

Before the Board of Inquiry
Waterview Connection Project

in the matter of: the Resource Management Act 1991

and

in the matter of: a Board of Inquiry appointed under s 149J of the Resource Management Act 1991 to decide notices of requirement and resource consent applications by the NZ Transport Agency for the Waterview Connection Project

Rebuttal evidence of **Tommy Parker (State Highway Manager)** on behalf of the **NZ Transport Agency**

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REBUTTAL EVIDENCE OF TOMMY PARKER ON BEHALF OF THE NZ TRANSPORT AGENCY

INTRODUCTION

- 1 My full name is Thomas (Tommy) Parker. I refer the Board of Inquiry to the statement of my qualifications and experience set out in my evidence in chief (*EIC*) (dated 13 November 2010).
- 2 I repeat the confirmation given in that statement that I have read and agree to comply with the Code of Conduct for Expert Witnesses in the Environment Court.

PURPOSE OF EVIDENCE

- 3 The purpose of this rebuttal evidence is to respond to certain aspects of the evidence lodged by submitters, including the evidence of:
 - 3.1 Mr Duncan McKenzie, on behalf of Living Communities (Submitter No. 167-3);¹
 - 3.2 Professor Hazledine (Submitter No. 15-1);
 - 3.3 Mr Ian Clark, on behalf of Auckland Council/Auckland Transport (Submitter No. 111-1);
 - 3.4 Mr Robert Black, (Submitter No. 186-1);
 - 3.5 Ms Belinda Chase (Submitter No. 126-1);
 - 3.6 Mr Max Robitzsch and Ms Barbara Cuthbert on behalf of Cycle Action Auckland (Submitter No. 79-1); and
 - 3.7 Mr Michael Gallagher and Mr Andrew Beer on behalf of Auckland Council (Submitter Nos. 111-9, 111-10).
- 4 In addition, I will comment on relevant aspects of the section 42A Report prepared by Environmental Management Services (*EMS*) dated 7 December 2010 (*Section 42A Report*) and the Addendum Section 42A Report dated 20 December 2010 (*Addendum Report*).

PROJECT OBJECTIVES

- 5 In his evidence (paragraph 4.7), Mr McKenzie claims that while the Project advances the NZTA's State highway objectives and private vehicle transport, it only marginally advances cycle traffic and may adversely affect the provision of rail. He argues that the Project's contribution to the full suite of the NZTA's objectives is incomplete.

¹ References are to Submitters' evidence as listed on the EPA website.

6 In his evidence (point 4), Mr Black also claims that the NZTA has not met its project aims and objectives. Mr Black does not however appear to be referring to the NZTA's specific Project objectives. From the footnotes in his evidence, he appears to be assessing the Project against Transit NZ's 10 year State Highway Plan and Forecast 2008.²

7 I disagree with Mr McKenzie and Mr Black and consider that the five objectives of the Project³ have been addressed. I address each objective in turn.

1. To contribute to the region's critical transport infrastructure and its land use and transport strategies:

- by connecting SH16 and SH20 and completing the Western Ring Route
- by improving the capacity and resilience of SH16.

8 The Project achieves this objective by connecting SH20 at Maioro Interchange with SH16 at Great North Road Interchange, and by providing additional lanes on SH16 between St Lukes Interchange and Te Atatu Interchange.

2. To improve accessibility for individuals and businesses and support regional economic growth and productivity:

- by improving access to and between centres of future economic development.

9 The Project achieves this objective by providing direct motorway to motorway access between key growth nodes and economic centres of the Airport, Auckland Central Business District (CBD), and Westgate.

3. To improve resilience and reliability of the State highway network:

- by providing an alternative to the existing SH1 corridor through Auckland that links the northern, western and southern parts of Auckland
- by securing the SH16 causeway against inundation.

10 The Project achieves this objective by connecting SH20 to SH16 which, in conjunction with completion of SH18 improvements, will provide a complete State Highway alternative to SH1. In addition,

² Footnotes 3, 4 and 5 in Mr Black's statement of evidence. I note that the State Highway Plan is a superseded document that was previously developed by Transit NZ to consult on and communicate its forward work programme. No new versions have been produced since the establishment of the NZTA.

³ As set out in Section 3.3 of the Assessment of Environmental Effects (AEE)

the SH16 causeway will be raised by 1.5m to prevent it from inundation by the sea.

4. To support mobility and modal choices within the wider Auckland Region:
 - by providing opportunities for improved public transport, cycling and walking
 - by protecting opportunities for future passenger transport development (e.g. rail).
- 11 Throughout the surface areas of the Project, new walking and cycling facilities are being provided, or in the case of SH16, upgraded. The details of these connections are shown in the consolidated plans lodged with the Board on 28 January 2011.⁴ The Project is also approximately doubling the length of bus lanes on SH16.
- 12 Throughout Sector 8, where the Project is in tunnel, extension of the cycleway connection between SH20 and SH16 is not precluded by the Project. To facilitate this connection, the NZTA developed its Urban and Landscape Design Framework (*ULDF*) and Network Plan in order to show how the NZTA-provided components of cycleway could integrate into these future connections to be provided by Auckland Transport. The Network Plan will also assist Auckland Transport in demonstrating the strategic fit of this connection if it is to seek funding assistance from the NZTA for its construction.
- 13 Mr McKenzie is incorrect to suggest that the Project may adversely affect the provision of rail. As I explained in paragraphs 103 to 105 of my EIC, the Project provides for a replacement rail corridor, thereby protecting the Avondale Southdown rail corridor. This is confirmed in Mr Neil Buchanan's evidence, on behalf of KiwiRail Group (in paragraph 2.20). Furthermore, Mr Buchanan concludes in paragraph 4.2 that:
- The design of the Project, together with the Project Agreement, will ensure that this future rail project remains provided for.
- 14 The final Project objective is:
5. To improve the connectivity and efficiency of the transport network:
 - by separating through traffic from local traffic within the wider SH20 corridor.

⁴ Plan set headed "PT and Active Mode Transport Routes Existing and Proposed", Drawing Nos. 20.1.11-3-D-N-903-100 to 119.

- 15 As summarised within section 5.4.3 of the Technical Report G.18 (Assessment of Transport Effects), the Project achieves this objective as it will assist in the separation of through and local traffic within the wider SH20 corridor.

NZTA'S STATUTORY AND POLICY OBJECTIVES

- 16 In her evidence (paragraph 30.0), Ms Chase contests that providing a cycleway link between SH16 and SH20 "would be in accordance with the NZTA's objectives, Hancock, section 36, and the Land Transport Management Act, 2003 section 77,(1),(2). "...contributes to an integrated, safe, responsible, and sustainable land transport system.""

- 17 While section 77 of the Land Transport Management Act 2003 (*LTMA*) was repealed by the Land Transport Management Amendment Act 2008, the intent of this section is retained by section 94 of the *LTMA*, where NZTA's objective is to:

... undertake its functions in a way that contributes to an affordable, integrated, safe, responsive, and sustainable land transport system.

- 18 I disagree with the contention that this section of the *LTMA* somehow requires the NZTA to provide an at grade surface of cycleway in Sector 8 as part of the Project.
- 19 I would instead point to two of the NZTA's statutory functions set out in section 95(1) of the amended *LTMA* being:

(c) to manage the State highway system, including planning, funding, design, supervision, construction, and maintenance and operations...

...

(e) to manage funding of the land transport system...

- 20 These sections highlight the dual role the NZTA plays now in delivering land transport improvements. In the case of State Highways, the NZTA has the sole responsibility for planning, constructing, funding and operating State highway infrastructure. However, for other parts of the land transport system, the NZTA's role is more focused on managing funding of these activities, which are then carried out by the relevant Road Controlling Authorities (*RCAs*), in this case Auckland Transport.

- 21 The NZTA is not proposing to implement the cycleway connections requested by Ms Chase and other submitters as it is not within the scope, footprint, land holdings or designation of the NZTA's State Highway project, and it is not required to mitigate the effects of the

Project. However, the NZTA maintains its role as a funder of this type of facility in the event it is pursued by Auckland Transport.

22 In the Cycle Action Auckland submission⁵ (which is referred to within their evidence), Mr Robitzsch and Ms Cuthbert contend that the cycleway connection between SH16 and SH20 should be provided by the NZTA (or by the NZTA and Auckland Council) as part of the proposed works. They refer to section 77 of the LTMA (which I have addressed above), as well as a number of other policy and strategy documents which I will respond to further.

23 The section on walking and cycling policy highlighted by Mr Robitzsch and Ms Cuthbert refers to a section on the NZTA's walking and cycling policy from the NZTA's Planning Policy Manual.⁶ This states that the NZTA is:

"...committed to providing and maintaining appropriate, safe and cost effective walking and cycling facilities... aimed at cyclists and pedestrians on State Highways." And that it will seek: "...consistency between local and regional cycling strategies, the relevant provisions of regional land transport strategies and Transits State Highway Forecast."
(emphasis added by CAA).⁷

24 The paragraph of Section 3.3.2.2 that follows, (which was not quoted in CAA's submission), states that.

Transit will fulfil this commitment by:

1. Working with local authorities, Land Transport NZ, other transport providers and representatives of cyclists, pedestrians and the disability sector to facilitate an integrated and affordable network approach to planning, providing and maintaining walking and cycling facilities, including provision for cycling and walking on and across state highways where appropriate.

25 When considered in its full context, it is important to note from Section 3.3.2.2, that the NZTA is committed to providing these facilities, where appropriate on State Highways (i.e. not in every case). It is also clear that the NZTA (formerly Transit and Land Transport NZ) needs to work with local authorities to achieve the wider integrated walking and cycling network. As I will explain in more detail in this rebuttal, I therefore maintain that cycle/pedestrian facilities in Sector 8 need to be provided in conjunction with Auckland Transport / Auckland Council.

26 I do not accept the view that the requested additional sections of cycleway are part of the State highway network when the Project

⁵ Pages 4 and 5, Submission No. 79.

⁶ The NZTA's Planning Policy Manual August 2007, Section 3.3.2.2.

⁷ At page 5 of the Cycle Action Auckland submission (Submitter No. 79).

itself is in a tunnel. Through Sector 8, the proposed connection is both physically separated from the motorway network, as well as being outside the footprint of the lodged sub-strata Notice of Requirement.

- 27 I also do not accept CAA's view that if the NZTA were to build this Project as a surface route it would have provided the cycleway component, and therefore, it should still provide the cycleway with the current design.⁸ The current proposal is a substantially different project to a surface alignment and the NZTA is investing significant amounts of money to provide a tunnel that mitigates the potential environmental, community and severance impacts that a surface motorway option would have resulted in.
- 28 This significant investment is something which is consistently overlooked by the majority of submitters requesting additional expenditure on this Project.

CONGESTION CHARGES

- 29 In Professor Hazledine's evidence (paragraph 16) he suggests that an alternative to the Waterview Project is the introduction of a congestion charge to encourage users of the road network in Auckland to change their travel plans, thereby reducing congestion on the network.
- 30 I disagree with Professor Hazledine that congestion charging is a viable alternative to the Project. Congestion charging would not deliver on most of the NZTA's objectives for the Waterview Connection (as described earlier). In particular, as congestion charging only results in the management of traffic capacity on the existing transport network, it would not be able to achieve the following objectives:
- 31.1 Connect SH16 and SH20 thereby completing the Western Ring Route;
 - 31.2 Improve the capacity and resilience of SH16;
 - 31.3 Improve resilience and reliability of the State highway network by providing an alternative to the existing SH1 corridor through Auckland that links the northern, western and southern parts of Auckland and by securing the SH16 causeway against inundation; and
 - 31.4 Improve the connectivity and efficiency of the transport network by separating through traffic from local traffic within the wider SH20 corridor.

⁸ Page 6 of the Cycle Action Auckland submission (Submitter No. 79).

- 32 In addition to not meeting those Project objectives, a congestion charging scheme would also fail to give effect to the numerous national and regional policies (previously outlined within my EIC)⁹ that either direct the NZTA to deliver, or support the NZTA's completion of, the Western Ring Route.
- 33 I note that the rebuttal evidence of Mr Michael Copeland and Mr Andrew Murray outlines reasons why they also do not agree with Professor Hazledine's proposals for congestion charging.¹⁰
- 34 Professor Hazledine's evidence references the Treasury/MOT "Business Case for the Waterview Connection".¹¹ This is an outdated document based on a previous project design option involving dual two lane tunnels, which was known as the Twin Tunnel Scheme. The current Project scope is substantially different, in that three lanes are now being provided (not two), with a resulting increase in transport benefits. In addition, the costs of the earlier scheme quoted in this report (\$2.77 billion in 2016 dollars) were significantly higher than the current budget the NZTA's Board has approved for completing the Western Ring route (at up to \$2 billion).

PROJECT ECONOMIC ASSESSMENT

- 35 A number of submitters, including David Mead and Professor Hazledine, have expressed uncertainty over the economic evaluation of the Project. Professor Hazledine has questioned the acceptance of a Benefit Cost Ratio (BCR) of 1.2 as adequate to support the Project and questions BCR's close to 1 in general,¹² while Mr Mead questions the "narrow margin"¹³ of benefits over costs.
- 36 This appears to be due to the fact that Professor Hazledine is using outdated information (as referred to previously), and that Mr Mead is unclear as to the reasoning behind the BCR range of 1.2-2.1, which I referred to in my EIC.¹⁴ In order to clarify the basis of this BCR range, I will discuss the economic assessment process to date.
- 37 In relation to economic efficiency, the BCR used in the funding application to the NZTA's Board was developed in mid-2009 by Mr Murray, based on the Auckland Regional Council's ART2 modelling.¹⁵

⁹ Parker EIC, paragraphs 19-32 and 86-102.

¹⁰ See paragraphs 6-10 of Mr Copeland's rebuttal evidence and paragraphs 110-111 of Mr Murray's rebuttal evidence.

¹¹ Statement of Evidence of Professor Hazledine, Footnote 2. I note that this document is dated December 2008, rather than "early 2009."

¹² Statement of Evidence of Professor Hazledine, paragraphs 22-25.

¹³ Statement of Evidence of David Mead, paragraph 4.3.

¹⁴ Parker EIC, at paragraph 83.

¹⁵ This was developed before the updated ART3 and WRR project models used in the Transportation Assessment were available.

That work showed a BCR of 2.1 excluding agglomeration benefits, and was peer-reviewed by the consultancy SKM (who raised some technical issues). The BCR was updated in September/October 2010 to address issues raised in the peer review process and to use the latest cost and benefit parameters available at the time (but still based on the ART2 modelling). This confirmed the BCR as 2.1 and SKM then completed its review, concluding that the BCR was calculated in accordance with the NZTA procedures. A copy of Beca's assessment and SKM's peer review is attached as **Annexure A** to my rebuttal evidence.¹⁶

- 38 In addition, Mr Murray has undertaken a further assessment of the BCR based on forecasts from the ART3 model obtained from the ARC in April 2010.¹⁷ This assessment, which has not been peer reviewed and therefore has not been finalised, indicates a BCR of 1.2 without agglomeration, rising to 1.8 when agglomeration is added. It is my view that the BCR will be at the higher end of this range.
- 39 While I consider the economic assessment the NZTA has undertaken is robust, I reiterate the point made in my EIC (paragraph 82) that economic efficiency is only one criteria taken into account by the NZTA when it makes funding decisions.
- 40 When the NZTA is developing an "assessment profile" for a project, the project is assessed across three factors, as outlined in NZTA's Planning, Programming and Funding manual (*PPFM*):¹⁸
- 40.1 Strategic fit of the problem, issue or opportunity that is being addressed;
 - 40.2 Effectiveness of the proposed solution; and
 - 40.3 Economic efficiency of the proposed solution.
- 41 Each of these three factors is given a rating of H: high, M: medium, or L: low. The Western Ring Route's assessment profile is HHM. This means the activity was rated high for strategic fit, medium for effectiveness and medium for economic efficiency.
- 43 While the NZTA uses profile ratings to assist in ranking projects across New Zealand, profile ratings are not used as a sole criteria for determining whether to fund a project. For example, in the case of the Western Ring Route, it has been identified as a Road of

¹⁶ Beca 6 October 2010 Western Ring Route – Economic Evaluations, and SKM Review Note 14 – Western Ring Route – Updated Economic Assessment dated 19 October 2010 (**Annexure A**).

¹⁷ This was not finalized as the funding arm of the NZTA decided the ART2 modeling was more appropriate for the funding assessment.

¹⁸ The NZTA's Planning, Programming and Funding Manual (25 August 2008), part G1.2.

National Significance by the Government, which the NZTA needs to take account of when making funding decisions.¹⁹ And even in the event that the efficiency rating was to change, the assessment against the other two criteria would remain unchanged, taking into account the high strategic fit of the Project, the support for the Project in regional planning documents and the direction given to the Project by the GPS.

SH20 TO SH16 CYCLEWAY CONNECTION

- 44 A number of submitters, including Auckland Council/Auckland Transport, have requested in evidence that the NZTA provide for a cycleway in Sector 8 connecting the SH20 and SH16 cycleways.²⁰ I disagree that this cycleway should be part of the Project scope and have previously addressed this issue (paragraphs 156 to 161 of my EIC) and earlier in this evidence.
- 45 Since I prepared my EIC, the NZTA has continued discussions with Auckland Transport about the Sector 8 cycleway. On 17 December 2010, I wrote to Mr Peter Clark (Manager, Strategy and Planning) of Auckland Transport, recording what I understood to be an agreed position regarding the key transport issues raised in the Auckland Council/Auckland Transport submission on the Project.
- 46 In that letter, I confirmed that the NZTA offered to work collaboratively with Auckland Transport /Auckland Council to investigate opportunities for funding and implementing this cycleway connection.²¹ While the NZTA is still working with Auckland Transport to achieve this connection, I note that in Mr Peter Clark's response to my letter,²² Auckland Transport remains committed to achieving this connection and recognizes that its resources will be required to do so.
- 47 There are a number of ways that the NZTA could assist in the implementation of this connection, including:
- 47.1 Sharing the findings of the NZTA's design and planning assessments obtained through earlier investigations of cycleway options along the route. Provision of this information to Auckland Transport and Auckland Council would allow for both cost savings and time efficiencies.
- 47.2 As described earlier, in addition to planning and delivering State Highway projects, the NZTA is also a funder of

¹⁹ The reasons for this are set out in paragraphs 24 to 32 of my EIC.

²⁰ For example, Statement of evidence of Ian Clark, paragraph 8.4; Statement of evidence of Margaret Watson (Albert Eden Local Board), paragraph 43; Statement of evidence of Belinda Chase, paragraph 36.

²¹ A copy of that letter is attached as **Annexure B** to my rebuttal evidence.

²² Letter dated 14 January 2011 and attached as **Annexure C** to this evidence.

transport infrastructure provided by territorial authorities.²³ Should a local project such as this cycleway, meet the NZTA's funding criteria, it would be eligible for the NZTA's funding assistance.

PROVISION OF BUS LANE ON GREAT NORTH ROAD

- 48 In the evidence of Mr Clark for Auckland Council/Transport, he requests that the NZTA provide a northbound bus lane on Great North Road as part of the Project.²⁴ I refer to and agree with the Mr Murray's rebuttal evidence that there is no need to provide bus lanes on Great North Road to mitigate the transport effects of the Project because traffic volumes on Great North Road are predicted to decrease.²⁵ The responsibility for implementing any local road improvements should therefore sit with Auckland Transport.
- 49 However, the NZTA and Auckland Transport both acknowledge that this improvement would benefit the transport network and have agreed to work together to progress these plans. As set out in my 17 December 2010 letter to Mr Peter Clark (**Annexure C**), the NZTA agrees to implement bus lane markings along any portions of Great North Road that will require reinstatement as part of the Project. Auckland Transport has agreed to work with the NZTA in developing concept plans for bus lane options. This is confirmed in Mr Peter Clark's 14 January 2011 response (**Annexure C**).
- 50 In addition, proposed Operational Traffic condition OT.1 would include these proposed works with the development of a Network Integration Plan.

ST LUKES INTERCHANGE UPGRADE

- 51 The evidence of Mr Ian Clark requests that the St Lukes Interchange be upgraded as a component of the Project. I refer to and agree with the analysis outlined in Mr Murray's rebuttal evidence (paragraphs 10-22) that as the Project does not overall cause an adverse transport effect on the Interchange, the NZTA is not required to upgrade the St Lukes Interchange as part of this Project.
- 52 I can also confirm that in September 2010 the NZTA began investigations into potential improvements at this Interchange. These are being pursued as a separate project. The NZTA and Auckland Transport have discussed this approach at an officer level and agreed to jointly progress subsequent stages of investigations at St Lukes Interchange, because an upgrade would have implications for both the NZTA and Auckland Transport's roading

²³ Section 95(1)(e) LTMA.

²⁴ Statement of evidence of Ian Clark, section 7.

²⁵ Statement of evidence of Andrew Murray, paragraphs 168-171, and rebuttal evidence, paragraph 23.

assets. This agreement is recorded in my 17 December 2010 letter to Mr Peter Clark and his 14 January 2011 response (see Annexures B and C).

LOCAL CONNECTION TO SH20 AT GREAT NORTH ROAD INTERCHANGE

- 53 Sir Harold Marshall has submitted that the NZTA should provide a local road connection to SH20 at Great North Road Interchange via ramps at Carrington Road.²⁶ I note that Mr Robert Mason and Mr Andre Walter have in their rebuttal evidence explained the significant safety issues, engineering issues, environmental impacts and increased construction costs associated with providing local road connections onto SH20 at Great North Road Interchange. Mr Andrew Murray has addressed the transport implications in his evidence in chief and rebuttal evidence.
- 54 I will not repeat those issues here, but reiterate the purpose of the Project, as discussed earlier in my rebuttal evidence. The key Project objective is connecting SH20 to SH16 thereby completing the missing connection of the Western Ring Route. This strategic interregional connection is the overriding purpose of the Project, not to facilitate additional local trips onto the State highway network by a connection to Great North Road.

NETWORK INTEGRATION PLAN

- 55 In paragraph 10.10 of his evidence, Mr Clark proposes amending Operational Traffic condition OT.1 to require Auckland Transport's approval of the Network Integration Plan (*NIP*). I disagree with the suggested change, as the purpose of the NIP is to undertake a joint planning exercise between the NZTA and Auckland Transport within the locations where the State Highway and local roading networks interact. As such, it would not be appropriate for Auckland Transport to have the sole right of approval for this plan. Instead, the NIP should be developed in collaboration with both parties, as suggested by Mr Murray in his rebuttal evidence.
- 56 I understand some amendments to this condition were agreed in the expert transport caucusing.²⁷ As a result, rather than Auckland Transport approving the NIP, it will be prepared in collaboration with Auckland Transport. I support the amendments to condition OT.1.

²⁶ Submitter No. 120-1.

²⁷ At the time my rebuttal evidence was finalised, the transport caucusing statement had not yet been signed.

ADDITIONAL MITIGATION SOUGHT

- 57 By constructing the majority of the Project within a tunnel, the NZTA proposes to spend approximately \$300-500 million²⁸ in additional mitigation when compared to a surface option.
- 58 A number of submitters have requested further mitigation over and above that offered by the NZTA's lodged proposal and I will respond to the key mitigation measures sought in turn.

Undergrounding of Southern Ventilation Building

- 59 Mr Walter explains in his rebuttal evidence, the engineering issues associated with undergrounding the Southern Ventilation building and estimates that the additional Project costs of doing so would be within the range of \$10 to \$25 million.
- 60 While this may appear to be a small amount in comparison to the total project budget, it is important to understand that the National Land Transport Fund (*NLTF*) is constrained. In other words, across New Zealand there are more projects awaiting funding than can be provided for within the NLTF. As such, the NZTA aims to work within its approved Project budget of up to \$2 billion for the Western Ring Route completion. This is because any additional funds spent on this Project for additional mitigation would need to be viewed in the context that other projects around New Zealand which may need to be delayed or cancelled.
- 61 Given the implications of these extra costs on the NLTF, the NZTA must ensure that any increased expenditure provides value for money. In the case of undergrounding the Southern Ventilation building, the NZTA does not consider that the additional cost incurred are warranted when viewed in the context of a constrained budget, the significant amount already being spent on mitigation by tunnelling Sector 8, and the works proposed to mitigate this aspect of the Project.

Full undergrounding of North Ventilation building and Relocating of the Northern Ventilation Stack

- 62 In his rebuttal evidence, Mr Walter addresses the engineering issues associated with difficulties in fully undergrounding the Northern Ventilation building. He also discusses the cost implications of doing so, in addition to the implications of relocating the ventilation stack.
- 63 As stated above, the NZTA needs to weigh up the implications of any additional expenditure on the Project budget. In the case of the Northern portal, the NZTA considers the proposed northern ventilation stack location and Northern Ventilation building achieves

²⁸ Based on Project estimates presented to the NZTA Board in May 2009. Board Paper No. 09/05/0190.

an optimal balance between environmental outcomes and fiscal prudence.

- 64 As discussed by Mr Walter his rebuttal, the alternatives put forward by submitters would cost an additional \$18 to \$22 million to relocate the ventilation stack and in excess of \$20 million to further underground the Northern Ventilation building. The NZTA does not consider that this will provide value for money or be able to be managed within the Project budget.

KEY SUBMITTER ISSUES

Open Space replacement

- 65 The evidence of Mr Michael Gallagher and Mr Andrew Beer, both on behalf of Auckland Council, include an alternative open space proposal to that presented by the NZTA.²⁹ Auckland Council seeks the removal of sports fields and less open space provision at Waterview Park; additional land take at Valona Street to allow an alternative playing field layout; and the enhancement of soccer facilities at Phyllis Street Reserve. While other witnesses will address the appropriateness of that approach as mitigation,³⁰ I would like to confirm that the NZTA is committed to working with Auckland Council to reach an agreed outcome that meets the requirements of both the RMA and the Public Works Act 1981.
- 66 To this end, the NZTA has been undertaking continued negotiations with Auckland Council officers in order to agree a final form of open space replacement that will meet Council's operational/maintenance needs as well as the needs of the community. While negotiations are ongoing, at the time of writing this rebuttal evidence, no agreement has yet been reached with the Council.

Waterview Kindergarten

- 67 The evidence of Mr Peter Pablecheque,³¹ on behalf of the Auckland Kindergarten Association seeks permanent relocation of the Waterview Kindergarten to 17 Oakley Ave (the site proposed by the NZTA for temporary relocation). The NZTA's social expert Ms Linzey also supports permanent relocation to reduce disruption.
- 68 The NZTA has met with the Ministry of Education and the Association to discuss the request for permanent relocation and I can confirm that the NZTA has offered to permanently relocate Waterview Kindergarten. At the time of writing this rebuttal the NZTA is waiting on a response but I am confident that we will be able to agree on an appropriate mitigation package (and advise the Board of Inquiry once that is agreed).

²⁹ Statement of evidence of Andrew Beer, paragraph 12.2; Statement of evidence of Michael Gallagher, section 8.

³⁰ This is addressed in the rebuttal evidence of David Little and Amelia Linzey.

³¹ Statement of evidence of Peter Pablecheque, paragraph 43.

Waterview Primary School

- 69 Evidence on behalf of Waterview Primary School Board of Trustees and the Ministry for Education has been provided by Mr Robert Black, Mr Brett Skeen and Mr Brian Mitchell. A number of operational and construction issues are raised throughout the evidence of all three representatives and Mr Skeen specifies particular mitigation sought by the School.³²
- 70 The issues raised on behalf of the School are wide ranging and concern noise impacts, air quality, social impacts, school roll security, visual amenity and perception effects. These issues are addressed by a number of the NZTA's experts including Ms Wilkening (noise), Mr Fisher (air quality), Dr Black (health), Mr Brown (visual) and Ms Linzey (social including school roll). I will not repeat their responses here. I will however address the mitigation sought raised by Mr Skeen.
- 71 Mr Skeen has requested a number of changes³³ to the School grounds and facilities as mitigation measures. I have met Mr Skeen on a number of occasions over the last two months to discuss these mitigation requests. I consider the meetings have been very constructive. The NZTA has subsequently offered a significant and comprehensive mitigation package to the School, which we believe addresses the Boards' concerns. At the time of writing we have not yet concluded discussions, but I believe that discussions are progressing positively and that parties are close to finalising a mutually agreed mitigation package.
- 72 I note that some of the measures sought by Mr Skeen in his evidence are measures which the NZTA's expert witnesses have separately recommended and which are offered regardless of any agreement with the School. These include measures such as insulation, double glazing, ventilation, construction noise walls, and monitoring of the school roll, which have already been noted in the evidence of NZTA witnesses.

Cycle Action Auckland

- 73 In its evidence³⁴ Cycle Action Auckland (CAA) seeks design changes to improve connectivity and access to the proposed cycleways, and to improve connectivity over the Project's interchanges. I am advised that NZTA representatives met with CAA representatives to discuss its submission (which had requested various specific changes to Project design) on 24 November 2010. The outcome of this meeting and the results of subsequent investigations are discussed in the rebuttal evidence of Mr Owen Burn.

³² Statement of evidence of Brett Skeen, paragraphs 28, 34, 40, 53, 55, 62 and 81.

³³ Ibid.

³⁴ Statement of Evidence of Barbara Cuthbert, sections 5(b) and 5(c).

- 74 I am pleased to report that, after investigation of CAA's suggestions, the NZTA is able to amend its Project designs to accommodate some of CAA's suggestions. In particular, as detailed in the rebuttal evidence of Mr Burn, we have been able to improve cycleway connectivity to parts of the local road network in Sector 9 and have agreed with suggested improvements at Herdman Street. I note that in other areas, as explained by Ms Hancock in her rebuttal evidence³⁵ (e.g. the Star Mills heritage area), the emphasis is on allowing pedestrians to stroll at a more leisurely pace and the NZTA's urban design expert considers that a cycleway standard access would cause conflict (this does not apply to the primary cycleway routes that will be used by commuters). I note also that the CAA will have the opportunity to have further influence on detailed design of open space and urban design plans as part of the Community Liaison Group, as set out in the revised conditions attached to Ms Linzey's Social rebuttal evidence.
- 75 I can confirm that the positions recorded within Mr Burn's rebuttal, and the resulting modifications to the NZTA's proposed Project Urban Design and Landscape Plans, are supported by the NZTA.
- 76 I note that CAA also supports provision of a Sector 8 cycleway. I have addressed that issue earlier in my rebuttal.

COMMENTS ON SECTION 42A REPORTS

Summary of changes to the Project

- 77 I note that section 2 of the Addendum Report requests the NZTA to confirm all changes to the Project since lodgement of the NoR and resolve consent applications. This is addressed by Mr Walter in his rebuttal evidence.

Conditions and final design

- 78 Paragraphs 14.2.1 and 14.2.2 of the Section 42A Report recommend that General Designation condition DC.1 be amended:

78.1 To require the works to be undertaken "in accordance with" the information provided in the NoR and application documents, rather than "in general accordance"; and

78.2 To delete the "subject to final design" qualification.

- 79 I strongly disagree with both suggestions. Before I respond to this point, I consider it is important and relevant to explain some background on how the NZTA is procuring the construction of the Project. The procurement model being used is a Competitive Alliance procurement model.

³⁵ Rebuttal Evidence of Lynne Hancock, paragraphs 18 to 26.

- 80 The NZTA is currently midway through the process of procuring a Competitive Alliance to construct the Waterview Connection (having shortlisted two Alliances). In a Competitive Alliance, the NZTA works collaboratively with two private sector parties and agrees to take uncapped risks and share opportunities. A concept of collective assumption of risk applies in alliance contracts where the alliance participants bear all risks equitably. This allows and encourages innovative practices to be pursued to find best solutions providing enhanced social / environmental outcomes and value for money.
- 81 To achieve the best possible outcomes using a Competitive Alliance process, the final designation and consent conditions need to provide flexibility, using a performance based approach that specifies outcomes that the Alliance will be required to meet, rather than conditions that prescribe methods based on concept design plans and draft management plans.
- 82 The concept design lodged for the Project will establish the Project's edge effects, within which final detail design will be completed in order to be ready for construction. As a result, if the works were constrained by needing "to be in accordance" with the concept design³⁶ instead of "in general accordance" (which commonly applies to large roading projects), this would inhibit innovation and the NZTA's ability to achieve a broad range of best possible outcomes for the community.
- 83 To illustrate these potential benefits, I would like to highlight two recent projects procured through the Competitive Alliance model that have resulted in enhanced community outcomes over and above those that were required by designation conditions or by the NZTA's original project scope:
- 83.1 *Victoria Park Viaduct.* Although this project is not yet complete, the Alliance currently constructing the project has agreed to relocate the Birdcage Hotel to its original location after completion of the tunnel construction, resulting in enhanced heritage outcomes. The consented proposal provided for the relocation of the Hotel to a location where the Hotel would retain its built character. The VPT Alliance found a solution to return it to its original location on the edge of the pre reclamation foreshore, which will preserve the Hotel's built character and the historical significance associated with this location. This approach has been strongly supported by the local community as it recognises the heritage values associated with this location. The relocation will be undertaken at an additional cost to the Alliance, even though it was not required by the designation conditions.

³⁶ Paragraphs 14.2.1 to 14.2.4, Section 42A Report.

83.2 *Northern Gateway (ALPURT Section B2)*. This extension of SH1 from Silverdale to Puhoi terminates at the 340m long Johnstones Hill Tunnels. The approved project originally involved a substantial cut through the top of Johnstones Hill. The twin tunnels, which were instead constructed, were a design innovation from the Alliance (achieved by an alteration to the designation) that avoided the more significant environmental effects that would have occurred if the Alliance had pursued the originally consented outcome.

84 I note in paragraph 14.2.1 of the Section 42A Report, the authors “question the merit of allowing any substantive “final design wriggle room” as sought”. In response to this, I would point out that for both projects, described above, the general designation conditions were based on the premise of “in general accordance with”, not “in accordance with.

85 Therefore, I support the current designation wording that the works should be “generally in accordance” with the plans submitted and “subject to final design”.

86 I consider the requirement for the certification of the final management plans by Auckland Council will provide sufficient safeguard to ensure that the final design is generally in accordance with the final designation and consent conditions and meets all the performance measures outlined in the management plans, while still allowing for innovative outcomes.

Economic assessment

87 The Section 42A Report suggests that it would be useful for more economic assessment information to be provided:

We are not aware that the documentation includes an economic assessment of the costs and benefits of the project. While we would not want to put undue weight on this form of assessment we think it would assist the Board if such an assessment was available.³⁷

88 While I agree that economic assessment of this Project should not be given undue weight, I have provided this information in **Annexure A** and responded to submitters’ concerns earlier in my rebuttal.

89 Section 7.3.2 of the Section 42A Report questions the lack of any assessment to back up claims of regional productivity improvements other than the assessment of social effects. An assessment of the Wider Economic benefits for all the Roads of National Significance

³⁷ Section 42A Report, at paragraph 7.2.25.

has been undertaken on the NZTA's behalf.³⁸ I append the Summary Report of this Economic Assessment as **Annexure D** to my rebuttal evidence. This Report takes into account traditional road user benefits, externalities, and potentially broader productivity and potentially broader economic growth associated with the Project.

Management Plans

- 90 I note that in para 14.2.7 to 14.2.8 of the Section 42A Report, the author does not consider the use of management plans, as the NZTA has proposed, is an acceptable approach. I disagree. This is addressed in the rebuttal evidence of Mr Hugh Leersnyder, Ms Amelia Linzey and Mr Mike Foster. I would also reiterate the importance of this approach to the NZTA given the procurement model discussed earlier in my rebuttal. I would also point to the successful track record that the NZTA has had in implementing other projects in this manner, as explained above.



Tommy Parker
February 2011

³⁸ Roads of National Significance Economic Assessment Review Summary Report prepared by SAHA International Limited (July 2010). A full copy of the Report (which is 166 pages) is available at: <http://www.nzta.govt.nz/resources/rons-economic-assessment-2010-05/docs/full-report.pdf>.

ANNEXURE A – BECA AND SKM ECONOMIC ASSESSMENTS

NZ Transport Agency (NZTA)
Private Bag 106602
Auckland 1143
New Zealand

6 October 2010

Attention: Paul Glucina

Dear Paul

Western Ring Route - Economic Evaluation

1 Purpose

As requested, we have updated the economic evaluation of the Western Ring Route project (as submitted with the funding application) in response to the peer review undertaken by Sinclair Knight Merz (SKM). In this update, we also took the opportunity to include the latest construction cost and benefit values that have become available since the previous evaluation was undertaken.

Additionally, this note outlines the background and basis of the evaluation that was submitted for funding, including the status of the peer reviews undertaken.

2 Previous Evaluation

The evaluation submitted for funding was prepared in July 2009 and peer reviewed by SKM in October 2009. That evaluation was based on the traffic models available at that time (the ART2 regional model and previous WRR Project Model), and scenarios developed for the earlier Business Case of the Driven Tunnel Option. In macro transport terms, the current scheme is equivalent to the previous Driven Tunnel option, and hence it was deemed appropriate to use the same model outputs. The construction costs were however updated to reflect the revised construction methods adopted.

The key results of that evaluation were as shown in **Table 1**:

Table 1 - Results of July 2009 Evaluation

Element	Value
Total Construction Cost, \$million	1,680
Total Discounted Costs, \$million NPV	1,133
Total Benefits, \$million NPV	2,396
Benefit Cost Ratio	2.1

3 SKM Peer Review of Economic Evaluation

SKM peer reviewed the detailed evaluation calculations and reported their findings in a File Note dated 6 October 2010 (included here as **Attachment 1**). Their key findings were that the evaluation calculations were appropriate and consistent with the Economic Evaluation Manual (EEM) except for the following items:

- The update factor for travel time (1.19) was inadvertently applied twice in the assessment of travel time benefits
- The CO₂ benefits were assessed as 7.5% of the Vehicle Operating Costs (VOC), rather than the 4% indicated in the updated EEM
- That the User values of time should be reviewed in any updates and their source documented

While not identified in the SKM review, in reviewing the assessment of User Costs as suggested, we identified that the user costs for VOC, in relation to Resource costs should also be reviewed. The response to these issues is detailed below.

4 Response to Review and Evaluation Update

Time Values Update Factor

We have removed the double-counting of the travel time update factor.

CO₂ Benefits

We have adopted CO₂ benefits as 4% of the assessed VOC benefits, as per the latest version of the EEM.

User Time Values

As outlined in the SKM review, the User Time values were developed for behavioural modelling when tolling of the WRR was being investigated, and set at 86% of the Resource cost values. As suggested by SKM, we have reviewed those values in light of the EEM guidance, especially as tolling is not now being considered. The EEM suggests user values should be the same as the resource values for working time, but 1.15 of the resource values for non-working time.

Based on the traffic composition suggested in the EEM for the Composite Urban Arterial road environment, we have assessed this to equate to a weighted-average value of 1.07 times the Resource Values.

Subsequently, we have adopted the User Time values as 1.07 of the EEM Resource values.

Vehicle Operating Cost User Values

As detailed in the SKM review, User vehicle costs were set at 15c/km and resource costs at 38c/km. The EEM suggests that User operating costs should be 1.2 times the resource cost for basic running costs and 2.0 times the resource cost for costs while stopped. Approximately 95% of

the VOC costs come from base running costs with only some 5% from stopped costs, meaning that the total User Costs should be some 1.24 times the resource costs. This factor was adopted in this update.

Updated Capital Cost Estimate

Since the July 2009 evaluation was undertaken the capital cost estimates have been revised. Subsequently we have included those latest estimates in this re-evaluation, as provided to us by NZTA in June/July 2010.

Updated Unit Values

The use of 2010 construction costs effectively means that the evaluation Base Date for costs is now 1 July 2010. In order to bring the benefits to the same Base Date, the 2010 update factors have been obtained from NZTA. Those update factors are as follows:

- 1.31 for travel time (to bring published \$2002 values to \$2010 values)
- 1.00 for VOC (to bring published (\$2008 values to \$2010)
- 1.15 for Crash benefits (to bring published \$2006 values to \$2010 values)

Time Zero in the evaluation was also updated to 1 July 2010 to reflect the project status.

Re-Evaluation

The BCR has been re-evaluated to address the issues raised in the SKM review and to reflect the latest capital cost and benefit update values. These results are shown in **Table 2**.

Table 2 – Re-Evaluation

Element	Value
Total Construction Cost, \$million	1,754
Total Discounted Costs, \$million NPV	1,349
Total Benefits, \$million NPV	2,867
Benefit Cost Ratio	2.1

Although both capital and user benefits have been updated, and it be seen that the BCR remains at 2.1, as presented in the July 2009 evaluation. The detailed worksheets for the re-evaluation are included as **Attachment 2**.

5 Reviews of Traffic Models

The SKM peer review was of the benefit calculations, and not of the traffic modelling on which those calculations were based. Those traffic models were however previously reviewed as follows:

- The original model (developed circa 2003) was peer reviewed by Opus International Consultants Ltd, and deemed fit for purpose
- In 2007 and 2008, the modelling was reviewed by the Modelling Liaison Group. This group was set-up by NZTA to liaise with key stakeholders on technical modelling issues. That group contained representatives from Auckland City Council, Waitakere City Council, Auckland Regional Council and Land Transport New Zealand (now included in NZTA). That group reviewed and agreed to the models and modelling process, including:
 - the fitness of the original model and its year 2001 validation
 - the acceptability of a validation check of a year 2006 model against observed 2006 data
 - the appropriateness of the inputs to the future year models, including land use, policy assumptions and Do Minimum and Option network assumptions

The members of the Modelling Liaison Group used expert advisers to assist in their technical review.

6 Updated Models

Since the July 2009 evaluation was undertaken, a new regional model (ART3) and new project model have been developed for the consenting process of the WRR project. Those updated models have not been used in this update because the project funding was based on the July 2009 evaluation an update was not required (the funding approval requested completion of the peer review).

7 Conclusion

This note responds to the SKM peer review of the economic evaluation prepared for the funding application of the WRR project, and includes an update to reflect the latest available construction and benefit unit values.

The original evaluation indicated a BCR of 2.1 for the project, although issues raised in the SKM review found that the travel time benefits were over-stated. After addressing those issues and updating the cost and benefit values to a 2010 Base Date, this re-evaluation has determined a BCR of 2.1.

Although not included in the SKM review, the traffic models used as the basis for this evaluation have been subject to review, both via a specific technical review of the original model and via a collaborative review of the model validation, inputs and assumptions by key stakeholders and their technical advisers. Although newer models have become available since that modelling was done, this re-evaluation has retained the original models as used in the original funding application.

Yours sincerely

Andrew Murray
Technical Director - Transportation

A handwritten signature in black ink that reads "A Murray". The signature is written in a cursive style with a large initial "A" and a long, sweeping tail on the "y".

on behalf of

Beca Infrastructure Ltd

Direct Dial: +64-9-300 9230

Email: andrew.murray@beca.com

File Note



Date 19 October 2010
Project No ZB1025
Subject **Review Note 14 – Western Ring Route – Updated Economic Assessment**

1. Introduction

This file note contains review comments on the updated economic evaluation of the Waterview Connection and SH16 Widening. It follows the initial review in the file note *Review Note 5 – Previous Economics.doc*.

This follow-up review has involved:

- review of the letter and attachments to NZTA from Beca: *NZ1-3609598-Western Ring Route - Economic Evaluation*, and
- discussions with Beca as required.

The traffic models from which the model data was extracted or the process by which the data was extracted have not been reviewed, and this review of the updated evaluation has focussed on the changes since the initial review.

2. Review of Previous Evaluation

The review of the previous evaluation concluded:

A review of the previous economic evaluations of Waterview Connection and SH16 widening options has been undertaken. This has entailed examination of spreadsheets provided, but not review of the traffic models or the procedures for extracting the data for the evaluations.

From examination of the spreadsheets it is considered that the economic evaluations undertaken have followed appropriate procedures, except for an error made in applying the unit cost update factors twice. Correcting this reduces the benefits by 16% and reduces the BCRs from 1.8-2.3 to 1.5-1.9.

It is also recommended that the user values of time used in subsequent evaluations are reviewed and their origins are documented.

It also noted that:

Carbon dioxide emissions have been valued at 7.5% of VOC as per the EEM at the time; the latest EEM states that they are approximately 4% of total vehicle operating costs.

SINCLAIR KNIGHT MERZ

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3. Changes to Previous Evaluation

The updated economics has used the same overall evaluation process as the previous evaluation with input data from the same traffic models. Variable matrix evaluations have been carried out following the procedures set out in the EEM. Traffic modelling has been carried out in years 2016 and 2026 for the AM, IP, and PM periods.

The changes made to the previous evaluation, including responses to the initial review, are as follows:

- The error in applying the update factors twice has been removed,
- The CO₂ benefits have been updated as 4% of the vehicle operating costs (VOC),
- The user values of time have been modified in light of the EEM guidance,
- The VOC user values have also been similarly modified,
- The capital cost estimate has been updated, and
- The base date for costs has been updated to 1 July 2010, the update factors adjusted accordingly and time zero changed to 1 July 2010.

The net outcome of these changes is a BCR of the same value as the previous evaluation.

Each of the above is considered in turn in the following sections.

4. Application of Update Factors

It is stated that the update factors are now applied once only and, based on the attached page from the evaluation spreadsheets headed “Annual Model Results”, the update factors have been set to 1.00 to remove the double-counting.

5. Carbon Dioxide Benefits

The factor for estimating the CO₂ benefits is now correctly set at 4% in the attached page headed “assumptions Sheet”.

6. User Values of Time

The user values of time have been calculated using the factors given in the EEM (Table A11.1). Resource cost values have been factored by 1.07, based on factors of 1.00 for work purposes and 1.15 for non-work purposes and the proportions of each as per the EEM.

7. User Vehicle Operating Costs

The user vehicle operating costs have been determined using the factors given in the EEM (Table A11.1). The user VOC have been calculated as resource VOC * 1.24, based on factors of 1.20 for base costs and 2.00 for stopped costs, and proportions of each of 95% and 5% respectively.

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As part of this review there has been discussion with both Beca (Andrew Murray) and NZTA (Sandy Fong). Several points arise from this.

- The specification of the factors in Table A11.1 occurred when the variable trip matrix procedures were first developed, but, based on the documentation viewed, the specific derivation of them is unclear.
- The EEM is not totally clear as to whether the user costs referred to in Table A11.1 are perceived user costs or total user costs for use in the VTM procedures.
- Webtag (Unit 3.5.3) seems clear that perceived user costs are used in VTM benefit calculations and for non-work purposes this is usually considered to be the fuel component of VOC.
- This does suggest that for non-work purposes, the factors for VOC should be applied to the perceived component of VOC. The EEM (Table A5.0(a)) gives the fuel and oil costs as a percentage of the total VOC (e.g. 49.1% for private car).
- Applying this to Beca BCR calculations results in a marginal change in BCR; 2.1 to 2.0.

8. Capital Costs

The costs for the options of investigation, design, property, construction and maintenance have been updated to 2010 values and the NPV of these are calculated the same as previously using SPPWF from the EEM (Table A1.1).

9. Base Date, Update Factors and Time Zero

The base date for costs and time zero have been updated to 1 July 2010, and the latest update factors from the EEM applied (Table A12.2).

10. Conclusions

The updated economic evaluation of WRR has been reviewed in terms of the changes since the previous evaluation.

It is considered that the evaluation follows the procedures set out in the EEM.

It is also considered that there is some ambiguity about whether user costs in the VTM benefit calculations are perceived user costs and from that the applicability of the resource to user cost factors. Applying the factors to perceived VOC only results in a marginal change to the BCR.

David Young
dyoung@skm.co.nz

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**ANNEXURE B - 17 DECEMBER 2011 LETTER TO AUCKLAND
TRANSPORT**



NZ TRANSPORT AGENCY
WAKA KOTAHI

Level 11, HSBC House
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Private Bag 106602
Auckland 1143
New Zealand
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www.nzta.govt.nz

17 December 2010

By email:

Peter Clark
Auckland Transport
Private Bag 92250
Auckland 1142

Cc Dr Kevin Doherty

Dear Peter

Waterview Connection – Auckland Council transport issues

I am writing to confirm what I believe is an agreed position on the following key transport related requests contained within Auckland Council/Auckland Transport's submission on the Waterview Connection application.

By building on the co-operative approach our two agencies are endeavouring to work within our aim is to reach an agreed position that will allow both parties to enter next year's SH20 Waterview hearing with certainty and avoid the need for the preparation of further evidence on these key matters.

1. St Lukes Rd interchange improvements

NZTA and Auckland Transport agree to work collaboratively on advancing improvements at St Lukes Rd interchange. While NZTA will proactively look at opportunities to achieve further benefits in this area through the Waterview Connection project, St Lukes Interchange will be advanced as a separate project through standard design and funding processes, including Auckland Transport involvement in design discussions and necessary changes to the adjoining local road network. This work is currently underway by NZTA, with Auckland Transport shortly to be included in project processes. The project will examine opportunities to improve facilities for walking, cycling and passenger transport while also addressing longer term road safety and traffic capacity issues.

2. Great North Rd bus lane provision

NZTA and Auckland Transport agree to work collaboratively on advancing the implementation of a northbound bus lane on Great North Road between Oakley Avenue and Oakley Creek culvert, generally utilising the existing carriageway width. Auckland Transport will supply (or work with NZTA's Alliance to provide) the bus lane design and project approvals for the works (including any necessary consenting requirements). As part of the SH20 Waterview project, NZTA agree to implement bus lane markings along any portions of Great North Rd that will require reinstatement as a result of project works. In the event that portions of Great North Road (and associated services, etc) above SH20 Waterview are required to be rebuilt as part of the project NZTA also agree to design and reconstruct these works so as to not preclude the future widening of Great North Road to allow for a southbound bus lane.

3. SH20-SH16 cycleway connection

NZTA and Auckland Transport agree to work collaboratively on advancing the implementation of a continuous cycleway between the proposed northern end of the SH20 cycleway at Alan Wood reserve

and the existing Northwestern cycleway at Waterview. The NZTA acknowledges that this is an important regional cycle connection and interacts with the SH20 Waterview project at both its northern and southern extents. The NZTA agrees to jointly with Auckland Transport and Auckland Council, investigate opportunities to implement and fund the cycleway connection, through NZTA's SH20 Waterview Connection project and Auckland Transport's cycling and walking activity fund (with the support of Auckland Council).

I understand that Auckland Council/Auckland Transport will refer to this agreed approach to the above issues in their evidence, soon to be lodged, to explain and support their submission points to the Board. I also understand that the remaining transport related issues contained within Auckland Council/Auckland Transport's submission have either been adequately addressed by NZTA's evidence or else are of a minor nature and are likely to be resolved through revisions of NZTA's proposed conditions.

If Auckland Transport is in agreement with the approach outlined above, can could you please confirm so by a return letter.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Tommy Parker', with a large, stylized initial 'T'.

Tommy Parker
State Highways Manager, Auckland and Northland

Cc: Dr Kevin Doherty

**ANNEXURE C - 14 JANUARY 2011 LETTER FROM AUCKLAND
TRANSPORT**

14 January 2011

Tommy Parker
NZTA
Private Bag 106602
Auckland 1143

6 Henderson Valley Rd
Henderson, Auckland 0612
Private Bag 92 250
Auckland 1142
New Zealand

aucklandtransport.govt.nz

Ph 09 355 3553
Fax 09 355 3550

Dear Tommy

SH20 Waterview Connection – progressing Auckland Council/Auckland Transport matters

Thank you for your letter of 17 December regarding NZTA's position on a number of transport matters raised by Auckland Council in its submission on the SH20 Waterview applications.

I can confirm Auckland Transport's willingness to collaborate on progressing those transport matters referenced in your letter and seek that genuine progress be made on these matters before the hearing scheduled for February 7th 2011, to ensure that they do not unduly hinder the court processes. As you note, a key aim of our collaboration is to avoid the need to use the hearing to resolve the matters.

I have instructed my team, led by Don Munro and Chris Smith, to meet with appropriate NZTA staff at the earliest opportunity to commence detailed discussions on progressing the individual matters. I note that NZTA is fairly advanced in investigating St Lukes Rd interchange improvements, but that Auckland Transport has yet to be involved, and I'd seek that my team be included in relevant discussions from this point on. This may also be progressed through caucusing as proposed by the Board of Inquiry at the pre-hearing conference held on the 21st December 2010.

In terms of the Great North Rd bus lane, as you know the former Auckland City Council produced a concept plan of bus lane options, and I have instructed my team to work with NZTA in developing those plans and ensure that these do not delay the finalising of NZTA's designs in the area. I believe there is a good opportunity for the creation of a useful passenger transport facility at little or no cost to NZTA, which can be seen as contributing to the sustainability objectives of both organisations.

I acknowledge that reaching an agreement on the completion of the SH20 cycleway is more challenging, but my team are committed to finding ways to achieve this regionally significant connection, using the resources available from both organisations. This is an important facility for the local community and it will be imperative to show progress towards resolution ahead of the February hearing date.

Please feel free to contact me if you have any questions, otherwise I look forward to NZTA staff contacting my team in the near future to commence discussions on these transport matters.

Regards



Peter Clark
Manager, Strategy & Planning



**ANNEXURE D - SUMMARY REPORT: ROADS OF NATIONAL
SIGNIFICANCE ECONOMIC ASSESSMENT REVIEW**

The logo for SAHA (South African Highways Agency) is located in the top right corner. It consists of the letters "SAHA" in a bold, white, sans-serif font, set against a blue background with a fine, horizontal line pattern. The blue background is part of a larger graphic element that tapers from the top right towards the bottom left.

SAHA

NZ Transport Agency

Roads of National Significance

Economic Assessments Review

Summary Report

July 2010

Contact Person

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Disclaimer

Saha International Limited (SAHA) has prepared this report as a summary version of SAHA's full report – Roads of National Significance – Economic Assessments Review May 2010 in consultation with the NZ Transport Agency (NZTA) for the purposes of public dissemination.

The underlying data to SAHA's assessment, specifically the conventional transport economic assessments, regional wider economic benefits and the CGE modelling, has been collected and developed by other external advisers engaged by NZTA. SAHA has relied on those assessments in the preparation of the full report, and subsequently this summary report. Therefore, this report provides high level analysis only and does not purport to be advice on particular investment options or strategies.

SAHA has used all reasonable endeavours to ensure the information in this report is as accurate as practicable. SAHA, its employees, and Directors shall not be liable (whether in contract, tort (including negligence), equity or on any other basis) for any loss or damage sustained by any person relying on this document whatever the cause of such loss or damage.

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1 Introduction

This report provides information on the findings of an economic assessment undertaken for the Roads of National Significance (RoNS).

The assessment includes consideration of the total economic benefits and costs for the seven RoNS taking into account traditional road user benefits, externalities, and potentially broader productivity and economic growth associated with the implementation of the RoNS.

The purpose of undertaking the assessment is to answer two fundamental questions, namely:

1. Are there quantifiable wider economic benefits associated with the portfolio of RoNS projects?
2. If such benefits exist and are quantifiable, are they of sufficient scale to demonstrate the economic worth of an aspirational RoNS implementation program?

1.1 What are the RoNS?

The New Zealand Government has announced seven Roads of National Significance projects, which have been identified as essential routes that require priority treatment to achieve higher economic growth and enhanced productivity.

The RoNS, from north to south, are:

- Puhoi to Wellsford – SH1
- Completion of the Auckland Western Ring Route – SH20/16/18 (including Waterview)
- Victoria Park Tunnel – SH1
- Waikato Expressway – SH1
- Tauranga Eastern Link – SH2
- Wellington Northern Corridor (Levin to Wellington) – SH1
- Christchurch motorway projects

The RoNS have been identified as the most essential routes from a nation-wide perspective that require significant development to reduce congestion, improve safety and support economic growth.

The purpose of the Government nominating these roads as “nationally significant” is to ensure they are given priority by NZ Transport Agency (NZTA) in developing the National Land Transport Program (NLTP).

NZTA has developed an aspirational implementation plan that would see the RoNS substantially advanced over the next ten years.

1.2 What are the objectives of this economic assessment?

The RoNS are each significant projects in their own right. Each has been progressed to a certain extent on an individual basis, and in a traditional approvals and procurement approach the funding for each would be assessed and sought in isolation from other major roading projects within NZTA's portfolio.

Due to the priority required for the RoNS, NZTA has considered an approach which seeks to justify, on economic assessment grounds, the seven projects on a portfolio basis taking into account their expected benefits.

The objectives from this process are to quantify:

1. The total benefits of the combined seven RoNS as a portfolio; and
2. The benefits of delivering the RoNS under an aspirational timetable (i.e. within a ten year time horizon).

This report represents the findings from the economic assessment which responds to those objectives.

It is important to note from the outset that the assessment approach adopted extends beyond conventional project level benefit-cost analyses alone, and incorporates broader second order macroeconomic effects. Similar approaches to evaluation have been made to varying degrees primarily overseas, and while there is growing agreement that the concept of including wider economic benefits in the appraisal of projects is appropriate (as evidenced by the inclusion of one component of these, agglomeration benefits, in the most recent versions of the NZTA Economic Evaluation Manual), the details of the approach in general are still embryonic and evolving, and some of the components are still the subject of debate.

It is therefore important that the results be considered within this context. It is generally acknowledged that broad benefits may accrue to a project beyond those undertaken in a conventional assessment, and this report simply seeks to outline a framework for identifying those benefits and then reporting on the results of quantifying those benefits in a coherent and transparent manner.

2 Methodology

An economic assessment of the seven RoNS projects as a portfolio that takes into account both conventional and wider economic benefits requires a methodology that is readily understood and can be used for undertaking necessary sensitive testing and scenario analyses.

The series of steps undertaken in this assessment is summarised as follows:

1. Approaches used in other jurisdictions in relation to program level economic assessment and/or the application of Wider Economic Benefits (WEBs) identification and quantification have been researched in relation to the structure or framework used.
2. Assess WEBs associated with the implementation of the RoNS. Two approaches were used (one essentially used as a comparison against the other, that is, they were not used in an additive manner):
 - A regionally-specific WEBs assessment of the regional impacts of each of the RoNS in relation to agglomeration effects and land use changes; and
 - Computable General Equilibrium model (CGE) to estimate the size of the national economy-wide effects.
3. Establishing a portfolio economic assessment framework, incorporating existing conventional cost benefit analysis results and profiles, together with WEB results, using the two approaches described above, for each of the RoNS projects.
4. Preparation and presentation of the results so that the specific impacts of both broader economic impacts and project acceleration can be quantified and reported.

In accordance with the NZTA Economic Evaluation Manual (EEM) guidelines the following parameters were used in this assessment:

- A discount rate of 8% real; and
- An economic assessment period of 30 years from following construction completion of the project (in this case the construction completion of the RoNS portfolio).

All dollars are represented in 2009 dollars unless otherwise stipulated.

3 Wider Economic Benefits

3.1 What are Wider Economic Benefits, or WEBs?

Conventional cost benefit analyses focus mainly on the costs and benefits specific to a project, and are derived from changes in travel conditions including travel time, safety and vehicle associated costs. However, research in recent years has shown that these savings do not always fully capture wider economic impacts, and thus the exclusion of such impacts may raise the risk of less than optimal investment decisions.

The fundamental issues associated with the conventional approach have been the focus on transport model outputs only which distribute existing traffic flows and forecasts between routes and modes. These do not always take into account induced or generated traffic which may occur due to the particular impacts of the project or the second order economic effects which may arise in particular in response to changes in transport accessibility. The extent that the underpinning transport data which 'drives' a conventional approach does not fully capture estimates of changed socio-economic activity in terms of new trips or changes in patterns of economic activity, could be considered to be a deficiency with the conventional approach.

Research in recent years has shown that conventional analysis based on savings in travel time does not necessarily capture all wider economic impacts, and thus the exclusion of such impacts increases the risk of sub-optimal investment decisions. This is where the explicit consideration of WEBs seeks to respond to this deficiency in the conventional approach.

The national significance assigned to the RoNS program presents an opportunity to test an approach where a national road building program may indeed have a materially quantifiable impact on the national economy over and above those captured in individual (and conventional) economic appraisals. In terms of evaluating the value of the portfolio, these broader benefits should be identified and quantified as part of the economic assessment.

In this regard, the agreed definition of WEBs for this purpose is:

"Second order effects on wider economic activity", with examples of WEBs covering agglomeration benefits, labour productivity and supply, and the impacts of imperfect competition. In addition effects at a macro-economic level resulting in GDP changes or more specifically changes in Real Gross National Disposable Income (RGNDI) have been considered.

Two approaches to the evaluation of WEBs have been undertaken. These are:

- WEBs at a regional level using agglomeration and labour market effects; and
- Changes in Real Gross National Disposable Income (RGNDI) using a Computable General Equilibrium (CGE) model.

It should be noted that the outputs from these two methodologies are not considered to be additive to each other but rather demonstrate, through different means, the potential for additional economic benefits/impacts to be accrued to the RoNS program.

3.2 Regional Wider Economic Benefits

Regional WEBs comprise two principal elements not accounted for in conventional economic analysis. These are:

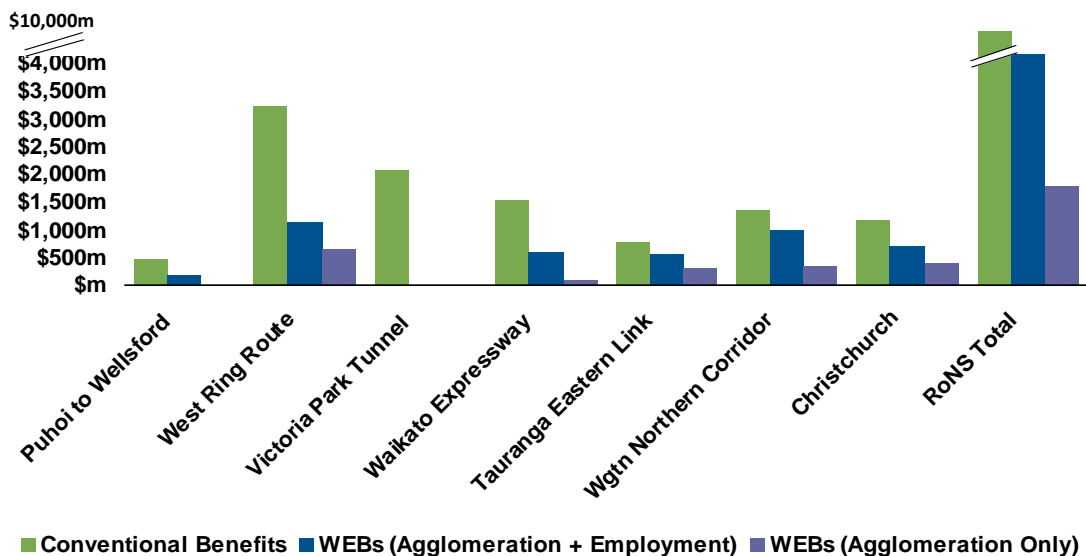
- Agglomeration impacts – the productive advantages that arise from close spatial concentration of economic activity, most likely to arise within major urban areas, and
- The impacts on employment levels experienced both within urban areas and more widely throughout the area of influence of the road project.

An estimate of the regional WEBs that would be generated by the RoNS was undertaken by Richard Paling Consulting.¹ This body of work indicates that such WEBs could amount to additional benefits in the order of 40 per cent of the value of benefits derived from the conventional economic analysis (on a present value basis across the evaluation period). Of these WEBs, the agglomeration benefits were estimated to amount to around 20 per cent or less of conventional economic benefits, a figure that is within the range typically found overseas. The employment impacts are larger but for these there is no typical range in relation to the quantum of these impacts.

While there are issues with the limited data available and with the use of results from different schemes and countries, the findings suggest that the WEBs from the RoNS are likely to be substantial when added to the benefits traditionally calculated for a road project. This result appears to support the priority and importance of the RoNS in improving productivity and raising economic output in New Zealand.

Figure 3.1 provides a comparison of the WEBs results on a present value basis for each of the RoNS projects under two WEBs scenarios – with and without employment effects, and against conventional benefits.

Figure 3.1 Present Value of Benefits – Conventional Benefits and Regional WEBs



¹ The Wider Economic Case for the Roads of National Significance (RoNS), Richard Paling Consulting Consulting, April 2010

Note that WEBs for Victoria Park Tunnel (VPT) were not assessed given that the purpose of this assessment has been to look at the effects of accelerating the RoNS, and as VPT is currently under construction at the time of preparing this report, there would be no incremental effect.

3.3 National Wider Economic Benefits

A computable general equilibrium (CGE) model was used by Infometrics Ltd to estimate national economic and productivity benefits generated by the RoNS program.² CGE is based on a benchmark of the economy based on interactions between economic agents including firms, workers, households, the government and overseas markets. By “shocking” the model, the changes in terms of GDP, employment and wages can be observed.

The main measure of economic welfare used in the CGE modelling is Real Gross National Disposable Income (RGNDI). RGNDI measures the total incomes New Zealand residents receive from both domestic production and net income flows from the rest of the world and adjusts for changes in the terms of trade. The inputs for the CGE model for RoNS includes change in work related travel time, vehicle operating costs and repairs and accident related costs.

For the RONS projects, Infometrics’ analysis using a ‘high’ scenario suggests that the generation of WEBs may be substantial, amounting to about \$1.4 billion per annum in 2020, some 80% increase in benefits over conventional transport related benefits alone.

The main driver of the expansion in economic activity is the enhanced resource productivity of transport-dependent commercial and industrial activities. As less time and money is spent transporting goods between suppliers and consumers as a result of the RoNS, between cities, and between ports and factories, more investment can be directed to increasing other productive assets such as telecommunications, infrastructure, and energy efficient appliances.

Industries that are critical to the economy such as dairy processing, forestry and tourism are key direct beneficiaries of better roads. The second round effects of more investment activity in these areas impact favourably on industries such as construction, base metals and metal fabrication.

Higher wage payments by these industries raise consumer demand, adding further impetus to the economic expansion. Ultimately better roads are considered to provide benefits to virtually all industries.

However, the existence of flow-on economic benefits depends crucially on whether there is an investment response to the potentially higher rates of return that would result from the productivity improvements generated by the RoNS. Without such additional investment, the CGE model forecasts no increase in the value of benefits over that estimated in traditional benefit-cost analysis. International best practice in general equilibrium modelling generally assumes that additional secondary investment does occur as a result of the initial stimulus resulting from the project.

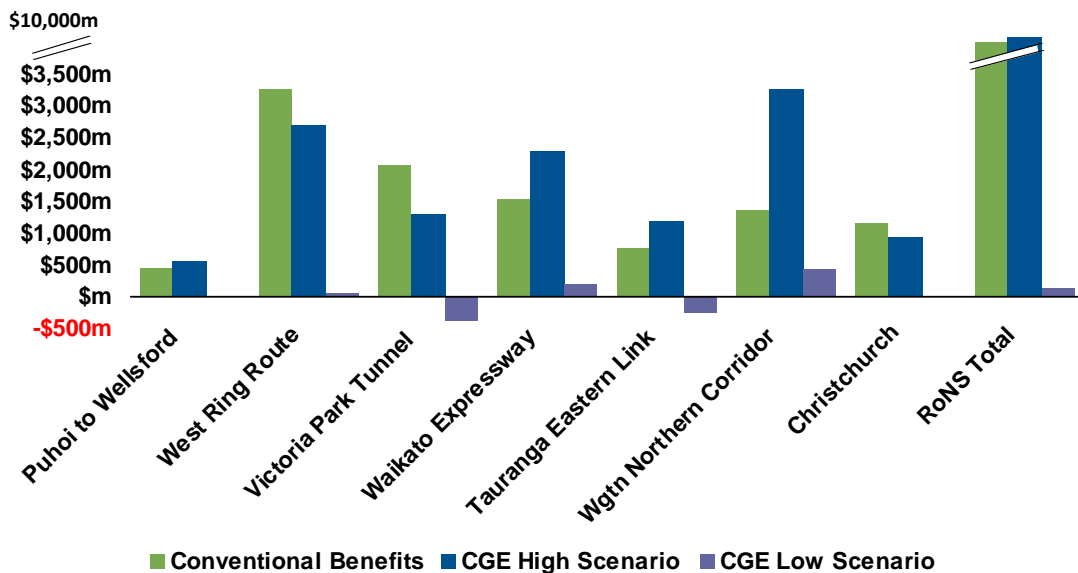
Figure 3.2 demonstrates the CGE output results at an individual project and also the portfolio level. The high and low scenarios are based on the capital closure assumptions, i.e. whether or not there is a secondary

² General Equilibrium Analysis of Roads of National Significance, Infometrics Ltd, December 2009 and May 2010

investment response to the potentially higher rates of return that would result from the productivity improvements generated by the RoNS. With such investment (high scenario) the total value of benefits of the RoNS increases by 80% in 2020 (that is in a single year) over the evaluation period the increase is forecast as 117% over that estimated by traditional benefit-cost analysis on a present value basis. However without such investment (low scenario), the model produces no increase in benefit value in 2020, with the total benefit value is 4% less than the conventional benefits. However, over the full project evaluation period, even under this low scenario, the addition of CGE benefits leads to an uplift of 1% in total benefits over and above the conventional benefits.

It is due to this broad variability in results that the CGE modelling has been used as one of two wider economic assessment approaches (the other being regional WEBS).

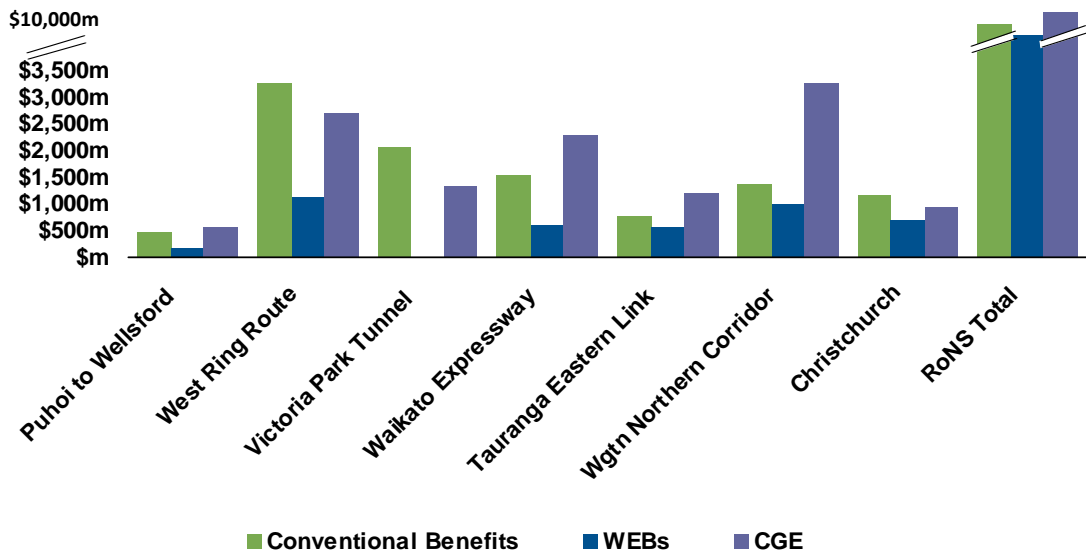
Figure 3.2 Present Value of Benefits – Conventional Benefits and CGE



3.4 Comparison of conventional and wider economic benefits

Figure 3.3 below provides a comparison of the present value of benefits for the aspirational scenario that are generated by the three evaluation methods, i.e. benefits generated by the conventional cost benefits analysis and the high estimates of the regional WEBS and CGE.

Figure 3.3 PV of benefits (Aspirational Program) – Conventional benefits, WEBs (agglomeration + employment), CGE (high estimate)



4 Combining the results

4.1 How are the methodologies used?

The economic evaluation of the RoNS incorporates conventional benefits and costs specific to each project, as well as WEBs which look at regional and national economic impacts.

Conventional economic appraisal assesses the cost and benefits of a project to the community, which are incurred by different stakeholders such as the project proponents, road users and the government.

The WEBs analysis undertaken at a regional level, and CGE model undertaken at a macro-economic level, attempt to capture the wider economic impacts of the RoNS, using two different approaches.

Wider economic costs and benefits have not traditionally been included in conventional cost-benefit analysis. However, there are increasing moves to include these impacts in some way, at least for large schemes. Standard approaches to the assessment of agglomeration impacts are evolving and are now included in the formal guidance for economic evaluation in New Zealand (by the NZ Transport Agency) in line with approaches in other jurisdictions. However the inclusion of employment impacts in conventional economic evaluations is still not conclusive, in part related to the difficulties associated with their estimation and potential double counting effects.

It also should be noted that the relationship between benefits derived from regional WEBs and those derived by the CGE model is at this stage unclear. It is probable that they are not additive to each other, but rather have been treated as two separate sensitivity tests over and above conventional results. It is acknowledged that further work on economic assessment more generally in dealing with WEBs benefits is required in this area.

For the purposes of this assessment, the estimates of both regional WEBs and CGE have been added separately, as a sensitivity test, to the conventional cost benefit analysis of the RoNS portfolio. The intention of adopting this approach has been to produce an indicative single investment measure that can be used to inform decision making with regards to the acceleration of the RoNS program. However the report writers note specific concerns and lack of precedents in adding WEBs and CGE to conventional CBA and emphasise such an approach provides an indicative outcome only and is not intended to be used as a conclusive investment validation tool.

4.2 Cost and benefit comparison of the programs

To assess the economic impacts of an accelerated or aspirational RoNS program, the evaluation results of an indicative aspirational program have been compared against an indicative “base case” or compliant program.

Figure 4.1 and 4.2 illustrates the different cost-benefit profiles of these indicative programs:

Figure 4.1 Cost and Benefit Profile – RoNS Compliant Program

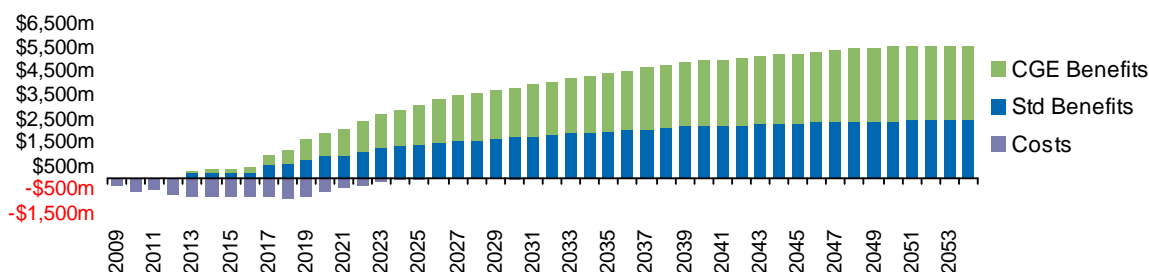
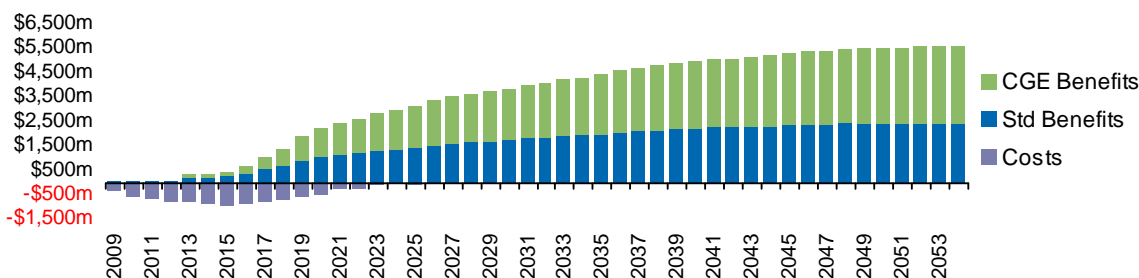


Figure 4.2 Cost and Benefit Profile – RoNS Aspirational Program



The figures show that as construction of the RoNS is accelerated, capital costs are brought forward, and benefits are realised sooner than the compliant program. These two effects (costs brought forward, benefits realised earlier) mean that the overall result of the indicative compliant and aspirational programs are very similar. That is, accelerating the program has little impact on the overall result and therefore is a realistic program delivery option from an economic standpoint. The following sections discuss the economic evaluation outcomes of the compliant and aspirational RoNS scenarios in more detail.

4.3 Measuring the RoNS

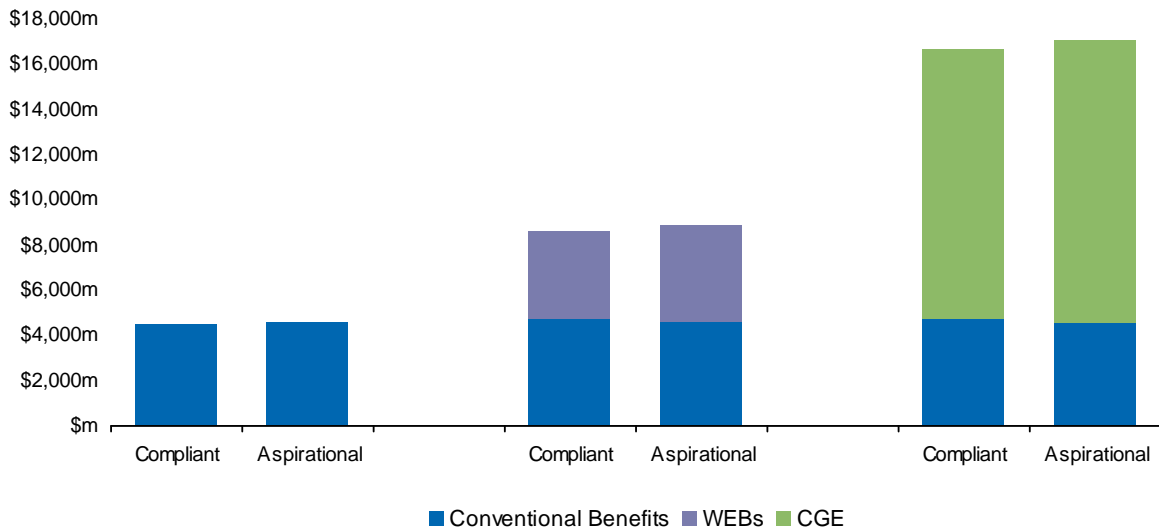
The outcomes of the analysis indicates that under conventional CBA the RoNS portfolio, for both the aspirational and compliant scenarios, delivers positive investment results with an NPV of over \$4.5bn and a BCR of 1.8 (that is, for every \$1 of capital invested, the portfolio generates approximately \$1.80 in return).

Both approaches to WEB estimation indicate substantial *additional* benefits may accrue to the economy from investment in the RoNS portfolio under both the aspirational and compliant scenarios.

Figure 4.3 summarises the results of the economic evaluation for the compliant and aspirational scenarios for the RoNS taken together under **three tests**:

1. Conventional Cost Benefit Analysis;
2. Conventional Cost Benefit Analysis plus regional WEBs; and
3. Conventional Cost Benefit Analysis plus GE benefits.

Figure 4.3 Net Present Value of the Compliant and Aspirational Scenarios



Key conclusions from the above analysis are:

1. The RoNS generate positive economic benefits under a conventional CBA approach;
2. The RoNS are likely to generate substantial *additional* wider economic benefits; and
3. There is not a statistically significant difference between the outcomes delivered by the aspirational and compliant scenarios. While the results indicate that there would not be a major difference to the economic outcome from delivering the RoNS under an aspirational program compared to a longer timeframe, if funds are available to invest sooner, economic benefits generated by the RoNS, both conventional and wider, can be realised sooner.

5 Conclusions

- i. Each Road of National Significance (RoNS) has been subject to a conventional economic assessment by NZTA considering traffic benefits, travel time savings, accident reductions, vehicle operating cost savings, and associated benefits and costs;
- ii. WEBs have also been identified and quantified at both a regional level and a national level, broadly consistent with the use of WEBs in program evaluation in other countries;
- iii. These WEBs are generated by the RoNS program beyond those estimated through conventional economic assessment, and are of relatively considerable scale;
- iv. Conventional assessments undertaken for each RoNS assessed at a portfolio level, indicate that **the RoNS portfolio generates positive economic benefits** with an NPV of over \$4.5bn and a BCR of approximately 1.8 (in other words, for every \$1 of capital invested, the portfolio generates approximately \$1.80 in return);
- v. Estimates of regional WEBs and of national economic and productivity benefits indicate that the **potential exists for further additional benefits to the economy generated by the RoNS** over and above conventional transport economic benefits;
- vi. There is not a materially significant difference between the outcomes of implementing the RoNS under an aspirational versus compliant timetable – the inclusion of WEBs does not change this outcome;
- vii. Notwithstanding this, the results indicate that the total benefits remain larger than total costs for the RoNS portfolio as a whole, whether delivered as an aspirational program or a compliant program;
- viii. The results indicate that there is no major difference in economic outcome in substantially delivering the RoNS within a ten year timeframe (an aspirational scenario) compared to a longer delivery timeframe. **Indeed if funds are available to invest sooner, economic benefits generated by the RoNS, both conventional and wider, can be realised sooner.**