the option that has restrictions on HCVs getting to the port, assuming restrictions on all routes would be large negative economic impact.

9.3.3.4 Environmental – water resources, resource efficiency and ecology

Overall minor – moderate impact from better use of existing resources despite increased impact on water resources from additional traffic.

New route – Increased traffic flow on St Vincent Street resulting in increased traffic emissions and impact on water resources. Potential stream culverting required. Moderate effect on ecology, which is mostly grassland.

9.3.3.5 Environmental – noise and vibration

Clearways – Minor impact to building occupants due to decreased set-back distances.

New route – Change in noise environment due to increased traffic and decreased set-back distances associated with new route. Less noise on the two other arterials.

9.3.3.6 Environmental – air quality

Clearways – Improves traffic flow and reduces emissions but brings roadside closer to receptors. Overall neutral effect on air quality.

New route – Increased traffic volumes will raise emissions in the confines of the valley. Lower traffic volumes on the state highway and Waimea Road will reduce emissions, although not Waimea Road to the same extent as the state highway due to proximity of valley floor. Range of score reflects need to undertake detailed analysis.

9.3.3.7 Social outcomes

Clearways – Moderate negative social effects for certain groups. Social outcomes continue to decline over time for clearways on the two existing routes.

New Route – Assuming no mitigation measures, there are substantial negative social effects for certain groups within the St Vincent Street area. Social outcomes associated with the two existing arterials improve at implementation of the new route and decline slowly over time.

9.3.3.8 Landscape / Urban design

Clearways – Minor negative effects on urban form.

New route – Provides long term stability with regard to transport network facilitating urban form and landscape design for the next 40 years. New route provides moderate negative impact to urban form and landscape. Overall, a minor impact.

9.3.3.9 Culture and built heritage

Over the course of the investigation, attempts were made to meet with all local iwi face to face and to communicate via telephone and email. Some iwi responded and engaged with the project team, but not all. Those that have provided feedback have said the investigation needs to progress further in order for them to be able see more detail around options that are likely to progress. With regard to the Rocks Road options that require reclamation, iwi have signalled concern over the reclamation of foreshore areas.

The predominant area containing built heritage is Rocks Road between Bisley Avenue and Haven Road roundabout. There are four recorded archaeological sites and a number of listed historic places and areas. Rocks Road walking and cycling options are likely to have a moderate impact.

The score is primarily reflective of the risks to the built heritage, acknowledging that more work will be needed during the IBC phase to better understand cultural risks.

9.3.4 Value for money

This section details the results of the economic analysis undertaken for the main activities within the recommended programme

9.3.4.1 Costs

Cost estimates for individual options within the recommended programme have been qualitatively estimated and are contained in Appendix G. The capital, maintenance, and operational costs for the recommended programme have been determined using the minimum cost of the main programme activities and the maximum cost option within the programme.

Costs for the Rocks Road walking and cycling options have been obtained from the Rocks Road Options Update Report, March 2016.

The investment cost of the recommended programme has a most likely practical maximum cost of \$300M. A practical minimum investment cost would be similar to sub-programme 3 (\$45M). The most likely practical operational and maintenance costs are assessed as \$60M maximum with a \$40M minimum.

9.3.4.2 Benefits

With reference to the desired benefits from implementing the programme (Benefits A, B and C) and the Transport Agency's Economic Evaluation Manual (EEM), the main monetary benefits that are likely to occur from clearways or a new route are travel time and vehicle operating benefits. For the Rocks Road walking and cycling project, the main benefits are health and environmental benefits.

Clearways, Rocks Road walking and cycling improvements and a new route would be the most influential options within the recommended programme and were used to calculate the benefits.

The Net Present Value (NPV) for the benefits was determined over 40 years using the following assumptions:

- the results from the traffic modelling undertaken in Section 9.2;
- a new route would be implemented in 2033;
- a new route would take three years to construct;
- the new route covers the subsequent 40 years;
- the Rocks Road option (Option 3) would be implemented in 2021;
- a base date of 2019;
- clearways would operate until 2033.

The travel time, vehicle operating cost, health, environment, travel time and storm resilience NPV benefits for the recommend programme have been determined as: \$204M.

9.3.4.3 Benefit-cost ratio (BCR)

The calculation of the BCR followed the process defined in the EEM.

For the recommended programme, the BCR is calculated based on a base date of 2019 when clearways are implemented followed by Rocks Road Options 3 in 2021 followed by a new route in 2033, with clearways being removed at that time.

The recommended programme has a BCR range due to the range of costs and benefits across the different options that may or may not be implemented. The estimated BCR range is:

- zero to 2.2 for the recommended programme

Safety benefits have not been quantified as part of the PBC and are not calculated in the BCR ranges. These benefits will be determined during the IBC phase for specific options.

9.3.4.4 Sensitivity Testing

Sensitivity testing on two key criteria (costs and benefits for the recommended programme) was undertaken against different growth scenarios and items from the uncertainty log.

Sensitivities of +/- 20% on costs and +/- 20% on benefits were assessed and calculated and are summarised in Table 10.

Table 10: Sensitivity Testing on the Recommended and Sub-programmes BCRs

Sensitivity	Recommended Programme versus Do Minimum
Base Case	0 to 2.2
+20% Costs	0 to 1.9
-20% Costs	0 to 2.8
+20% Benefits	0 to 2.7
-20% Benefits	0 to 1.8

Table 10 shows that the recommended programme is sensitive to changes in benefits and costs. The BCR will be dependent on the options chosen, their benefits and costs. There is potential to improve the BCR through further analysis and investigation.

9.4 SUMMARY OF RECOMMENDED PROGRAMME ASSESSMENT

The work described in Sections 9.1, 9.2 and 9.3 reinforces the initial PBC finding that the primary activities of network optimisation followed by a new route should be undertaken consecutively. The recommended timeline is to implement network optimisation options including clearways at the end of the business case process and, under a medium growth scenario, implement a new route in the early 2030s.

The key uncertainty around which Rocks Road walking and cycling option is implemented, is directly related to whether the new route is a state highway or a local arterial road.

The key uncertainty around the timing for a new route is directly correlated to the growth in traffic that actually occurs over the coming years and the success of network optimisation measures.

9.5 IAF PROFILE

The recommended programme was assessed by the project team using the Investment Assessment Framework (IAF) profiles for the following elements:

- Strategic fit of the problems that are being addressed;
- Effectiveness of the proposed solution; and
- Economic efficiency of the recommended programme(s)

An assessment profile of M/M/L was determined for the programme using the Transport Agency's IAF as detailed below.

9.5.1 Strategic Fit

Overall – MEDIUM

The PBC demonstrates a change in the perception of the actual transport performance on the two Nelson arterial routes to that observed in previous plans and strategies.

The PBC demonstrates the gaps in journey time reliability and the congestion and capacity levels of service which adversely affect the transport system. The recommended programme identifies a number of opportunities to improve economic and social outcomes, including making better use of the existing transport capacity. These can also provide benefits to tourism and freight.

9.5.2 Effectiveness

Overall – MEDIUM

Outcomes Focussed – High

The problems identified relate to congestion, which leads to delays, and the need to ensure that the existing network continues to perform effectively in order to deliver liveability, connectivity, and economic benefits to the region.

Integrated – High

The programme appropriately responds to growth (current and forecast) to continue providing an appropriate level of service in the short and medium term. In addition, multiple projects are integrated over a 40-year horizon across various modes and through multiple delivery organisations.

Correctly scoped – Medium

The recommended programme integrates spatial land-use, connectivity and accessibility and operational issues in a balanced way. However, the recommended programme contains too many options and alternatives which needs to be challenged, optimised and narrowed down..

Affordable – High

The recommended programme involves a significant cost over the 40-year horizon. The programme reflects the level of infrastructure required to address the problems over this timeframe and the appropriately timed interventions. While further work is required to assess uncertainties within the recommended programme, overall it has understood and traded off alternative programmes to recommend the best while of life cost approach.

Timely – High

The recommended programme includes future actions that will create transport solutions and route protection at the right time to be effective. External factors may influence this timing and accelerate or defer the options or change the size of the interventions, and these are highlighted for testing at the next phase of the investigation.

Confidence – High

There is high confidence that the recommended programme is sound and can be implemented subject to further investigations on risks and uncertainties particular to specific activities within the recommended programme.

9.5.3 Benefit and cost appraisal

The estimated BCR range for the recommended programme is 0 to 2.2. It falls into the low rating for efficiency because it is less than three.

RECOMMENDED PROGRAMME

9.6 RECOMMENDED PROGRAMME IMPLEMENTATION STRATEGY AND TRIGGER POINTS

This section recommends what investigative work should be completed and when before the physical implementation of the recommended programme. It is summarised in Figure 15.

9.6.1 Indicative Business Case

The first element of the indicative business case phase is for the Transport Agency, the key stakeholders, and key organisations to convene a workshop to reconsider the Problems, Benefits, Investment Objectives and primary activities identified for implementation.

It is recommended that the IBC phase investigates in greater detail the options that support network optimisation and a new route.

The network optimisation investigation would refine the options that meet the Investment Objectives and provide value for money. Consideration must be given to ensuring that the options support the new route activity.

The new route investigation will determine the location and recommended alignment of the new route, its classification as either a state highway or local road, a more accurate estimate of when a new route will be required and the best way to protect it until it is required. The IBC will also inform the decision around which of the Rocks Road walking and cycling options to implement.

To understand when the measures for the clearway options fall below the targets of the Investment Objectives and trigger the need for a new route, the investigation needs to build a micro traffic model. It will provide a higher level of accuracy for determining the longevity of clearways options. It will also, provide a higher degree of accuracy related to side road delays, which can be compared with NCC's desired levels of service.

As part of building the model, the investigation team needs to work with NCC and TDC planners to review and update growth statistics and forecasts. Assuming that the IBC will start in early 2017, approximately two years would have passed since the current traffic model was initially developed.

In the IBC, the investigation should involve discussions with NCC, the public and key stakeholders to obtain their views about clearways and whether the new route should be a local arterial road or a state highway.

Route protection work could involve proposing activities such as land purchase, regulatory controls, planning activities by NCC and possibly include designation of a new route.

To provide a robust cost estimate for the new route, an engineering option should be developed to a reasonable level of confidence so a scheme estimate can be produced. This would involve geotechnical investigations, topographical surveys, property costs and baseline surveys correlated to anticipated impacts. Alignment options will require development to provide an upper and lower bound cost estimate and this work will form part of the IBC.

9.6.2 Detailed Business Case and pre-implementation works

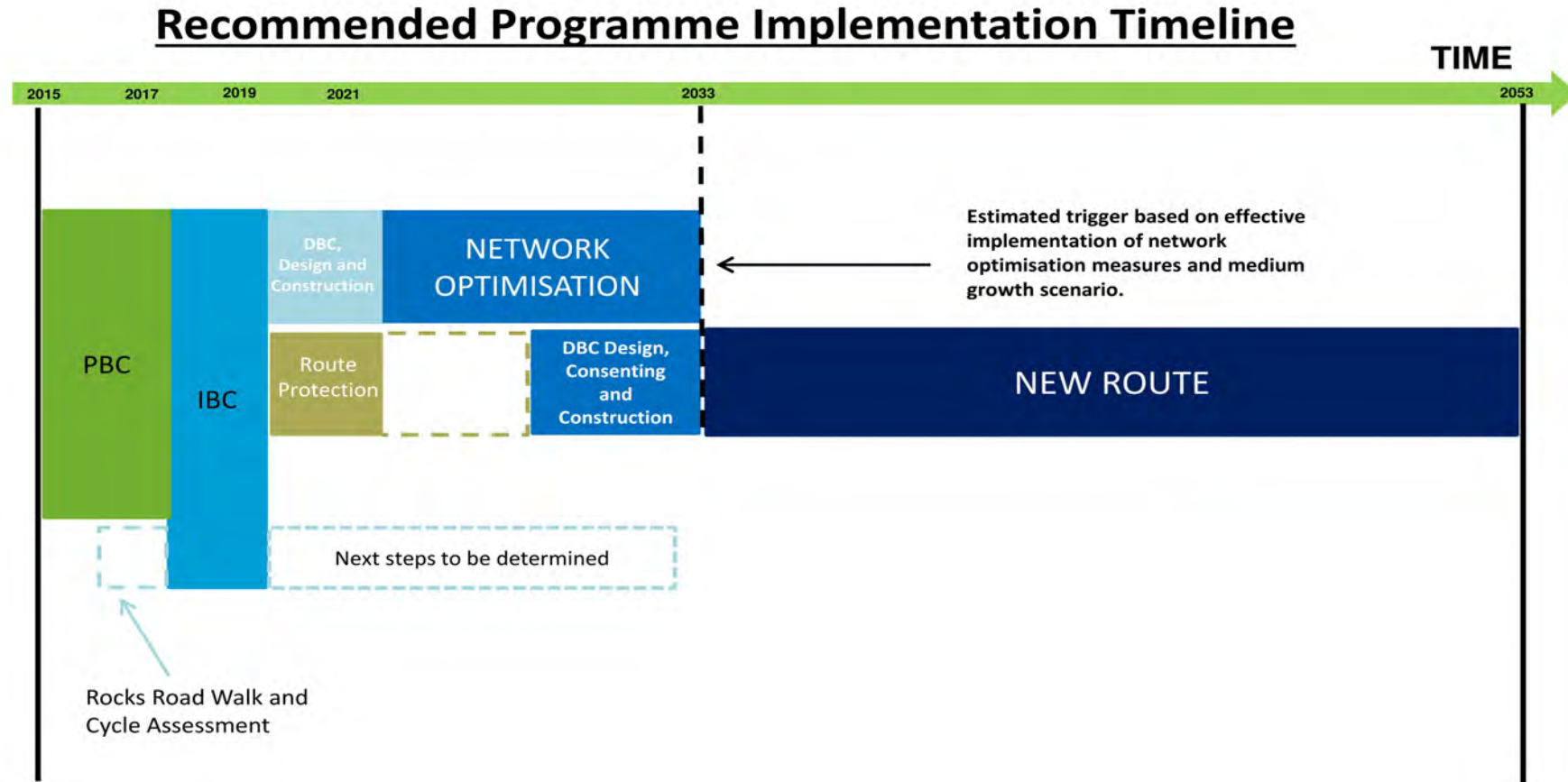
At this stage, it is recommended that the DBC for the network optimisation activities begin immediately after completion of the IBC.

The DBC for the new route should wait until actual traffic growth triggers the need to start the DBC.

Acknowledging that the DBC could take approximately 1–2 years, the RMA consenting work could take 3 years and the design and construction could take 3 years, the trigger point for starting the DBC is approximately 2025 to complete it in advance of the currently predicted date for the new route, 2033.

After implementation of the network optimisation programme, yearly monitoring of traffic growth and the success of the programme is recommended to inform the decision as to the likely date for starting the new route DBC.

Figure 15: Summary of Implementation Timeline



10 PROGRAMME FINANCIAL CASE

This financial case looks at the preferred programme and assesses the costs, affordability and funding options within the regional context.

10.1 INDICATIVE COSTS

Cost estimations were made for all programme options in the PBC. Standard cost models for network options were built up from inputs in the Transport Agency's Costing Estimation Manual (such as earthworks, land prices, carriageway construction costs, site clearance, footpaths, cycleways and others). Costs for non-transport related options have been estimated using the project team's costing knowledge base held by their Quantity Surveying division.

Option costs have been based on estimated construction costs, property costs plus maintenance and operational costs associated with concept alignments and a qualitative assessment of the option descriptions provided by Key Stakeholders.

PART C – DELIVERING AND MONITORING THE PROGRAMME

This section of the document outlines how the recommended programme will be delivered through the project partners and the key activities and next steps to take the programme forward.

11 MANAGEMENT CASE

The following sections discuss the key management case questions.

11.1 PROGRAMME GOVERNANCE AND REPORTING

Table 11 below identifies the high level organisational strategies of the Government, the Transport Agency and NCC that relate to this investigation project.

Table 11: Relevant organisational strategies and plans

Organisation	Organisational Strategies
Government	Government Accelerated Regional Rooding Package, Government Policy Statement on Land Transport 2015/16–2024/25
Transport Agency	Statement of Intent, South Island Freight Plan, National Business Cases, National Infrastructure Plan, National Land Transport Plan
NCC	Long Term Plan 2015–25, Heart of Nelson – Central City Strategy, Nelson 2060 – Framing our Future
NCC (Regulatory Authority Objectives)	Nelson Resource Management Policy Statement and Plan (under review as the “Nelson Plan”)
NCC (Regional Transport Objectives)	Transportation Asset Management Plan, Regional Land Transport Plan

Successful delivery will require a collaborative partnership and working arrangement between NCC and the Transport Agency.

The project team will comprise of:

Table 12: Project Team

ROLE	NAME
Project Sponsor (HNO)	Mark Owen, Regional Performance Manager Transport Agency
Planning and Investment Sponsor	Julie Alexander, Regional Manager Planning & Investment Transport Agency
Project Manager	Andrew James, NZ Transport Agency
Senior Supplier	AECOM NZ Ltd
Supplier Team Leader	Graeme Doherty, AECOM

The programme governance structure will be reviewed at the start of the IBC phase.

11.2 STAKEHOLDER ENGAGEMENT AND COMMUNICATIONS PLAN

Key stakeholder workshops and public engagement will be important to ensure the views of the public are taken into consideration during the next phase. Formal public consultation on the recommended options to progress, possibly in conjunction with NCC, will then be sought, along with NCC's formal support.

11.3 PROGRAMME PERFORMANCE AND REVIEW

Monitoring of the Programme Timing and Triggers

Revisiting timings will be an on-going part of the NSLI process. The outcomes from the micro traffic modelling will allow more effective identification of trigger points.

Monitoring of the programme performance

The performance of the programme in delivering the outcomes will be monitored against the KPI measures as summarised in the Benefits Map from Figure 12, at periods of one year, five years and ten years after completion of construction.

11.4 RISKS ASSOCIATED WITH THE RECOMMENDED PROGRAMME

These critical risks around the implementation of the activities and options within only the recommended programme were identified:

- Organisational risk – The Transport Agency will need NCC's support for some of the activities and options within the recommended programme to enable implementation;
- Affordability – Detailed preferred option costs and assessments are required before they can be considered for inclusion in the National Land Transport Programme;
- Rocks Road consents – Obtaining permission for a Rocks Road option that requires reclamation into the coastal area presents significant challenges;

- New route consents – Obtaining permission for a new route, which includes designating it as a state highway or a local road – presents significant challenges;
- Operational risks
 - physical operation of the network
 - the integration with and operation of additional PT services
 - policy and systems operational aspects (eg traffic signal optimisation, parking charges).

Some of the operation risks will fall outside of the Transport Agency's sphere of responsibility (eg changing land use or changing school hours) and will need to be integrated across the delivery of the programme with the wider land use and transport system.