

SH1 Wellington RoNS Programme Update

Board Workshop

22 August 2024

Purpose of this Session

Purpose of this session is to:

- Present and discuss work undertaken in 2024 on the SH1 Wellington RoNS scope
- Receive feedback from the Board prior to advice being provided to the Minister (by end of August 2024) on next steps for this work.

Overview of Work Undertaken in 2024

Following previous initiatives to investigate options for state highway upgrades in Wellington, the Minister for Transport asked NZTA to investigate the Long Tunnel option before confirming the scope of the Wellington RoNS.

To do this, starting in January 2024, we undertook preliminary investigation of the Long Tunnel option to confirm **technical feasibility** to enable a comparison with the duplicate Mt Victoria Tunnel (Diagonal and Parallel) options; and

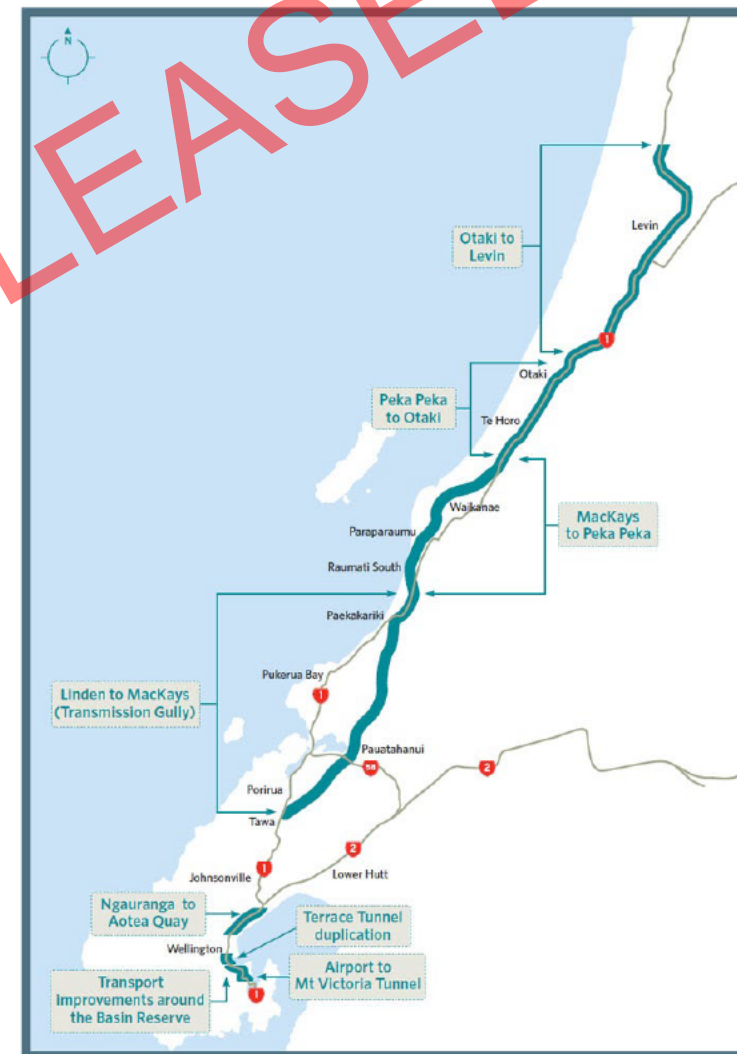
Through a value for money assessment of the Long Tunnel a third/middle option was brought forward based on the previous RoNS programme. As a result of being included later, this option has not been evaluated to the same level of detail as the other options.

The material findings of this work was that:

- The Long Tunnel is technically feasible and has an indicative cost of \$5.2 bn to \$7.6 bn (\$2024 including contingency) and a BCR of 0.3-0.7.
- The Basin and Parallel Tunnel option has an indicative cost of s 9(2)(ba)(ii).
- The Middle option has an indicative cost of s 9(2)(ba)(ii).
- s 9(2)(ba)(ii).
- The options create varying levels of opportunity for WCC and GWRC to invest and implement in complementary activities to enhance outcomes and benefits.

Strategic Setting

- The Wellington region has a population of 550,000 and is growing. There is still uncertainty about the quantum and location of growth, with forecasts ranging between 11% and 35% over the next 30 years. All scenarios will result in increased travel demand into Wellington City.
- As the capital city, Wellington is a significant contributor to New Zealand's economy. In 2023, the economy of Wellington city grew 0.7%, even though GDP nationally dropped by 0.2%. Future economic growth and productivity will be compromised if access between the region's airport, port and the central city continues to decline.
- Improvements to SH1 to improve the capacity and efficiency through the city centre have been considered for decades. In 2013 the RoNS programme included several activities to improve the capacity of SH1. Subsequently, Let's Get Wellington Moving also included some highway improvements to manage increased movement of people and freight.
- Consistent to these previous programmes was the need to make improvements around the Basin Reserve and duplicate the Mt Victoria Tunnel. The current iteration of RoNS also includes these projects.
- However, before progressing with the Basin and Mt Victoria tunnel project, the updated project objective (to provide more efficient and reliable access to support regional economic growth) means that a previously discounted option of a Long Tunnel needs to be reconsidered.



2013 Wellington Northern Corridor RoNS

What are the problems?

- **Poor and declining levels of service:** The highway is operating at capacity in peak hours resulting in peak spreading, less efficient journeys, rat running and poor travel environments. As the Wellington Region continues to grow, travel times into and around the city will be up to 50% longer, with variability in travel times exceeding 100% on key routes.
- **Limiting Growth:** Without increasing capacity, growth will be limited as people will choose to locate in areas with better access to key facilities. Recent growth statistics have shown growth slowing in Wellington City and improved access could help swing this back.
- **Poor safety and amenity:** Even though the traffic volume on SH1 is large, there is an even greater volume of people wanting to cross SH1 for their local trips. This leads to safety concerns and an environment in this part of the city which is unattractive for people to live, work and shop.
- **Poor resilience:** The network is vulnerable to natural hazards (earthquakes, sea level rise) and due to geographical constraints, there are limited alternative routes. Even a crash on the current network can have knock on delays for many hours.



Long Tunnel – Scope of Option



Long Tunnel:

- New Terrace Tunnel parallel to the existing tunnel (0.5km long) s 9(2)(ba)(ii)
- New twin bored tunnels (2.8km) from south of the Terrace Tunnel to Kilbirnie providing two general traffic lanes in each direction.
- Southbound off-ramp from tunnel onto Adelaide Road (near Wellington Regional Hospital).
- Grade separation of SH1 through Kilbirnie.

Network improvements to unlock benefits including:

- Improvements to the SH1 on- and off- ramps north of the Terrace Tunnel.
- Two-way traffic on Vivian St and Karo Drive.



Terrace Tunnel duplication (south portal)



Waterview tunnel boring machine

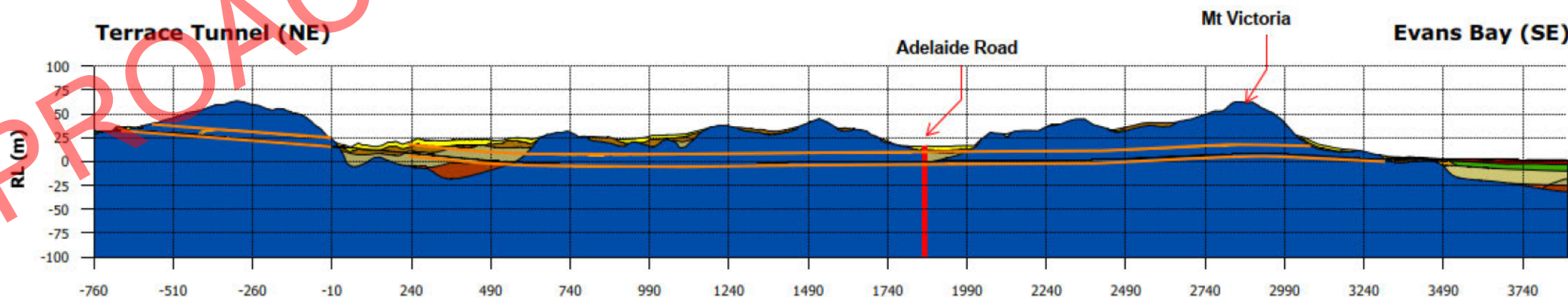
Long Tunnel - Technical Feasibility

- **Ground Conditions** – Desktop assessment identified no significant issues for most of the corridor. Area of future focus would be recently discovered Aotea fault located at Adelaide Road. Option design includes cut and cover section at this location. Cost allowance included in estimate to address Aotea fault is \$300-450M.
- **Construction Approach** – Use of Tunnel Boring Machines working from south to north. Large tunnel site compound in Kilbirnie Park. Approximately one million cubic metres of spoil would be excavated.
- **Network Effects** – Broader network effects that would lead to unpalatable operational or reputational risks have been identified and mitigation included.



Draft design model looking west into Long Tunnel from above Kilbirnie Park

Geological
section
along
tunnel
alignment



Basin and Duplicate Mt Victoria Tunnel – Parallel

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s 9(2)(ba)(ii)

Mt Victoria Tunnel:

- New 2-lane tunnel (0.7km) parallel to the existing
- s 9(2)(ba)(ii)

Basin Reserve improvements including:

s 9(2)(ba)(ii)

Network improvements to unlock benefits including:

s 9(2)(ba)(ii)



Basin and Duplicate Mt Victoria Tunnel – Diagonal

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Mt Victoria Tunnel:

- New twin Mt Victoria tunnels (1.5km)
- Grade separation of SH1 through Kilbirnie
- Existing tunnel retained for local access between Hataitai and Mt Victoria

s 9(2)(ba)(ii)

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This option was assessed throughout this phase but ultimately is not recommended due to severe short-term and long-term impacts on local schools. Accordingly, it is not discussed further in this presentation.

"Middle Option"

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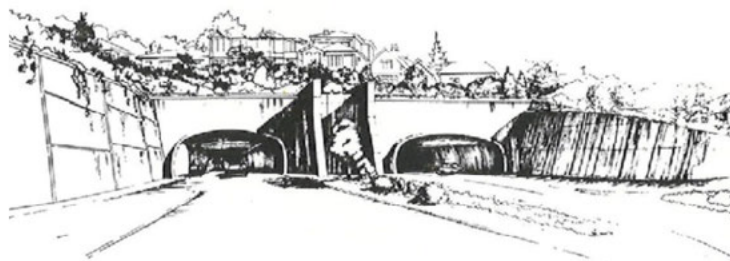
Same Mt Victoria Tunnel, Basin Reserve and Network Improvements as per Basin and Duplicate Mt Victoria – Parallel, plus:

Terrace Tunnel

- New Terrace tunnel (0.5km) parallel to the existing Terrace Tunnel

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Terrace Tunnel duplication (south portal)



Visualisation of Basin Reserve Option

Options Compared

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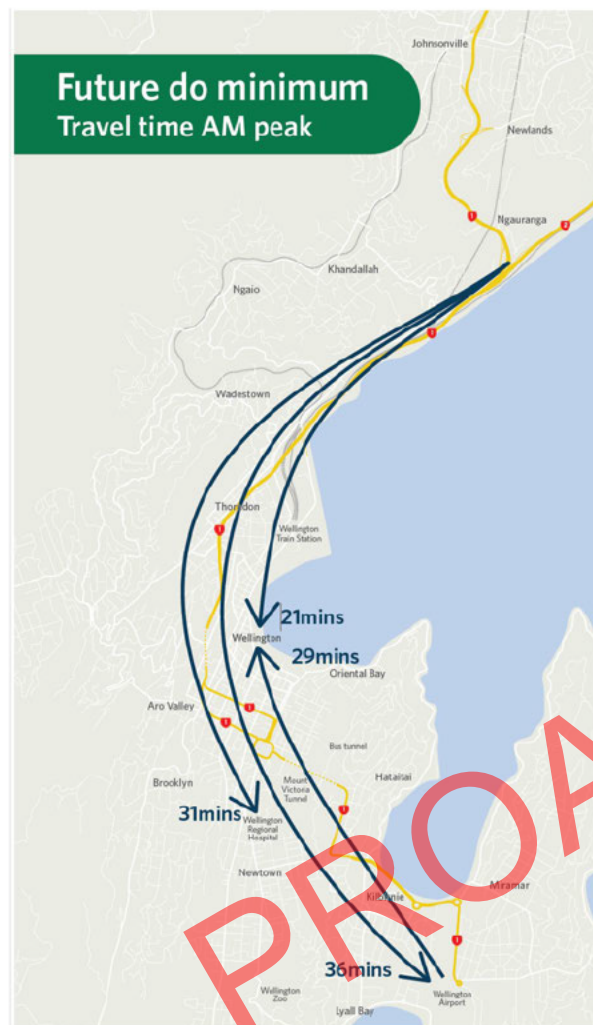
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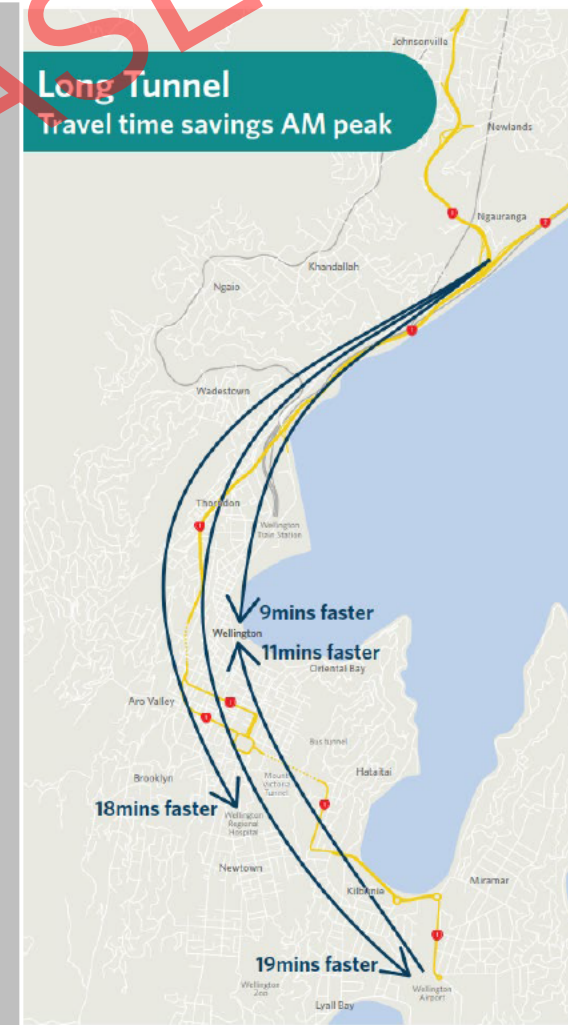
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Efficient Journeys –Travel Time AM Peak

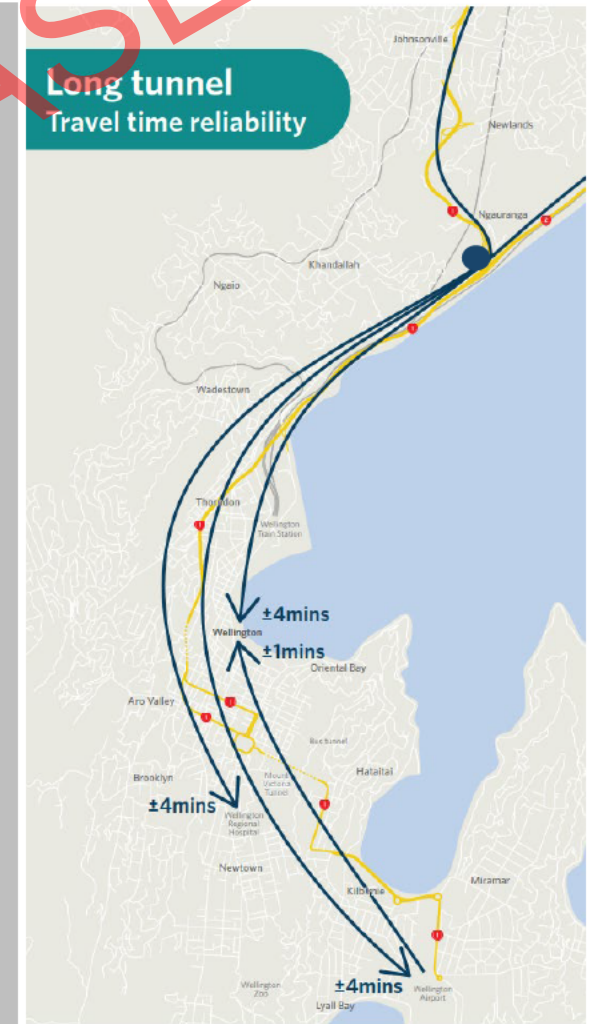
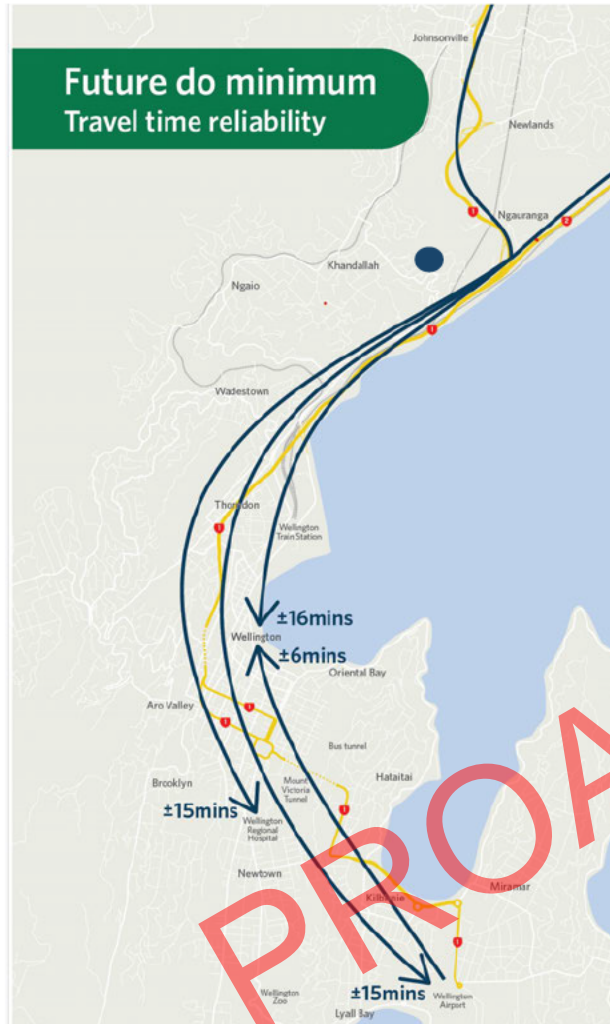


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Efficient Journeys –Travel Time Reliability AM Peak

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Network Impacts

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Benefits

	Basin and Parallel Mt Victoria Tunnel	Middle Option	Long Tunnel
Efficient and Reliable Journeys	s 9(2)(ba)(ii)		9-19 minute savings on peak hour journeys
Safety			Safety benefits as removes traffic from city
Resilience			Improves access to hospital and provides network redundancy
Travel Choice			Provides ability to improve travel options throughout central city
Urban Development			Enables development throughout central city if progressed by WCC
Economic Growth			Significant benefits due to better connections between economic centres

Impacts

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	Basin and Parallel Mt Victoria Tunnel	Middle Option	Long Tunnel
Impacts	s 9(2)(ba)(ii)		Heritage, Social, Noise and Landscape impacts in Kilbirnie and the southern end of the Terrace Tunnel, but less than the other options
Stakeholder Perspective			Long-term fix and removes traffic from city centre
Consenting Risk			Fewer impacts and potential for greater stakeholder alignment reduces consenting risk.
Property			Around 200 Property Titles needed, and around 900 sub-surface rights transactions.
Economic Impacts During Construction			Impacts traffic at Kilbirnie and Terrace Tunnel, but slightly lower impact
			Impacts likely for 7-8 years

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Deliverability

	Basin and Parallel Mt Victoria Tunnel	Middle Option	Long Tunnel
Cost	s 9(2)(ba)(ii)		
BCR			
Commercial			
Road Pricing			
Value Capture			
Timeframes			
Future Proof			
			\$5.2 - \$7.6 bn (plus escalation of \$0.8bn – \$1.4bn)
			0.3 – 0.7
			Assessed as eligible for PPP against hurdle criteria.
			Able to be tolled, but high sensitivity to price. Can also be part of time of use scheme
			Later construction start and longer timeframe.
			No future works required on SH1 in city centre

Summary

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Three Options have been investigated:

Basin and Parallel Mt Victoria Tunnel

Middle Option

Long Tunnel

s 9(2)(ba)(ii)

Cost of \$5.2bn to \$7.6bn and a BCR of 0.3-0.7.

In summary:

- s 9(2)(ba)(ii)
However, the Long Tunnel has the potential to deliver much wider economic benefits for urban development and economic growth.
- All options create impacts, commensurate with delivering infrastructure in a highly urban environment. s 9(2)(ba)(ii)
- All options are feasible and deliverable. The Long Tunnel is the option which will take the longest to deliver but is the most likely candidate for delivery as a PPP or other form of alternate financing.

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