



Officially opened in November 1999, the Oтира Viaduct in Arthur's Pass replaced the narrow winding road that was prone to avalanches, slips and closures – might this be an option for the Manawatu Gorge?

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The extracted material will be low grade; however, it is still envisioned it will have a credit value in the range of at least \$1–\$2 per cu m. It could be used for fill in other roading projects.

This potential sizable credit has not been addressed in any cited analysis report concerning the BCR calculation. In theory, any applied project credits could generate a more favourable BCR for this option.

The greenfields option appears a viable solution. Such approaches are well utilised in other parts of the world. Based on the data presented in

the 2012 report, it is suggested the option should cost under \$300 million, provided any credits are retained by the Crown and not by the contractor to be later on-sold back to the Crown.

**Option B**

Option B is a bridging and viaduct option. It is 6670 m in length and follows the same corridor as the existing SH3 passageway. The project is expected to cost \$412 million and has an anticipated BCR of 0.9.

Construction sums have been estimated at \$312 million with a \$100 million contingency.

Why and what the 32% contingency is for is unclear. If the full contingency is not used, a credit would be applied to the project cost that could potentially improve the BCR.

A bridge and/or viaduct option design would certainly be a drawcard for the region and attract many domestic and international tourist travellers. The option will, however, still need to consider the shallow-seated regolith (the loose unconsolidated rock that sits atop the bedrock) and bedrock failures that plague the current road. Whether these effects will be greater or less than the current alignment is unclear. A bridge and viaduct option would need to contend with the risk of deep-seated slope failure.

**Option C**

Option C is the Worley Road route north of the Manawatu Gorge. It is 10,500 m in length with a documented project cost of \$118 million. BCR is predicted at 1.5 for this option.

It is unclear how the construction sums for this option were calculated. The addition of all construction items, as presented in the report, is \$74 million. There is, however, a \$44 million gap between the sum of the project's construction costs (\$74 million) and the documented total project cost (\$118 million).

The Worley Road option is the cheapest out of the four options presented. It has potentially the most favourable BCR, which would increase if there is an error in the construction sums.

Logistically, however, the route is considered the poorest option of the four presented. The government spends millions nationwide improving and reducing the length of freight connections. Adding a further needless 5 km onto the freight passageway between Manawatu and Hawke's Bay does not make sense.

**Option D**

Option D is a tunnel option with a length of 5380 m. The construction sum is \$1.8 billion and largely composed of \$300,000 per metre cost for the construction of a four-lane tunnel. BCR for the project is 0.2.

Firstly, economically this is the most expensive solution. Secondly, at least two major active faults would need to be crossed. Thirdly, the propensity for catastrophic deep-seated landslides in this area has not been sufficiently addressed in any of the publicly available reports. Accordingly,

there is insufficient research available on this option.

**THE SOLUTION**

The Manawatu Gorge is, in an adaptation of government vernacular, a gorge of national significance and should be accorded such status. The Manawatu River's action is the principal origin of slope instability in the gorge, with the roading realignments of the past having accelerated this natural process. The planners of the future need to recognise it is always problematic to fight nature and find a better option to link the Manawatu and Hawke's Bay regions.

The 2012 report suggests a long-term solution will be at least a decade away. The regions of Manawatu and Hawke's Bay, and the wider NZ Inc, will continue to be logistically impaired while awaiting a solution. It is also recognised that continued road access through the area must be maintained during the reconstruction of whatever option is chosen.

From a geological perspective, it appears that the greenfields project of taking a multi-lane direct line over the Southern Taranaki Range is possible and logistically efficient. Once constructed, this new access way would re-establish the efficiency the distribution industry has created dispensing freight from the Manawatu distribution hub to the wider reaches of NZ Inc.

This greenfield option has a projected cost of \$300 million, with a potential 52 million cu m stockpile of rock for NZTA roading or other projects. With a potential project credit value at \$2 per cu m for the cut-to-waste fill of \$100 million, the real cost of this option reduces to \$200 million.

If, however, there is a perceived benefit to future tourism, then a viaduct option may well have merit.

The government is reportedly releasing a final resolution to the issue in December this year. As the gorge has already been open 145 years, any BCR should consider a project benefit of at least that time horizon.

Procrastination has caused \$100 million to have already been consumed in the 13 years since 2004. Extrapolating this value along with the longevity of the gorge road would indicate a significant investment is justified in restoring the viability of one of New Zealand's most important road links.

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