

April 28, 2008



omcshane@wk.planet.gen.nz
www.RMAStudies.org.nz

Centre for Resource Management Studies

1104 Oneriri Road, Kaiwaka
Northland 0573, New Zealand
T 64 9 + 431 2775 F 64 9 + 431 2772

Waterview Connection Project Tunnel Proposal

Five questions which must be answered.

Question One

- Why does Transit New Zealand favour the proposed Driven Tunnel Option through Mt Albert, even though it comprehensively fails to address the amenity, mobility and efficiency requirements of the general motoring public, who will actually pay for the project, and who will make most use of it?

Question Two

- Why has Transit New Zealand not even considered the option of an at-grade motorway through Mt Albert, similar to that now being built through Mt Roskill, which would cost only a fraction of the Driven Tunnel Option?

Question Three

- Why does Transit New Zealand favour a Driven Tunnel Option which cannot readily adapt to future growth in demand by adding lanes, by adding future connections, and which closes off the option of a second harbour bridge joining Pt Chevalier to the North Shore?

Question Four

- Why, for such a critical link in the road network, does Transit New Zealand favour a Driven Tunnel Option which is highly vulnerable to future natural disasters, (such as earthquake, volcanos and tsunami) and is also prone to frequent closure because of accidents or breakdowns, which are likely to cause injury and death?

Question Five

- Why has Transit abandoned the at-grade solution, which was their preferred option up until 2000?"

Expanding on these Questions.

1 Who Calls the Consultation Shots?

In this case Transit has targeted all its consultation resources at those comparatively few people who live immediately adjacent to the proposed tunnel. Unsurprisingly the consultation has found that the Mt Albert community has decided that the driven tunnel has the lowest impact of the three options they were presented with.

However, this consultation has not revealed the preferences of the much larger number of people who will actually use the Waterview Ring Road when complete. The modeling indicates a two-way flow of 90,000 vehicles a day by 2026, which would be carrying at least 100,000 people a day. Surely their preferences count as much as a few score households on nearby land?

In our opinion most of these road users would find the tunnel a much less attractive option than an at-grade open road with the normal roadside landscaping and general amenity of a modern motorway design.

Most importantly the Waterview project will be paid for almost entirely by the motoring public of the Auckland region and we would have thought that the motoring community that “pays the piper” should surely “call much of the tune”.

The local community possibly believes that congestion and other traffic effects will largely disappear as the through traffic disappears into a tunnel. However, the lack of tunnel capacity (having only two lanes) means that large volumes of traffic will be diverted back to the surface streets at peak hours.

There seems to be an implicit view that motorways generate adverse effects and no benefits to amenity and landscape. In reality a well designed highway in a park like setting can provide a major open space amenity to scores of thousands of road users every day. The northern motorway beyond Albany is an excellent example.

The Air Quality Fact sheet emphasizes that the air vented from the tunnel would meet the National Air Quality Standard and hence there would be no adverse effects on the neighbouring residents.

However, the Air Quality Fact Sheet is silent on the air quality within the tunnel, and the effect on the 100,000 plus people who will use the tunnel every day. This air quality would be seriously degraded during any accidents or gridlock in the tunnel and people would be

exposed for extended periods. Again, the motorists seem to have no rights compared to the nearby residents.

Many people are uncomfortable driving in tunnels. Some call it the Princess Diana syndrome, but many people suffer from genuine claustrophobia in such environments.

We wonder why the interests of the neighbouring residents of Mt Albert are regarded so highly, while the interests of the motoring public, who pay for the project, are totally ignored.

Furthermore, this motorway network will exist and be in use for hundreds of years.¹ Surely the specifications of such a major piece of infrastructure should not be determined by the wishes of households whose average stay is measured in years.

If necessary, adversely affected residents should be bought out with generous compensation.

2 Where is the Cost and Benefit Analysis?

The brochure simply records the conclusion that the driven tunnel is the cheapest of the three options. Where is the cost and benefit analysis, and, in particular, where are the specific designs and locations of the discarded options, including the fourth option of an at-grade highway?

After all, if this conclusion is correct for this link, which is being built through a mix of low-density residential development and open parkland, then this outcome must also hold true for all future motorway construction in the Auckland Metropolitan Area, and through many of the urbanized areas within the Auckland Region.

The Driven Tunnel Option makes it difficult, if not impossible, to properly connect the Western Ring Route to any future second harbour bridge in this area, which would be the best option..

The most rudimentary calculations demonstrate that future traffic loadings will require four lanes in each direction while the tunnel proposal provides only two lanes in each direction. Adding one extra lane in each direction would add further costs of between \$120 million and \$150 million.

The motoring population (which is in effect 100% of the Auckland population) will not be impressed by a repeat of the Auckland Harbour Bridge exercise. The only greater mistake we

¹ The Romans built roads and aqueducts which are still in use.

April 28, 2008

could have made in building the first Harbour Bridge, with only two lanes in each direction, would have been to put those four lanes in a tunnel.

A tunnel with only two lanes in each direction will not provide a “strategic alternative to SH1 and the harbour bridge” (as claimed in the brochure) because it simply does not have the reliable capacity, now or in the future.

3 The Driven Tunnel Option is not “Sustainable” because it is not Adaptable.

Sustainability is a popular word with politicians and pressure groups because “Sustainability” means whatever the speaker, or the listener, wants it to mean. Ask most people what they mean by “sustainable” and the replies will be more garbled than most lay attempts to explain quantum mechanics. So when someone promises to deliver “a sustainable future” everyone nods their heads because they all have their own idea of what “sustainability” means to them.

However, the evidence from life itself, from bacteria to human beings, is that the key to long term survival in the face of changing environments, (if that is what we mean by sustainable) is long term adaptability.

Humans are the most successful species on the planet in terms of habitat coverage because we are the most adaptable species on the planet. When it got cold during the little ice age the Europeans invented knitting and the Polynesians had the good sense to stop sailing towards New Zealand.

If we wish to build a sustainable road network we need to build a network which can adapt to changes in the size, nature, and direction of demand.

Has the cost benefit analysis compared the final cost of an expanded eight lane tunnel and an expanded at-grade eight lane surface highway?

4 The Tunnel Option is Poor Disaster Planning.

The slide in the Briefing Document titled “Tunnel Option” indicates that the Waterview Interchange and the portal entrance to the tunnel is close to sea-level, as determined by the Oakley Creek.

The tunnel then inclines down to a level two or three metres below sea level.

Hurricane Katrina demonstrated that the most effective means of evacuating large urban populations is the private vehicle fleet using at-grade or elevated motorway systems. For example the *Emergency Evacuation Report Card*² noted:

***Automobiles:** The Principal Evacuation Resource: The overwhelming majority of households have their own cars. As a result, urban areas principally rely on private automobiles for evacuation and on the publicly provided highways. Those without access to automobiles also rely on the highways, because buses are the most important alternative to cars for evacuation.*

Auckland is subject to risk of earthquake, volcanic eruption and tsunami – probably in that order of risk. Motorways in tunnels are not the best option for any of these disasters.

The tunnels themselves are subject to damage from earthquake, and to flooding from tsunami.

Conversely, tunnels may provide shelter from nearby volcanic eruption. However, during such events people are unlikely to see such tunnels as shelters and are more likely to avoid them, especially if attempting to flee from danger in their own vehicles.

Also, during Hurricane Katrina “panic-driving” led to many accidents while many other vehicles simply ran out of fuel. The proposed tunnels are easily blocked by accidents or stoppages at precisely the times they would most need to be open.

Britomart is already below sea level. The proposed Victoria Park viaduct extension, which connects to the Harbour Bridge, will lie below sea level and now we are proposing to place a critical link in the “strategic by pass” below sea level as well.

Flooding of Britomart may not matter too much because public transport played such a minor role in the evacuation of New Orleans. However, the prospect of sea-water entering Britomart and flooding an electrified rail system hardly bears thinking about.

On the other hand, the risk of flooding key links in both the existing State Highway One and the “Strategic Bypass” to “State Highway One” does not seem sensible risk management.

The adjoining section of the Western Ring Route (Waterview to Te Atatu) is already at a level very close to mean high water spring tide, so this may also flood during a tsunami event.

However surface water can clear comparatively quickly while water in a tunnel has to be removed.

² Prepared by the American Highway Users Alliance. Go to:
http://www.highways.org/pdfs/evacuation_report_card2006.pdf

The people of wider Auckland would almost certainly vote against a Driven Tunnel Option if these risks were spelled out to them. There is no indication that such matters were discussed with the nearby residents who would also depend on the Western Ring Route to escape from their homes in the event of a major disaster.

5 The Tunnel Option is Vulnerable to Ordinary Accidents or Breakdowns.

The slide “Tunnel Option” in the Briefing Document shows the vehicle clearance dimensions within the tunnel are only 9.7 metres wide and 4.9 metres high. (The diameter of the tunnel bore is 13 metres.) There are no shoulders available and no “third lane”, although if all vehicles in the tunnel pulled hard over to each tunnel wall there would be sufficient room for emergency vehicles to get through.

However, if an accident in the tunnel caused number of “flow on” accidents in which several vehicles slewed across the lanes, or if a single articulated vehicle jackknifed, emergency vehicles would have great difficulties getting to the scene of all accidents. Cranes would also be limited by the low ceiling height.

Fires in tunnels are particularly dangerous and frightening. The fire which followed a tragic road accident in the City Link Burnley Tunnel in Melbourne on 23 March 2007 attracted considerable media, community and industry attention. *The Burnley Tunnel Fire – the Arup View*³, is a sobering read and demonstrates the significant costs of properly maintaining and operating such tunnels to minimize the effects of such events. The tunnel took four days to clear. The total asset damage and repair bill has been estimated at AUD\$1.5 million and loss of toll revenue at AUD\$3.0 million.

The Australian *CityLink*⁴ incident data records that during 2006, there were 412 tunnel incidents attended to by the *CityLink* emergency response team. The Burnley Tunnel is three lanes each way and total average daily flow is about 100,000 vehicles a day.

During any periods of lane blockage, some of which could run to several hours, the Western Ring Route traffic would presumably be diverted onto local surface streets.

So while the tunnel option might reduce neighbourhood disturbance during construction and routine operation there would be many times during the year when disruption and congestion would be considerable.

³ Go to: <http://www.fpaa.com.au/docs/burnley.pdf>

⁴ CityLink – the company which operates the Burnley Tunnel.

April 28, 2008

It also seems probable that the two-lane tunnels would be overloaded soon after opening so there would be continual load shedding to neighbouring surface streets all year round.

6 The Documentation is Inadequate.

The briefing document concludes that the driven tunnel option is the cheapest of the three considered options, which are AW1 partial cover (PC), AW1 Extended Cover (EC) and the Driven Tunnel, but does not examine the costs and benefits of the original option to build an at-grade motorway, similar to that being built through Mt Roskill. This fourth option is surely the most realistic and cost-effective and it is difficult to understand why it is not even considered at this stage. The at-grade option is the baseline against which covered trenches and driven tunnels must be assessed.

In reality the “supporting” information provides no information supporting the conclusion other than several assertions, and provides no details of the design and placement of the rejected options, and in particular makes no reference to the obvious fourth option of an at-grade motorway.

The documentation makes no reference to the comparative ongoing maintenance and operating costs of the four options. The initial construction cost is only one part of the total financial analysis.

**Director
Centre for Resource Management Studies.**

April 28, 2008