

Treasury / MoT Report: Business Case for the Waterview Connection

Executive Summary

This paper outlines the business case for the Waterview Connection as a tunnel and seeks guidance from Ministers as to next steps.

Background

The Waterview Connection is a proposed extension of State Highway 20 from Mt Roskill to intersect with State Highway 16 at Waterview. The current proposal for the Waterview Connection project is to construct it within twin two-lane tunnels (northbound traffic in one tunnel, southbound in the other), with interchanges at either end. Construction of the Waterview Connection completes the Western Ring Route, a strategic route that links the cities of Manukau, Auckland, Waitakere and North Shore while avoiding SH1 and the Auckland Harbour Bridge.

Cost

The Waterview Connection is estimated to cost \$2.77 billion in 2015 dollars, including the costs of financing the project across the construction period. This is an increase from the published estimate of \$1.89 billion in 2015 dollars. The increase in cost has been driven by increases in scope, input cost increases and the inclusion of the costs of financing the project.

Scope

With the additional traffic volumes that the Waterview Connection brings to the SH16 North-western motorway corridor, it is not possible to integrate the Western Ring Route into the corridor without some form of improvement to SH16. The base Waterview Connection project scope proposes additional lanes in each direction both east and west of the interchange at Waterview.

Two alternative scope options have been considered that could vary this scheme.

- Constructing wider tunnels to accommodate three lanes in each direction. This would add \$390 million to the cost, but traffic modelling suggests that the value of additional benefits would be less than the cost. While we recommend against this option, it could be left for consideration by bidders during any tendering process.
- Addition of State Highway 16 “desirable” works delivers an increase in the benefit cost ratio. However, a decision on this option can be made independently of the Waterview connection decision and should be prioritised under the National Land Transport Programme.

Completion

The published target date for completing the Waterview Connection is 2015. Officials no longer believe that completion in 2015 is possible; however, based on experience from tunnelling projects in Australia, completion in mid-to-late-2016 is likely, with no additional cost.

Economic Evaluation

The benefit/cost ratio for the Waterview Connection in 2015 is 1.15, including financing costs for construction. The benefits overwhelmingly arise from travel time savings and congestion cost savings. The Waterview Connection also has some benefits from reducing volumes of some air pollutants in the vicinity of the project. On the negative side, accident costs marginally increase as a result of constructing the Waterview Connection. Other benefits and costs such as vehicle operating cost savings, CO₂ emission reductions and impact on noise have also been assessed but these are minor. Finally, an estimate has also been made of agglomeration benefits and the economic costs of financing this project from taxation. While both are substantial, they largely offset each other.

A ratio of \$1.15 for every dollar invested means that total social and economic benefits are only a little in excess of the total costs. This is because the high cost of tunnelling relative to surface roads largely offsets the significant benefits of building the Waterview Connection. To put it into context, we note that the Waterview Connection is six to nine times as expensive as a comparable length of motorway at the Mt Roskill State Highway 20 extension and the recently awarded Hobsonville SH18 project.

If the project were delayed by ten years, the benefit/cost ratio is estimated to increase significantly to 1.7.

Contribution to Government Objectives

The project's contribution to the government's transport objectives as expressed in the New Zealand Transport Strategy is mixed. The Waterview Connection delivers strong travel time savings and de-congestion benefits, contributes towards economic development and provides some air pollution reduction. It contributes negatively to the safety objective, negatively to the environmental sustainability objective and neutrally to the access and mobility objective.

Funding

The Waterview Connection could be funded:

- entirely by the Crown;
- through existing user charges or tolling;
- through a regional contribution from the Auckland region; or
- through a mixture of these sources.

Indicatively, at \$2.77 billion, annual payments, either to cover Crown debt or to a private operator through a public private partnership (PPP), would be in the order of \$200 million – \$260 million per annum for 35 years – the maximum term of a concession agreement. Funding the entire project through a single source would place a considerable strain on that source. All sources of funding other than Crown funding or tolling would require the agreement of the Board of the NZ Transport Agency and the Auckland Regional Transport Authority.

Funding the project through the Crown account would create a liability on the Crown balance sheet. The cost of the Waterview Connection would increase the Crown's gross debt by a little less than one percent of GDP. Given that gross debt is already forecast to exceed the Government's target of 20 percent of GDP, Ministers need to consider whether this project is affordable, given its relatively modest net economic benefits if built now.

User funding could be provided through reprioritisation of the current National Land Transport Programme, through increases to fuel excise duty, road user charges and/or motor

vehicle registration or through tolling. Reprioritisation of the National Land Transport Programme in favour of the Waterview Connection would result in significant delays to other projects currently advancing through their design and construction phases. Reprioritisation would also require decisions of the NZ Transport Agency Board and the Auckland Regional Transport Authority.

Toll modelling suggests that a toll of \$2 would support around \$410 million of debt. However, it would cause significant traffic diversion. We estimate that a toll of this size would reduce economic benefits by \$395 million. It would reduce the benefits of the project to just \$1 for every dollar invested. This compares with a cost of general taxation of around 20c for each dollar of revenue. Consequently, tolling may not prove a viable funding option for the Waterview Connection.

Regional funding could be undertaken in a similar manner to that used for the Wellington Western Corridor, whereby the Crown appropriated a sum of funding as a contribution and required the region to identify the capital improvement desired and a method for funding the cost. Possible regional sources of funding for the Waterview Connection could include regional fuel tax and/or local or regional rates.

Procurement Method

The method of procurement for the Waterview Connection should be selected based on the objectives the Government wishes to achieve with the procurement and the selected funding methods. The Waterview Connection Procurement Steering Group found that, subject to critical success factors being met, a PPP was likely to deliver greater value for money when compared with the most efficient traditional procurement method. Further consideration of the particular circumstances of the Waterview Connection suggests that the benefits of a PPP could be modest. They may be outweighed by the disadvantages of being locked into a long-term contract.

Project Governance

Officials have identified a number of governance issues that need further investigation before options can be provided to Ministers, however, these issues do not need resolution for Ministers to make decisions on the contents of this paper.

Recommended Action

We recommend that you

- a) **note** that the current estimated cost of the Waterview Connection project and associated necessary work on State Highway 16 is approximately \$2.77 billion in 2015 dollars (including finance costs);
- b) **note** that the Benefit / Cost Ratio for the Waterview Connection is currently 1.15;
- c) **agree** to meet with officials from the Ministry of Transport and the Treasury to discuss this report; and
- d) **note** that, following our meeting, officials will report to you with a suggested work programme or next steps.

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Ministry of Transport

Hon Bill English
Minister of Finance

Hon Steven Joyce
Minister of Transport

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Referred: Yes/No

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Purpose of Report

1. The purpose of this report is to seek guidance on the project scope, business case and procurement issues for the Waterview Connection project. Specifically, the report:
 - assesses the economic return and its contribution to government transport objectives of the Waterview Connection;
 - identifies potential funding sources for the Waterview Connection; and
 - assesses arrangements for its procurement under a concession agreement (often referred to as a public private partnership or PPP).
2. If Ministers wish to proceed with the project, the next step would be for officials to draft a paper to seek a Cabinet commitment to the construction of the Waterview Connection and approval to proceed with the preparation for the tendering process.

Background

3. The Waterview Connection is a proposed extension of the Auckland motorway network from State Highway 20 at Mt Roskill to State Highway 16 at Waterview. The project completes the final five kilometres of a 48 kilometre Western Ring Route motorway that links Manukau, Auckland, Waitakere and North Shore Cities and bypasses the Auckland City Centre.
4. On 18 August 2008, the Cabinet Business Committee [CBC Min (08) 22/18] agreed to a work programme to further consider the procurement of the Waterview Connection as a PPP, starting with a report-back by 28 November 2008 on:
 - a business case for the Waterview Connection;
 - the use of a PPP;
 - the physical project scope;
 - high level project objectives;
 - potential sources of funding;
 - tolling process (if applicable);
 - the establishment of an implementation team to deliver the PPP;
 - a confirmed funding commitment.

Map One: General Waterview Connection Alignment



Physical scope

5. The current proposal is to construct this linkage as a tunnel underneath the suburbs of Avondale and Waterview. Also proposed is the addition of further lanes to State Highway 16 where it connects with the new Waterview route.
6. Officials from NZ Transport Agency (NZTA) have undertaken work to update the cost estimate for the Waterview Connection. To date, the cost of the project has been estimated and escalated to 2015, the original estimated date of completion, in order to provide cost estimates to stakeholders at a constant point in time. The publicly announced cost of the Waterview Connection in August 2008 was \$1.89 billion in 2015 dollars. Officials now estimate that the cost of the Waterview Connection will be \$2.77 billion in 2015 dollars¹ – an increase of some 47 percent. This cost increase is made up of increases in scope, input cost increases and the inclusion of the cost of financing the project across the construction period.

¹ \$2.77 billion includes an estimate of the cost of financing the project through the construction period and an escalation factor of three percent to give costs in 2015. If costs rise at a faster rate, the overall cost will rise.

7. There are two main scope options for the current (tunnelled) proposal:
 - twin two-lane versus twin three-lane tunnels: the Waterview Connection can be constructed as twin two-lane tunnels (two lanes in each direction) or twin three-lane tunnels (three lanes in each direction). The twin three lane option adds \$390 million.
 - Additional works on SH16: construction of the minimum necessary works on SH16 to enable it to accommodate the additional traffic that the Waterview Connection will funnel into SH16. These works have not previously been included in the scope or cost estimates for the Waterview Connection. They entail adding an additional lane in each direction on SH16 in the vicinity of the Waterview Connection interchange and raising this section of the causeway to avoid the periodic inundation from sea waves, suffered due to the low lying nature of the causeway.
8. Other additions to the scope of the Waterview Connection that have been investigated but not advanced include further works to SH16. Expanding the width of causeway to five lanes in each direction as well as various lane additions further westward to Hobsonville and eastward to St Lukes adds additional benefit, at a cost of \$390 million. This work can, however, be progressed independently of the Waterview Connection through the National Land Transport Programme.
9. While there is some requirement for the alignment of the Waterview Connection to go either above or below two rail corridors – one existing and one possible – the proposal to tunnel has primarily been advanced by the NZTA to avoid developed residential areas and to resolve environmental mitigation requirements at the request of submitters during public consultation processes.
10. Not advancing the Waterview Connection, and alternative options and alignments have also been considered, and to date, not advanced. Given the significant increase in the cost of the project, previously dismissed options could be considered further, including reaffirming that alternative alignments are still inferior to the Waterview alignment and do not offer greater value for money.

Project objectives

11. NZTA's project objectives for the Waterview Connection project are as follows.
 - To contribute to the region's critical transport infrastructure and its land use and transport strategies² by providing a connection between SH16 and SH20 for people and freight.
 - To improve accessibility for individuals and businesses by improving access from the western part of the Auckland Isthmus and Waitakere City to the rest of the Auckland region.
 - To align traffic types and movements with the most appropriate routes by separating through traffic from local traffic and the residential areas within the Southwestern corridor.
 - To improve network resilience by acting as an alternative to the existing SH1 corridor through the greater Auckland area, linking North Shore, Waitakere, Auckland and Manukau cities.
 - To improve mobility choices within the wider Auckland region by creating opportunities for improved public transport, cycling and walking on the regional arterial routes.

² Land Use and Transport Strategies include the Auckland Regional Growth Strategy, National Land Transport Plan, Auckland Regional Land Transport Strategy, Southwestern Transport Corridor Study and other strategies and plans prepared by relevant statutory agencies for future land use and transport development and management within the Auckland Region.

Preferred date for completion

12. The public date for completing the Waterview Connection is 2015. Completion by 2015 is not an optimised completion date in terms of the economic contribution gained by constructing the Waterview Connection, but the earliest estimated completion date from the point at which the previous administration sought to advance the priority of the Waterview Connection.
13. Officials from the NZTA do not believe that completion in calendar 2015 is now possible without a shortened construction period and a fast procurement process. Both of these methods for achieving a 2015 completion add risk and cost to the project, with no economic benefit. Accounting for the finance cost saving from a shorter construction period, officials estimate that accelerating construction for a 2015 completion would add costs of approximately \$62 million.
14. Based on experience from tunnelling projects in Australia, officials believe that the Waterview Connection could be completed in mid-to-late 2016 at no additional cost to the estimate above.

Economic assessment

15. The economic benefits and costs of the Waterview Connection include the following:
 - travel time savings;
 - congestion benefits (road users value reductions in frustration due to traffic congestion over and above the benefits gained from travel time saving. Congestion also gives rise to additional vehicle operating costs.);
 - trip reliability (users value being able to rely on the time it takes to complete a journey);
 - vehicle operating benefits (a shorter distance means lower vehicle costs);
 - accident costs (a better and shorter road means fewer accidents, but faster speeds means accidents are more severe);
 - carbon Dioxide emission benefits (shorter travel distance means lower emissions. This is partially offset by increased traffic due to a better road);
 - construction costs;
 - operating and maintenance costs over 30 years.
16. In addition, an estimate has been made of:
 - “wider economic benefits”, in particular agglomeration externalities. Agglomeration externalities are economic benefits that workers and firms derive from increased density and accessibility of population and firms, and which are not captured by road users. The NZTA estimates that the proportion of these benefits over 30 years, not captured in traditional benefit cost analysis, are worth around \$607 million in 2015 terms. This could represent around 15 percent of total project benefits.
 - “deadweight cost of taxation” - which are the costs to the wider economy arising from having to impose taxation. They only arise to the extent a project is funded from a tax source. They arise from the efforts made by taxpayers to avoid a tax or changes in consumption or investment as a result of a tax. Based on a study carried out for the New Zealand Treasury, these costs have been estimated at 20 cents per dollar of tax raised.

17. These latter two elements are more difficult to estimate and are not usually included in orthodox cost benefit analyses. Nevertheless, they are valid concepts and a literature is developing around the methodologies to be employed in measuring them. We consider that they should be taken into account, although the greater uncertainty around their magnitudes should be recognised.

18. The benefit to cost ratios of the main options are summarised in Table 1.

Table 1: Benefits and costs of various options

Main Options	Cost³	Benefit/cost ratio
Twin 2-lane tunnels including minimum necessary widening of SH16		
(i) Un-tolled	\$2.77 bn	1.15
(ii) Un-tolled, deferred to 2025	\$2.77 bn	1.7
(iii) Tolled (Balance, \$2)	\$2.36 bn ⁴	1.0
Twin 3-lane tunnels including minimum necessary widening of SH16		
(iv) Un-tolled	\$3.16 bn	1.13

19. The benefits arising under all options are overwhelmingly (over 95 percent) comprised of travel time and congestion relief benefits. Other benefits include improved trip reliability, vehicle operating costs and reduced carbon dioxide emissions. While crash risk is reduced, safety benefits are negative due to increased total vehicle hours arising from induced traffic. The benefit cost breakdown for the twin two-lane tunnels including minimum necessary State Highway 16 works (option (i) in table 1), is set out in Table 2.

³ In 2015/16 terms. Includes financing costs for construction, but not ongoing operations and maintenance costs. The present value (to 2015/16) of operations and maintenance costs was added to calculate the benefit cost ratio.

⁴ Cost to government after deducting capital that can be financed from the toll.

Table 2

	\$m (in 2015/16 terms)
Benefits	
Travel time savings	\$2,620
Congestion cost savings	\$690
Trip reliability benefits	\$100
Vehicle operating cost savings	\$40
CO ₂	\$3
Noise, air quality	\$0
Total benefits	\$3,452
Costs	
Construction costs (incl. financing to 2015)	\$2,770
Increased accident costs	\$79
Operations and maintenance costs	\$141
Total costs	\$2,991
Ratio of benefits to costs (conventional method):	
	1.15
Wider economic benefits and costs	
<i>Agglomeration benefits</i>	\$607
<i>Less deadweight costs of taxation</i>	-\$582
<i>Total</i>	\$25
Ratio of benefits to costs including wider benefits and costs:	
	1.16

20. A ratio of \$1.15 or \$1.16 of benefits for every \$1.00 invested means that total social and economic benefits only marginally exceed total costs. This is because the high cost of tunnelling relative to surface roads largely offsets the otherwise significant benefits of building the Waterview Connection.
21. By comparison to the adjacent Mt Roskill SH20 project and the recently awarded Hobsonville Deviation Project to realign and improve SH18, the Waterview connection is six to nine times more expensive per lane kilometre than these more traditional surface alignments. However, it still has a positive cost benefit ratio, which is indicative of the high strategic value of the project.
22. The ratio of benefits to costs improves significantly to a figure in the order of 1.7 if the project is delayed by ten years to completion in 2025. This is because the costs remain the same in real terms while the benefits are further increased as a result of likely increased congestion.

Policy assessment

23. The New Zealand Transport Strategy 2008 (NZTS) sets out the government's long-term vision for transport in New Zealand, along with five objectives for transport. Under each broad objective are a series of transport targets that support the delivery of the objectives and provide a focus for the government's actions in the transport sector.
24. The NZTS vision and its objectives provide a framework for considering the contribution made by the construction of the Waterview Connection, and this approach is consistent

with that taken by the NZTA to assess transport projects funded through the National Land Transport Fund.

25. The Waterview Connection project (SH20 twin two-lane tunnel plus acceptable SH16) makes a mixed contribution to the achievement of the NZTS objectives. The Waterview Connection:
- contributes positively to the economic development objective, by reducing travel times and reducing congestion;
 - contributes neutrally to the access and mobility objective, because it will not directly increase public transport use or walking, cycling or other active modes, though it does provide the potential for some improvement (discussed below);
 - contributes negatively to the safety objective, by increasing the speed of traffic and the severity of potential injury;
 - contributes marginally positively to the public health objective by decreasing exposure to air pollution; and
 - contributes negatively, on balance, to the environmental sustainability objective because whilst it marginally reduces CO2 emissions and will include indigenous vegetation planting, the project induces some additional vehicle trips, will not reduce single occupancy vehicle travel and does not contribute towards targets for increasing freight movement by coastal shipping and rail.
26. Officials from the NZTA are working with Auckland local authorities to develop an integrated package of projects that can take advantage of the construction of the Waterview Connection to advance a number of public transport, walking and cycling projects. These projects would serve to improve access and mobility for walkers, cyclists and public transport users in the south western corridor. However, a commitment to developing and funding these additional projects is yet to be confirmed by local authorities.
27. Some of the potential access and mobility benefits generated by constructing the Waterview Connection will be lost if the additional capacity generated after traffic is moved into the Waterview Connection is not transferred to alternative uses, such as bus priority and walking and cycling improvements.

Funding sources

28. In the event that the business case for advancing the Waterview Connection as a public private partnership (PPP) is considered favourably, Ministers will need to decide whether funding is available.
29. One option would be to fund the project entirely through the Crown account. Alternatively, some or all of the funding could be sought from road users, the Auckland region or a mixture of all funding sources.
30. Funding the entire project from any single source would place a considerable strain on that source, making a combination a more feasible approach to take. All the sources of funding other than Crown funding or tolling require agreement from the Board of the NZTA, Auckland Regional Transport Authority (ARTA) or both. To date, neither the Board of the NZTA nor ARTA have indicated that they view the Waterview Connection as a priority project within existing funding levels.
31. Options for regionally sourced funding have not been explored to date. Obtaining agreement to regionally sourced funds for the Waterview Connection would most likely

involve a delay in the project. Most of the alternative funding sources would also require legislation to a greater or lesser extent, or issuing a new Government Policy Statement.

32. Given the high cost of this project, developing the project for completion in 2015 will create some significant opportunity costs for other projects, no matter what the source of funding. The level of debt associated with the Waterview Connection may make it difficult to fund other strategic transport projects that may be considered in the future, such as the Auckland CBD rail loop or the additional Waitemata Harbour Crossing.
33. If Ministers propose to investigate shared funding options with the region, and ARTA and/or the Board of the NZTA confirm that the Waterview Connection is not a priority project under the current strategic framework and that they cannot or will not make a funding contribution, extending the timeframe for completing the project may be further justified.

Crown funding options

34. Funding the Waterview Connection through the Crown account would create a liability on the Crown balance sheet. Assuming a 2015 cost of \$2.77 billion, annual payments would be in the order of \$200 million – \$260 million per annum for the 35 years of the concession.
35. The cost of building the Waterview Connection would increase the Crown's gross debt by a little less than one percent of GDP. Given that gross debt is already forecast to exceed the Government's target of 20 percent of GDP, Ministers need to consider whether this project is affordable, given its relatively modest net economic benefits if built now.
36. This option may create a precedent for other regions that are seeking to advance unfunded strategic transport projects.

User funding options

37. Some or all of the funding required could be sought from road users by reprioritising existing revenue streams, by increasing existing revenue streams, or by new revenue streams, such as tolling.
38. The Waterview Connection could be funded through a reprioritisation of projects in the National Land Transport Programme. Under existing legislation, this would require ARTA to prioritise the Waterview Connection in its Regional Transport Plan. Final funding approval would also be dependent on the Board of the NZTA, which would need to be satisfied that funding the construction of the Waterview Connection was consistent with its statutory objectives.
39. It is not clear that ARTA would prioritise the Waterview Connection ahead of the projects currently programmed for advancement in Auckland. Prioritising the Waterview Connection would be likely to result in significant delays to projects currently advancing through the design phase and scheduled for construction or completion in 2015 or later.
40. The opportunity cost of allocating any significant amount of revenue from the National Land Transport Fund to the Waterview Connection would be that the development of other projects in Auckland and in other parts of the country would have to be delayed.
41. Additional Fuel Excise Duty (FED) and Road User Charges (RUC) could be levied to contribute towards the cost of the Waterview Connection. Transport officials estimate that a one cent per litre increase in FED and a RUC equivalent increase would raise approximately \$50 million per annum nationwide.
42. Following the passing of the Land Transport Management Amendment Act 2008, all FED, RUC and motor vehicle registration is directed into the National Land Transport Fund. Consequently, as with reprioritisation of existing revenue discussed above, for any

additional fuel levies to be used to fund the Waterview Connection, ARTA and the Board of NZTA would have to approve the project.

Tolling

43. While the Waterview Connection will provide travel time savings of around 15 minutes for through traffic, a great deal of traffic that will use the Waterview Connection will be local traffic that will detour through the tunnel to achieve much smaller time savings. For this traffic, staying on the local roads is an easy and free alternative. As a result, a toll would create a significant level of traffic diversion back onto local roads, especially at off-peak travel times.
44. Traffic modelling suggests that up to 50 percent of users would be diverted from the road if a \$2 toll were imposed. A \$2 toll would support around \$410m of debt, but the diversion would mean the loss of economic benefits worth an estimated \$393 million. (The revenue-maximising toll is approximately \$3 per vehicle, which would support approximately \$470 million of debt in total, or approximately 17 percent of the total project cost.)
45. Incurring \$393 million in economic costs to finance \$410 million in debt is equal to an economic cost of nearly 96c for every dollar raised. This compares with an estimated 20c in economic costs incurred for every dollar raised through general taxation (income taxation or GST). Therefore, we recommend against the use of a toll in this circumstance.

Regional funding options

46. The approach taken with Wellington's Western Corridor could be considered a model for funding the Waterview Connection. For Wellington's Western Corridor, the Crown has appropriated a sum of funding for a "Western Corridor solution" (\$405 million). This funding is available to the region through the NZTA subject to the remaining funding for the chosen capital improvement being identified by the region itself.
47. A similar approach to the Waterview Connection could see approximately one-half to three-quarters of the cost of the project made available from Crown funding sources, with the region required to make up the difference if the project is to advance. This would put at risk the completion date for the project due to the need to determine how the region would raise the necessary revenue and how it would be implemented.
48. An advantage of this approach is that it would require the Auckland region to prioritise the Waterview Connection ahead of other land transport improvements and consequently reveal the region's relative priority for the project. It would also require the region to contribute towards the cost. The Ministerial Advisory Group on Roading Costs identified this as one way to manage the cost of scope changes.
49. It must also be noted that regional funding could delay the project as the funding arrangements would need to be complete before a decision is made to proceed with the project. More importantly, funding commitments should be confirmed before announcements are made on the use of a PPP mechanism, or the impetus for the region to resolve the funding shortfall would likely be lost.
50. A number of potential regional sources of funding are explored below in further detail.

Regional fuel tax

51. Auckland is the first region to implement a regional fuel tax. The Government and the Auckland region have already reached agreement on 9.5 cents of the maximum permissible 10 cents per litre. Since this only leaves 0.5 cents per litre of additional regional fuel tax revenue available for an additional project, such as the Waterview

Connection, it would be necessary to get the region to agree to a further substantial increase in the regional fuel tax.

52. Indicatively, 1 cent per litre of the regional fuel tax in Auckland would raise approximately \$10 million – \$12 million per annum, which would support approximately \$150 million of debt. If the existing scheme were to be used to fund the Waterview Connection, only \$5 million – \$6 million per annum would be available.
53. If the region were to be asked to fund a quarter of the cost of the Waterview Connection, for example, then new legislation would be required enabling the region to enact an additional regional fuel tax of a further 5 cents per litre.
54. An additional regional fuel tax may create arbitrage problems at the borders of the Auckland region if adjacent regions choose not to implement their own regional fuel tax scheme. The fuel price differential between regions would be up to 15 cents per litre if the Waterview Connection were to be funded through an additional 5 cents per litre regional fuel tax, which may increase the risk of regional fuel tax avoidance.

Regional property tax

55. The Auckland Regional Council already has the ability to levy a regional property tax, which could be implemented for the purpose of funding the Waterview Connection. This would require the agreement of the region. Alternatively the government could enact a regional property tax to be collected by the region, given its existing rates collection systems.
56. A very early estimate of regional property taxes suggests that a rate of approximately \$460 per year per dwelling would be required to fund the costs of the Waterview Connection, which would amount to an approximate 20 percent increase in the average rate (local and regional rates) in Auckland.
57. Officials note that Auckland local authorities have in the past proven unwilling to increase local rates revenue to fund passenger transport improvements. If Ministers wish to explore shared funding options, officials will report back to Ministers with proposals for engagement with the Auckland region to investigate these issues further.
58. Existing rating legislation creates some limits on the level at which targeted rates can be levied. General rating powers include specific provisions about transparency of expenditure that could be problematic if rates are to be levied for a project as expensive as the Waterview Connection. If Ministers would like to investigate a regional contribution further, officials will provide additional information on the levels of revenue that could be expected to be raised.

Procurement options

59. The preferred procurement method depends on the Government's objectives and the methods to be used to fund the project. If the main objective is to:
 - Commence the project as soon as possible: An alliance contract arrangement can give the earliest commencement to design and construction. Under an alliance contract, the contractor is selected first and the price negotiated later. Risks are shared and managed jointly. The main disadvantage of an alliance contract is that the cost is likely to be higher.
 - Procure in the traditional way: a "Design & Construct" (D&C) is a conventional procurement method understood by the industry. Some risks remain with the client and final cost can be uncertain until the contract is completed. As a result, there is a perception that D&C contracts often result in cost blow-outs. The practice of making

progress payments reduces the incentives of the contractor to complete the project early or on time. As a result, D&C contracts can go over time and cost more.

- Ensure that the project is completed on time and within budget: Both a fixed price / turnkey contract and a concession agreement (often referred to as a PPP) are most likely to achieve this. Both methods allocate risks to the party that can best manage them. The main disadvantage of a fixed price / turnkey contract is that it requires tougher negotiating than the public sector is used to (both in New Zealand and Australia). The main disadvantage of a concession agreement is that the long-term contract reduces the government's future policy choices.
- Avoid or defer the fiscal cost of the project: The only way to achieve this is if the project is toll-financed under a concession agreement. If the project is not tolled then under a concession agreement the government will have a liability to make regular payments over 35 years, which for accounting purposes are treated the same way as the interest that is payable on government debt.
- Maximise value for money: the Steering Committee led by Sir Brian Elwood reported in June that a concession agreement (PPP) is on balance more likely to provide value for money than the other procurement methods⁵. It noted that the main disadvantage of a concession agreement is that the government is locked into a long-term contract, which will make it more difficult for future governments to change management arrangements for the Waterview Connection.

60. The Waterview Connection Procurement Steering Group found that, subject to a series of critical success factors being met, procuring the Waterview Connection as a PPP is likely to deliver greater value for money than the most efficient traditional procurement method.

61. They noted that the factors critical to the success of a PPP procurement process were:

- unequivocal public sector commitment to the project in terms of funding, process and timeline;
- clear project objectives to guide the development of tender documentation and bids;
- adequate public sector resources and clearly defined roles; and
- confirmation that there will be sufficient bidders to ensure adequate competition in bidding for the project.

62. Further consideration of the particular circumstances of the Waterview Connection, including the fact that we are recommending against tolling, suggests that the value for money advantages of a concession agreement are likely to be relatively small, for the following reasons.

- The scope for saving costs by optimising construction against operation and maintenance costs is relatively small given that operation and maintenance represent less than 5 percent of total costs.
- The incentives to increase user benefits by finding innovative ways of increasing the attractiveness of the project, and therefore traffic volumes, is limited by the absence of a toll. (Incentives to innovate can be provided in the absence of a toll under any procurement method, by including appropriate selection criteria in the tender evaluation process, but the effectiveness is likely to be less.)

63. Whether a concession agreement (PPP) is preferred on value for money grounds therefore depends on the extent to which there is a concern about the lock-in effect of a

⁵ By maximising value for money we mean maximising the benefits relative to the costs. This can be achieved either by a lower cost, or by increasing the benefits provided by the project, or by a combination.

40 year contract⁶. If it is thought that there is a significant risk that a future government will want to change the way the Waterview Connection is managed, then one of the other procurement methods may be preferred.

Proposed performance measurement and payment mechanisms for a PPP

64. We expect that the concession agreement will link the government's annual payment for the Waterview Connection over 35 years to successful delivery of lane availability, traffic flow performance, asset condition, and safety performance indicators. Payments would be abated at an agreed rate for failure to meet these performance measures. Shadow tolls where payments are linked to traffic flows are not envisaged at this stage, as they either create significant fiscal and political risk for government, or if they are designed to avoid those risks they become ineffective. If a decision to proceed with a PPP for Waterview is made then we propose to report further on possible measures in April 2009.

Project governance arrangements

65. Existing legislative provisions can be used to advance the Waterview Connection as a PPP should Ministers wish to do so. Officials have identified a number of governance issues, however, that will need further investigation before options can be provided to Ministers for further assessment and selection. These issues do not need resolution for Ministers to make high level decisions now on funding and scope options for the Waterview Connection.

66. Officials from the Ministry of Transport and the Treasury will report back to Ministers on options for project governance as part of the future work programme.

Quality assurance

67. In 2007 the Cabinet approved the use of a "Gateway Review Process" for quality assurance of large state sector projects. This United Kingdom-based methodology is also a standard component of the Partnerships Victoria procurement methodology. The Waterview Connection fits the criteria for application of the gateway process. It is proposed that the Waterview Connection proceeds through appropriate gateway steps before the proposed report-back to Ministers and Cabinet in April 2009.

Initial project funding

68. Government's administrative costs are expected to be substantial given the financial scale of the project, especially if it is decided to use a procurement method that is largely new to the New Zealand construction procurement environment. Substantial external legal, financial and engineering consultancy advice will be required. Significant international experience is available, however, and wherever possible these established processes should be used.

69. If the Waterview Connection is advanced through a PPP procurement process, the main tasks from now through to the time of the proposed invitation for expressions of interest in July 2009 which require funding above existing departmental provisions include:

- engagement of the Crown's project team including commissioner, project director, procurement team and probity auditor;
- development of expressions of interest and tender documents including detailing of principal's requirements.
- market testing discussions; and
- statutory approvals and land purchases.

⁶ The LTMA specifies a maximum of 35 years from when the road becomes open to the public, which together with a 5 year construction period means a 40 year contract.

70. The project, from last quarter 2008 to contract signing in the first quarter of 2011, is estimated to require approximately \$30 million for procurement and \$90 million for property purchase costs to a total of \$120 million. It is envisaged that if the project proceeds, property purchase and investigation costs of \$7.5 million already incurred though the National Land Transport Programme would be reimbursed from the Crown account.
71. If a decision is made to proceed then we propose that Cabinet be asked for an initial appropriation of \$60 million through Vote Finance, with the balance being sought when we have to hand more accurate information about project costs.

Communications

72. The previous Minister of Transport noted that she expected officials to report back to her on the advancement of the Waterview Connection by the end of October or early November 2008.
73. Given the public expectation of progress on the development of the Waterview Connection by the end of 2008, officials believe that it would be helpful for the Ministers of Finance and Transport to make a public statement regarding progress on the assessment of the Waterview Connection. Ministers could note that they have asked officials to undertake additional work to enhance the assessment of the value for money of proposals for the Waterview Connection, and note that they have sought an amended work programme to be delivered in April 2009.
74. Officials will draft a press release should Ministers wish to make a public statement about the Waterview Connection project.

**Attachment One: AW Options: Connect SH20 to SH16 at Waterview Interchange
Summary of Options by Scope and Cost**

Option Number	Construction	Initial Lane Capacity	Maximum Lane Capacity	Central Interchange Connectivity	Expected Cost 2008 (\$m's)	Escalated cost 2015 (\$m's)	Evaluation
1	Bored Tunnel (2x2)	4 lanes	4 lanes	No central interchange	\$1,752	\$2,005	NZTA Preferred Option
2	Bored Tunnel (2x3)	6 lanes but could be operated as 4 lanes with priority lanes	6 lanes,	No central interchange	\$2,039	\$2,335	Continues to be evaluated
3	Cut and Partial Cover	4 lanes	4-lane north of central interchange and 6 lanes south of central interchange	South facing ramps only.	\$1,582	\$1,790	Evaluated against tunnel and considered to have higher social and environmental impacts
5	Cut and Partial Cover	4 lanes	6 lanes	Full central interchange	\$1,604	\$1,813	Not shortlisted. Full interchange not considered necessary in traffic benefit terms
6	Cut and Extended Cover	4 lanes	4-lane north of central interchange and 6 lanes south of central interchange	South facing ramps only.	\$1,882	\$2,134	Evaluated against tunnel and considered to have higher social and environmental impacts
7	Cut and Extended Cover	4 lanes	6 lanes	South facing ramps only	\$1,968	\$2,234	Evaluated against tunnel and considered to have higher social and environmental impacts
8	Cut and Extended Cover	4 lanes	6 lanes	Full central interchange	\$1,877	\$2,128	Not shortlisted. Full interchange not considered necessary in traffic benefit terms
9	Cut and Extended Cover	4 lanes	4 lanes	No central interchange	\$1,755	\$1,988	Compares in scope to 2x2 tunnel, but has higher social and environmental impacts
10	Cut and Extended Cover	4 lanes	6 lanes	No central interchange	\$1,943	\$2,205	Compares in scope to 2x3 tunnel, but has higher social and environmental impacts
11	Open Cut	4 lanes	4 lanes	No central interchange	\$1,303	\$1,456	Not shortlisted. Comparative functionality to 2x2 tunnel, but does not meet stakeholder requests to maximise 'undergrounding'.
12	Open Cut	4 lanes	6 lanes	South facing ramps only	\$1,407	\$1,585	Not a shortlisted option. Does not meet stakeholder requests to maximise 'undergrounding'.

Note: All Waterview Connection options require capacity improvement works to SH16 of approximately \$240million in 2015 dollars in addition to the figures in this table

**Table 2: AR Options: Connect SH20 to SH16 at Patiki Road Interchange
Summary of Options by Scope and Cost**

Option Number	Construction	Initial Lane Capacity	Maximum Lane Capacity	Central Interchange Connectivity	Expected Cost 2008 (\$m's)	Escalated cost 2015 (\$m's)	Evaluation
AR1	Open sections, Cut and cover, bridge sections and elevated sections	4 lanes	6 lanes south of central interchange	South facing ramps only	\$2,544	\$2,877	Eliminated in 2005/06 largely on cost grounds.
AR1 No Waterview link	Open sections, Cut and cover, bridge sections and elevated sections	4 lanes	6 lanes south of central interchange	South facing ramps only	\$2,308	\$2,605	Not a shortlisted option as it did not meet prevailing Project Objectives