

**To: Auckland Regional Council – Transport and Urban Development Committee**  
**From: Campaign for Better Transport**

**Regarding: Faster and more cost effective approach to improving State Highway One between Puhoi and Wellsford**

## 1. Summary:

The Campaign for Better Transport (CBT) is a non-politically aligned group that advocates for more balanced, cost-effective and sustainable transport policy decisions. The CBT is concerned that the “Puhoi to Wellsford road of national significance”, which is currently under investigation by the New Zealand Transport Agency (NZTA), is an extremely expensive project that is not economically justified. That being said, the CBT is well aware that the Puhoi to Wellsford stretch of State Highway One (SH1) suffers from unacceptable safety and congestion problems. Therefore, the CBT has proposed a much more cost-effective and faster approach to improving this stretch of SH1. The CBT seeks that the Auckland Regional Council (ARC) adopts the CBT’s approach as the ARC’s preferred solution to the problems faced along this road and advocates to NZTA and the Minister of Transport for this alternative approach.

## 2. Background:

In May 2009 the Government released an updated Government Policy Statement on land transport funding 2009/10-2018/19<sup>1</sup>. As part of that document, seven “roads of national significance” (RoNS) were proposed for construction within the next decade, one of which is the upgrade to SH1 between Puhoi and Wellsford.

Prior to the release of the May 2009 GPS, there had been little planning for the Puhoi-Wellsford RoNS, beyond upgrades to the existing route, some small deviations and a bypass of Warkworth.

The Puhoi-Wellsford road was not prioritised by either the most recent 2010-2040 Regional Land Transport Strategy<sup>2</sup>, or any of its predecessors. Neither was it prioritised in any of NZTA’s main plans and strategies prior to the May 2009 GPS. From the CBT’s perspective, it appears as though the Minister of Transport made a personal decision that the project was important and a priority, and all progress has flowed from there; rather than from NZTA identifying a need for the project. Amongst all RoNS, the Puhoi-Wellsford road appears to be unique in this respect.

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<sup>1</sup> <http://www.transport.govt.nz/news/newsevents/Documents/Final-GPS-May-09.pdf>

<sup>2</sup> [http://www.arc.govt.nz/albany/fms/main/Documents/Transport/RLTS/Regional%20Land%20Transport%20Strategy%20\(RLTS\)%202010-2040%20part%201.pdf](http://www.arc.govt.nz/albany/fms/main/Documents/Transport/RLTS/Regional%20Land%20Transport%20Strategy%20(RLTS)%202010-2040%20part%201.pdf)

### 3. The Current Proposal:

In January 2010 NZTA released the Puhoi to Wellsford: Project Summary Statement<sup>3</sup>, which detailed the project’s benefits, gave a brief description of what the project would entail, and undertook a preliminary business case analysis of the project to determine its cost effectiveness.

The project was described as follows:

**Section 1:** A new motorway running parallel to the old highway featuring a high standard of construction, including grade separation of connections with the existing roads, starting from the terminus of the Northern Gateway Toll Road and ending just north of Warkworth.

**Section 2:** A new expressway parallel to the old highway with lower geometric and access standards than Section 1, running from north of Warkworth to just north of Wellsford.

The anticipated cost of the project was given as \$1.38 billion, within a range from \$1.24 billion to \$1.52 billion. This cost was given in 2009 dollars – but because of the lengthy construction period the forecast outturn cost of the RoNS corridor would be \$1.69 billion with a confidence range of \$1.53 billion to \$2.04 billion.

As noted above, cost-benefit analysis of the proposal was undertaken, its findings are outlined below:

Discount Rate	Standard NZTA BCR	BCR inc WEBs
8%	0.8	1.1
6%	1.1	1.5
4%	1.6	2.0

The standard discount rate for transport projects is 8%, so under the standard business case analysis, the project has a cost-benefit ratio of 0.8 – meaning that for a \$1.69 billion ‘investment’, it would only generate \$1.352 billion in return, effectively a “loss” of \$338 million. While this does not take into account the “wider economic benefits” referred to in the table above, the CBT understands that these benefits are considered to be quite debatable in transport policy circles, and should be treated quite carefully and not necessarily accorded too much weight.

Because of the project’s poor cost-benefit ratio (in contrast, rail electrification has a demonstrated cost benefit ratio of 1.5-1.7 and the Onehunga Line one of 3.1), and because the project has other adverse effects (potentially significant environmental impact, encouraging urban sprawl, encouraging car dependency and so forth) the CBT considers that the project is poorly justified and should not be a high priority in its current

<sup>3</sup> <http://nzta.govt.nz/network/rons/docs/puhoi-wellsford-project-summary-statement.pdf>

form. There are many projects in Auckland that desperately require funding, such as the CBD Rail Tunnel, rail to the airport and arterial road upgrades, that the CBT considers should be of a higher priority for a number of reasons:

- they are likely to be more economically justified;
- they work to assist Auckland's regional urban growth strategies, through encouraging intensification, rather than work against them by encouraging urban sprawl;
- they help reduce Auckland's auto-dependency; and
- they align more closely with the 2010-2040 RLTS

Another significant reason why the CBT opposes this project is because of its very lengthy design, consenting and construction timeframes. In January 2010 a media statement by the Minister of Transport suggested that while the Puhoi to Warkworth section of the road could be completed by 2019, the Warkworth to Wellsford section would take longer<sup>4</sup>. Given the safety and congestion problems faced along this route of SH1, the CBT considers that more urgent action than these timeframe is required – particularly in terms of safety upgrades and the bypassing of Warkworth.

#### 4. The Problems With State Highway One:

The CBT does not dispute that urgent action is required to improve the quality of SH1 between Puhoi and Wellsford. The New Zealand Road Assessment Programme has identified SH1 between Warkworth and Wellsford as having the 7<sup>th</sup> highest risk of any stretch of road in NZ, with SH1 between Orewa and Warkworth having the 10<sup>th</sup> highest risk<sup>5</sup>. Furthermore, between 2000 and 2009 there have been 41 road fatalities on this stretch of SH1, comprised of 15 between Puhoi and Warkworth<sup>6</sup>, and 26 between Warkworth and Wellsford<sup>7</sup>. In addition to these 41 fatalities, between 2004 and 2008 alone there were 31 serious injuries and 118 minor injuries resulting from accidents between Puhoi and Wellsford.

The route also suffers from severe congestion, particularly during the holiday period, but also at normal times – particularly around Warkworth.

Considering NZTA's timelines for designing, consenting and constructing this RoNS, it appears likely that the congestion problems around Warkworth may not be solved for at least another five years (and up to nine years if that stretch of the project is built at once) while improvements to the road between Warkworth and Wellsford, which includes the notorious Dome Valley, may be ten or more years away. Furthermore, it appears likely that NZTA are not going to "waste" money on safety upgrades to the existing SH1 if they plan to bypass that alignment in the future via the new motorway/expressway. Therefore

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<sup>4</sup> <http://www.scoop.co.nz/stories/PA1001/S00117.htm>

<sup>5</sup> <http://www.kiwirap.org.nz/results.html>

<sup>6</sup> [http://www.parliament.nz/en-NZ/PB/Business/QWA/a/6/9/QWA\\_10163\\_2010-10163-2010-David-Shearer-to-the-Minister-of-Transport.htm](http://www.parliament.nz/en-NZ/PB/Business/QWA/a/6/9/QWA_10163_2010-10163-2010-David-Shearer-to-the-Minister-of-Transport.htm)

<sup>7</sup> [http://www.parliament.nz/en-NZ/PB/Business/QWA/e/d/8/QWA\\_10162\\_2010-10162-2010-David-Shearer-to-the-Minister-of-Transport.htm](http://www.parliament.nz/en-NZ/PB/Business/QWA/e/d/8/QWA_10162_2010-10162-2010-David-Shearer-to-the-Minister-of-Transport.htm)

one would expect the current death-rate on the road to remain for up to 10 years under the current plan.

If fatalities on the stretch of State Highway 1 between Puhoi and Wellsford are to continue at their current rates, and the Puhoi-Warkworth section is not completed until 2019 and the Warkworth to Wellsford section until 2022, then there will be 50 further fatalities along this stretch of road before the upgrade opens.

## 5. The Alternative:

Considering the various problems with the Puhoi-Wellsford road in its currently proposed form, and recognising the urgent need to relieve congestion around Warkworth and undertake safety upgrades to the entire route – particularly between Warkworth and Wellsford through the ‘Dome Valley’, the CBT proposes two alternatives, and seeks that the ARC adopt one of these alternatives as its preferred option for improving SH1 between Puhoi and Wellsford. The CBT also seeks that the ARC advocate to NZTA and the Minister of Transport the advantages of this scheme.

At a broad level, the proposed alternative seeks to analyse what benefits could be achieved from spending approximately 10% of the budget for the Puhoi to Wellsford road. In other words, what could be constructed for around \$160 million. It is also considered worthwhile to look at what might be able to be achieved for approximately 20% of the cost of the Puhoi-Wellsford project, which would provide a funding envelope of \$320 million.

It is estimated that the following projects could be constructed for a cost that fits within the \$160 million funding envelope (Option 1):

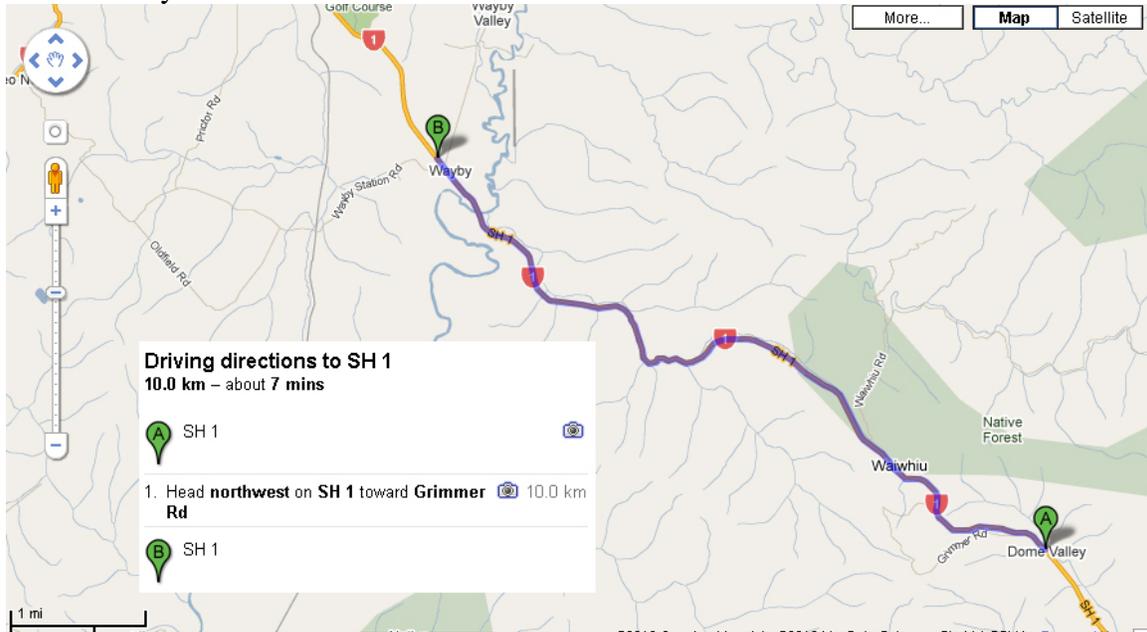
### **Option One (\$160m)**

- Warkworth Bypass - approximately \$50 million cost. There has been some previous investigation into this project.
- Wire/concrete medians throughout Dome Valley and around Schedewys Hill. At an average cost of \$1 million per kilometre the total cost would be \$15 million: \$10 million for Dome Valley and \$5 million for Schedewys Hill/Pohuehue area.
- Wire/concrete barriers on sides of road in particularly dangerous sections of Dome Valley and Schedewys Hill (where there is a record of “loss of control” accidents). Approximately 5km at \$2 million per kilometre, total cost of \$10 million.
- Wayby Valley Road intersection upgrade. In 2009-2012 NLTP. Cost approximately \$2.5 million and BCR of 5.0 (see attached OIA response).
- Pohuehue widening and edge protection. Widens existing viaduct to three lanes and provides upgraded edge protection barrier. Cost: \$4.7 million, BCR: 3.2 (see attached OIA response)
- Falls Bridge to Waitarere Bridge safety improvement, part of Dome Valley. Project involves seal widening and cuttings widening to improve sight lines. Cost: 1.4 million, BCR: 2.5 (see attached OIA response).

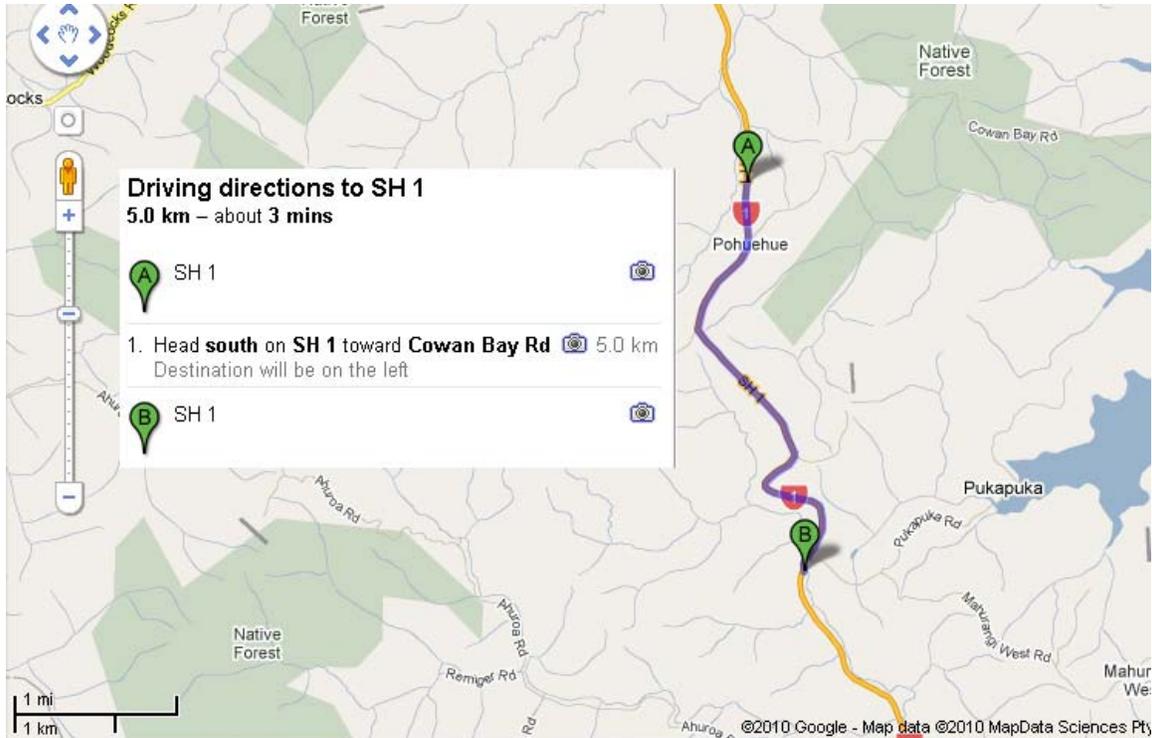
- Sheepworld southbound passing lane – north of Warkworth. Extends existing 570 m passing lanes by another 756m. Cost \$4.7 million, BCR: 3.4 (see attached OIA response).
- Dome Hill realignment

The lengths of State Highway 1 proposed for wire/concrete median barriers are shown in the two images below:

Dome Valley:



Schedewys Hill/Pohuehue Viaduct:



## Option 2 (\$320m):

Within the \$320 million funding envelope it is considered that the following additional projects could be constructed (over and above what is proposed in Option 1):

- Tidal “three-laning” between Warkworth and Puhoi along the existing alignment
- Schedewys Hill realignment. Cost: \$25-70 million depending on alignment, BCR 1.3-1.4 (see attached OIA response).
- Wire/concrete barriers throughout entire Dome Valley and at dangerous points between Puhoi and Warkworth

The CBT accepts that further analysis should be undertaken into testing what projects would be possible for \$160 million, and for \$320 million.

The relatively low cost of the upgrades listed above suggests that significant benefits could be gained for a relatively modest cost. It should also be noted that both CBT alternatives would retain access between Puhoi and the Orewa-Puhoi section of State Highway 1, alleviating a strong community concern that Puhoi’s accessibility will be greatly reduced by the current proposal.

An analysis of the cost-effectiveness of the alternatives, and how that compared to the cost-effectiveness of the current proposal, are analysed in the section below.

## 6. Analysis of Cost-Effectiveness:

This section analyses how the cost-benefit ratio of the current proposal was undertaken, and uses this process to undertake an approximate analysis of what the benefits would be from the two proposed alternatives.

### 6.1. Travel Time Savings

The table below is taken from the December 2009 Business Case Study by SKM into the Puhoi to Wellsford project:

■ Table 4-11: Summary of Benefits: Conventional Economic Appraisal and Wider Economic Benefits

Criteria	NPV Benefits (\$millions)		
	Puhoi – Warkworth	Warkworth – Wellsford	TOTAL
Journey time reliability	\$5.0	\$3.4	\$8.4
Travel time benefits (including holiday periods)	\$236.3	\$115.7	\$352.0
Vehicle operating cost benefits	\$23.6	\$11.6	\$35.2
Accident cost savings	\$73.6	\$59.8	\$133.4
<b>Total Conventional Economic Benefits</b>	<b>\$339</b>	<b>\$191</b>	<b>\$530</b>
<b>Wider Economic Benefits</b>	<b>\$122</b>	<b>\$37</b>	<b>\$159</b>
<b>Total Including Wider Economic Benefits</b>	<b>\$461</b>	<b>\$228</b>	<b>\$689</b>

As can be seen, the main benefits as calculated are travel time benefits and safety (accident cost) benefits. Wider economic benefits include mainly benefits to forestry and tourism, although as noted above the CBT is highly sceptical of the real value of these benefits (tourists may prefer a more scenic road to a motorway while logs are more suited to rail transportation than road transportation).

The CBT also notes that the calculation of travel time savings is reliant upon some quite significant assumptions – as described on page 31 of the December 2009 SKM Report.

This page reads:

The current alignment standards of SH1 between Puhoi and Wellsford vary considerably. Delays are caused by various sections of difficult terrain, high likelihood of being forced to slow down due to following HCVs, lack of overtaking opportunity and other operational factors are impede traffic speeds. The traffic signals in Warkworth and the high side friction evident when travelling through Wellsford are also significant.

To account for the delays on the existing SH1 as discussed above, an average speed of 60 km/hr has been taken as representative of the current route. Assuming that the standard of road discussed in Section 4 are achieved, travel times resulting from the project would result in a saving of 8 minutes from Puhoi to Warkworth and 7 minutes from Warkworth to Wellsford, giving a total travel time saving of 15 minutes along the whole route. The results of this analysis using these travel time savings are reported below in Table 4-4.

It is the CBT's consideration that much of the reason behind the low speed results from problems originating in Warkworth, where State Highway 1 passes through the town. The

CBT notes that there is a current upgrade to Warkworth under construction, and the impact of that project should be taken into consideration when analysing what the actual improvements of the Puhoi-Wellsford upgrade would be. Furthermore, as noted above, a bypass of Warkworth could achieve many gains, and potentially increase the average speed significantly from the estimated 60 kph.

Considering that such a large proportion of the project’s benefits are supposed to arise from travel time savings, the CBT would hope for some detailed analysis being undertaken to determine what the real existing average travel speed is, rather than the “wild guess” that the 2009 SKM Report appears to have made. It is noted that page 29 of the December 2009 SKM Report states that easing severe congestion during holiday periods will only contribute \$19.88 million of benefits over the economic lifetime of the project.

Most of the time savings benefits are accrued between Puhoi and Warkworth (\$236.3 million out of \$352 million, or 67%), a part of the route that the 2009 SKM Report considered to include Warkworth. As State Highway 1 between Puhoi and Warkworth is generally straighter than the road between Warkworth and Wellsford, it would appear as though a significant proportion of the “time lost” along this route is as a result of the Warkworth bottleneck. Significant improvements to travel times could therefore be achieved by constructing a Warkworth bypass.

## 6.2. Safety

In terms of safety benefits, it is recognised that the project creates \$133.4 million of “accident cost benefits” – including \$73.6 million for the Puhoi to Warkworth section and \$59.8 million for the Warkworth to Wellsford section. This reflects the significant safety issues faced by the current stretch of road. This is shown in the tables below (adapted from pages 32 and 33 of the SKM Report:

Crash Severity	Number of Crashes (2004 - 2008)
Fatal	5
Serious Injury	19
Minor Injury	52
Non Injury	174
<b>TOTAL</b>	<b>250</b>

Crash Severity	Number of Crashes (2004 - 2008)
Fatal	14
Serious Injury	12
Minor Injury	66
Non Injury	169
<b>TOTAL</b>	<b>261</b>

This shows that in addition to the 19 fatalities between 2004 and 2008, there were 31 serious injuries and 118 minor injuries. This has a significant social, as well as economic, impact.

It would be the goal of the proposed safety upgrades listed in the two CBT alternatives to seek to eliminate as many of these accidents as possible. Of the 19 fatal crashes between 2004 and 2008, 14 were the result of head-on collisions, which could be eliminated

through the placement of either wire or concrete median barriers. Wire barriers can be erected for approximately \$1 million per kilometre (cost taken from section of Waikato Expressway). Such an upgrade would provide significant benefits for relatively low cost, particularly if focused on the most dangerous parts of the route (Dome Valley and Schedewys Hill). The second-most common cause of fatal or serious injury accidents is “loss of control”. It is considered that the number of these types of accidents could be reduced through some realignments, and also through the potential placement of wire or concrete barriers on the sides of the state highway in the most dangerous stretches. The placement of barriers both in the centre of the road and at its sides would make it very difficult for either ‘head on’ or ‘loss of control’ accidents to occur.

### ***6.3. Economic Analysis***

The economic appraisal is based approximately on the December 2010 SKM Report. Generally it has been estimated the percentage of benefits that the CBT’s suggested alternative would provide compared to the level of benefit provided by the full Puhoi to Wellsford upgrade.

#### ***6.3.1. Journey time reliability***

The SKM report suggests that \$8.4 million of NPV benefit will arise from improvements to journey time reliability. As both CBT alternatives include a Warkworth upgrade, the main bottleneck in the road between Puhoi and Wellsford, it is considered that a significant proportion of the improvements could be anticipated. Furthermore, with Option 2 providing three-laning between Puhoi and Warkworth as well as a Warkworth bypass, it is considered that most of the improvements would be achieved.

Option 1: 60% of benefits - \$5.04 million

Option 2: 80% of benefits - \$6.72 million

#### ***6.3.2. Travel time benefits (including holiday periods)***

The SKM report suggests that \$352 million of NPV benefit will arise from improvement to travel times. CBT option 1 is likely to have some improvement to travel times, through bypassing Warkworth and also through the extension of passing lanes, allowing faster vehicles to pass slower vehicles. For CBT option 2, additional time savings benefits would arise, particularly during holiday periods, through the tidal three-laning of the road between Puhoi and Warkworth.

Option 1: 30% of benefits - \$105.6 million

Option 2: 40% of benefits - \$140.8 million

#### ***6.3.3. Vehicle operating cost benefits***

The SKM report suggests that \$35.2 million of NPV vehicle operating cost benefits will arise from the project. It is considered that the CBT alternatives are likely to offer

relatively low benefits compared to the full upgrade, as the road’s existing alignment will be largely maintained. Some benefit is likely to occur from the Warkworth bypass.

Option 1: 5% of benefits: \$1.76 million  
 Option 2: 10% of benefits: \$3.52 million

**6.3.4. Accident cost savings**

The SKM report suggests that \$133.4 million of NPV accident cost savings will arise from the project. A particular focus of the CBT alternatives is to improve the safety of this stretch of State Highway 1, with median barriers, side barriers, realignments, extensions of passing lanes and other possible upgrades all likely to have significant safety benefits.

Option 1: 70% of benefits: \$93.4 million  
 Option 2: 90% of benefits: \$102.1 million

**6.3.5. Total Conventional Benefits and Cost**

Option 1: \$170.6 million NPV  
 Option 2: \$253.1 million NPV

This compares with the \$530 million of total NPV benefits calculated by SKM to arise from the Puhoi to Wellsford project. The table below summarises comparisons of the options above

<b>Benefits</b>	<b>NZTA proposal (\$1.69 billion cost)</b>	<b>CBT Option 1 (\$160 million cost)</b>	<b>CBT Option 2 (\$320 million cost)</b>
Journey Time Reliability	\$8.4 million	\$5.04 million	\$6.72 million
Travel Time Benefits	\$352 million	\$105.6 million	\$140.8 million
Vehicle Operating Cost Benefits	\$35.2 million	\$1.76 million	\$3.52 million
Accident Cost Benefits	\$133.4 million	\$93.4 million	\$102.1 million
<b>Analysis</b>			
Total Benefits	\$530 million	\$170.6 million	\$253.1 million
Benefits/Cost	0.31	1.07	0.79
Benefits/Cost (assuming a 0.8 BCR for NZTA proposal)	0.8	2.76	2.04

The conventional analysis of the cost-benefit ratio gives a total of 0.8 with an 8% discount rate. This suggests a project cost of \$662.5 million, rather than the \$1.69 billion cost of the project. Either the cost of the project appears to have been under-estimated in the SKM business case, or the benefits have been calculated in a way that under-values them. If the former is the case, then the project would have a BCR of 0.31 (assuming a cost of \$1.69 billion and benefits of \$530 million). If the latter is the case, and a 0.8 BCR

is retained with a project cost of \$1.69 billion, then the benefits should come to a total of \$1280 million, more than twice what SKM's calculations show them to be.

The uncertainty in SKM's figures make it difficult to undertake a full cost-benefit analysis of the proposed alternatives, but it appears clear that they would be a far more cost-effective solution to the problems faced by State Highway 1.

## **7. Contribution to the RLTS:**

It is important to note that the 2010-2040 Regional Land Transport Strategy (RLTS) does not mention the Puhoi-Wellsford road upgrade in any great detail. Section 4.4 of the RLTS notes that the road network should be improved by way of a number of projects, one of which is "Safer and more reliable linkages to Northland, Waikato and Bay of Plenty." The CBT considers that this objective could be achieved through the cost-effective alternative, particularly through focusing efforts on improving safety in the very short term and also improving trip reliability by bypassing Warkworth.

Policy 6.4.2 of the RLTS notes that the "investigation of the SH1 Puhoi-Wellsford Road of National Significance" is supported. This alternative does not seek to undermine that policy, as what is proposed is still a significant upgrade to State Highway 1.

A brief analysis has been undertaken to compare the currently proposed project and the CBT alternative against the various aspects that make up the "vision" of the RLTS – as outlined in section 2.1 of that strategy.

### ***7.1. People and goods are able to move when and where necessary***

Both projects would contribute to improving the ability of people and goods to move between Auckland and Northland. It is accepted that the current proposal would probably save more time off trips between Puhoi and Wellsford than either CBT alternative, but this should be weighed up against the significantly higher cost that the current proposal has. By bypassing Warkworth and (under the "Option 2 proposal") providing a third 'tidal' lane between Puhoi and Warkworth, it is considered that the CBT alternative would eliminate the worst congestion faced on this road and therefore assist in achieving this part of the RLTS's vision.

The CBT considers that it is important to consider the ways in which other projects that could be funded as a result of the savings on this project could better achieve the vision of the RLTS.

### ***7.2. Transport supports vibrant, well designed, attractive and environmentally sustainable urban and rural centres, business and economic activity, and access to social, cultural and recreational activities***

The CBT considers that the extension of a motorway/expressway standard road to Wellsford could encourage urban sprawl in this northern part of the Auckland Region,

and beyond it into the southern part of the Northland Region. An urban sprawl type of development would make it difficult to create vibrant, well designed, attractive and environmentally sustainable urban centers – as the growth would be directed away from these areas potentially leaving them to deteriorate. Furthermore, the value of the rural areas may be adversely affected by their urbanisation – that would be encouraged by the motorway/expressway standard road.

A dispersed type of development that the current proposal may encourage can reduce access to social, cultural and recreational activities as facilities will generally be more spread out, and people will have poorer access (especially those without cars).

### ***7.3. Streets are safe places for people and the community***

The CBT alternative proposes immediate safety upgrades to SH1, which would assist in immediate improvements to the road's safety record. As noted in section 4 of this document, the timeframe for the current proposal and the existing death-rate for the road between Puhoi and Wellsford could mean that 50 fatalities occur before the motorway upgrade is completed. The CBT alternative would improve safety immediately, as safety works are within the existing designation so could occur with a minimal amount of delay.

### ***7.4. The distinct volcanic and coastal (Whenua, moana/awa) character of the region and the cultural values of its inhabitants (nga tangata katoa) is protected and enhanced***

While the route is not immediately located in the coastal area, and does not appear to pass through any areas of distinctive volcanic character, it is likely that the CBT's alternative would have less impact on cultural values and on the character of the region, because the existing alignment of the road would be retained and the amount of earthworks would be much less than the current proposal.

### ***7.5. Getting around by all modes is integrated, safe, effective, and accessible to all, including people with disabilities***

It is considered that the current proposal will tie up a significant amount of the funding available for transport projects in the Auckland region while only benefitting a relatively small number of people – particularly freight distributors, holiday-makers and commuters living in the north Rodney area. As noted above, both proposals will have positive effects on safety and accessibility, however the safety benefits of the CBT alternative will be realised a lot sooner than the current proposal.

### ***7.6. People have choices which enable them to participate equitably in society, especially those with mobility issues, including children and the elderly and those most disadvantaged.***

As noted above, the current proposal ties up significant funding while benefitting a relatively narrow (and generally quite advantaged) section of society. The key element

that the CBT is concerned about is the opportunity cost of this project – of what the funding proposed to be spent on the current proposal could otherwise be spent on to better achieve parts of the RLTS’s vision such as this.

### ***7.7. The natural environment and human health are protected and enhanced***

The CBT alternative is considered to have significantly less environmental impact than the current proposal. The current proposal involves a completely new “off-line” road of motorway/expressway standard that would require significant earthworks, vegetation removal and land modification. Parts of the route, notably around the Pohuehue Viaduct and in the Dome Valley, are areas with significant environmental values that would be sensitive to building a completely new high-speed road through the area.

While aspects of the CBT’s alternative may have environmental effects, such as widening the existing road, undertaking some deviations and bypassing Warkworth, it is considered that these would be very minor compared to the environmental effects of a completely new motorway/expressway standard road.

### ***7.8. Transport resources are used efficiently, supported by sustainable, innovative design practices.***

As noted throughout this document, the CBT strongly considers that the current proposal is a very poor use of transport resources. The current proposal represents poor value for money, and the CBT considers that the money saved by pursuing the CBT’s alternative could free up significant funds for more cost-effective projects elsewhere in the Auckland region (such as the CBD rail tunnel).

While the CBT is sure that sustainable and innovative design practices would be adopted in the construction of the project, the poor ‘value-for-money’ that the project represents as well as its potentially significant environmental impact mean that it is considered the project does not accord with this part of the RLTS’s vision.

### ***7.9. The transport system is resilient in the event of shocks and is adaptable to change***

The CBT considers that the current proposal undermines the resiliency of the transport network, because it involves spending a significant amount of funds on a project that will undermine the viability of the North Auckland Railway Line (which is already proposed for potential closure). Furthermore, it will act as an incentive for people working in Auckland to live further and further north, creating a greater amount of car (and therefore oil) dependency. The most likely ‘shocks’ and ‘change’ to be experienced by the transport network in the future would be a significant spike in the price of oil, or a very sudden need to reduce carbon emissions to counter the effects of climate change. In both scenarios, the current proposal is considered to do more harm than good.

Furthermore, one must again consider the ‘opportunity cost’ of spending a significant amount of transport funds on this project, when it could instead be spent on projects that would improve the resiliency of the transport network to shocks – such as the CBD rail tunnel project that would stimulate increased use of the rail system that will be electrified in the near future.

### 7.10. Summary

Overall the CBT considers that the current proposal does not contribute positive to the vision set by the Regional Land Transport Strategy. While the project’s investigation is supported by the RLTS, and the RLTS recognises the need to improve connectivity with Northland, the poor cost-effectiveness and potentially significant environmental effects of the proposal mean that compared to other projects, the Puhoi-Wellsford road of national significance in its current form is considered to be a ‘poor fit’.

Furthermore, the CBT considers that the ‘opportunity cost’ of spending funds on this project rather than on other, more needed and more strategically aligned projects, will adversely impact on the ability to fulfil the vision of the RLTS.

## 8. Discussion:

The CBT considers that the current project does not offer good value for money and should not be a priority transport project. Many of the benefits the project is supposed to deliver are highly questionable, and the low cost-benefit ratio of the conventional analysis (which excludes wider economic benefits) is considered likely to be over-stating the benefit of the project in any case. This is largely because the travel time savings benefit, which are the most significant proportion of benefits generated by the project, are predicated on a base average speed of 60 kph along the whole route between Puhoi and Wellsford. This seems to be extremely slow, and therefore if the current speed is higher, the benefits of the project would be significantly reduced.

A summary of the estimated costs and benefits of the different options is included in the table below, with an analysis of their comparative cost-effectiveness:

<b>Benefits</b>	<b>NZTA proposal (\$1.69 billion cost)</b>	<b>CBT Option 1 (\$160 million cost)</b>	<b>CBT Option 2 (\$320 million cost)</b>
Journey Time Reliability	\$8.4 million	\$5.04 million	\$6.72 million
Travel Time Benefits	\$352 million	\$105.6 million	\$140.8 million
Vehicle Operating Cost Benefits	\$35.2 million	\$1.76 million	\$3.52 million
Accident Cost Benefits	\$133.4 million	\$93.4 million	\$102.1 million
<b>Analysis</b>			
Total Benefits	\$530 million	\$170.6 million	\$253.1 million
Benefits/Cost	0.31	1.07	0.79
Benefits/Cost (assuming a 0.8 BCR for NZTA proposal)	0.8	2.76	2.04

In terms of the project's wider economic benefits, the CBT considers that these are tenuous as well. The primary wider benefits are considered to relate to tourism and forestry, but as tourists may prefer a more scenic route over a motorway while logs are often more suited to rail transportation, these benefits might be over-stated. It should be noted that the 2008 SH1/16 Auckland to Wellsford Strategy Study – prepared by SKM for Transit NZ – had the following to say about wider economic benefits:

#### **5.9.1 Regional Economic Impacts**

Within the initial evaluation framework, the relative effects of strategy options for the state highway network were considered. Further work was undertaken to assess the potential magnitude of implementing the strategy on the regional economy. The key conclusions that arose from this assessment were:

- The economy of Northland is relatively weak with low regional GDP per capita and a low historic growth rate.
- The economy also has a relatively high concentration of activities in the agriculture and natural resources sectors, areas where key demand may lie overseas rather than elsewhere in New Zealand. For this traffic, interactions with Auckland may decline with the development of port facilities at Marsden Point and the construction of a connecting rail link.
- The key centre in the Northland is Whangarei, which is at a considerable distance from the main centres in the Auckland region. The areas south of Whangarei are relatively lightly developed containing about 10-15 per cent of total regional employment, and the scope for substantial economic growth with the upgrading of SH1 is limited.
- The activity most likely to benefit from the improvement of SH1 to Wellsford is tourism. However, this is relatively small scale in the areas in the south of Northland with a contribution to GDP of about \$30-50 million. Even a significant increase in this contribution would be modest when set against the likely costs of road upgrading.

Therefore, regional economic issues are unlikely to make a significant contribution to the viability for implementing the strategy. However, it is clear that the strategy would make an overall positive contribution to the region.

The CBT is highly surprised that between 2008 and 2009 SKM changed their opinion of the impact of wider economic benefits from the above to “The impact of including the wider economic benefits would therefore be significant” as is stated on page 36 of their 2009 report.

It is considered that many of the most significant benefits of the Puhoi to Wellsford road upgrade, particularly in terms of safety, could be achieved at a fraction of the cost, and that is what has been proposed by this report. It is also very important to consider that the timeframe for implementing many of the upgrades proposed is far shorter than would be the case for constructing a completely new, offline motorway. Many of the safety upgrades would occur within the existing highway designation, and therefore would require very minimal consenting work. The smaller scale of other projects, such as the Warkworth bypass, is likely to mean that consenting, design and construction would be

much faster than the full 38 km upgrade. Therefore, the benefits could be realised much sooner.

## 9. Conclusion and Recommendations:

Overall, the CBT considers that either of the two alternatives proposed would provide far better value for money than NZTA's current project. The benefits would also be delivered much sooner, which is of particular importance to avoid any further loss of life along this stretch of State Highway One.

Therefore, the CBT recommends that the ARC adopts the following principles and position with regards to the Puhoi to Wellsford road upgrade.

- That officers undertake further analysis of the CBT's proposed alternatives, particularly in terms of their approximate costs, benefits and economic evaluation.
- That, subsequent to further analysis of the proposed alternatives, the ARC adopts either Option 1 (approximate cost \$160 million) or Option 2 (approximate cost \$320 million) as their preferred solution to the current issues faced on the Puhoi to Wellsford section of State Highway One.
- That the ARC will meet with senior officials at NZTA and with the Minister of Transport to discuss the concerns held about the cost-effectiveness of the Puhoi to Wellsford road upgrade and the need for more immediate safety upgrades to the existing sections of State Highway One between Puhoi and Wellsford.
- That the ARC will write to NZTA and the Minister of Transport requesting that current investigations into a full off line road between Puhoi and Wellsford be placed on hold, and efforts be focused on progressing a Warkworth bypass and safety upgrades to the most dangerous sections of State Highway 1.