The proposed monorail and tunnel schemes: compounding problems, not solutions

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Background
Mary Williams is an expert in road safety and sustainable transport issues and chief executive of the international charity Brake with branches in the UK and New Zealand. She has sat on numerous government and non political committees relevant to her area of work such as select committees and taken a lead in responses to national consultations in the UK and New Zealand on road safety and sustainable transport matters, ranging from new build roads to cycle paths, such as the New Zealand Safer Journeys strategy 2010-2020.

Introduction
Transport solutions should cause levels of disruption and pollution in their construction and usage that are acceptable when weighed against benefits. Benefits typically include reduced carbon footprints and casualties and improved transport routing and modal options to enable travel for all; connecting and stimulating conurbations and enabling healthier, more sustainable travel. They may, although not necessarily, reduce journey times. This paper considers the monorail and tunnel schemes against these criteria usually applied by governments, such as the UK government's Transport appraisal and modelling tools[1].

Carbon footprint
Carbon savings have been trumpeted by the monorail and tunnel companies.[2] Based on transportation of 160 visitors (the capacity of the monorail), the total distance travelled by vehicles required on Riverstone's multi-modal return journey from Queenstown to Milford Sound (via catamaran, multiple all-terrain vehicles, monorail and multiple coaches) is 1,016km.[3] To transport the same number of people by three coaches through the proposed tunnel incurs 1,236km.[4] On initial consideration, both these schemes compare favourably with 1,740km incurred by using coaches on the existing road infrastructure.[5] However, this simplistic calculation is misleading as it does not consider a) the energy efficiency of all vehicles involved, nor b) other options remaining open to travellers.

While an electric monorail is more energy efficient than three coaches, this is countered by the use of multiple all-terrain vehicles travelling a combined distance more than four times the distance travelled by the monorail.[6] The significant carbon emissions caused by the construction of the tunnel and the monorail also need factoring.

More critically, carbon saving claims for both proposals must be considered in the context of high numbers of freedom visitors continuing to choose to visit Milford Sound independently. There has been "an increase in the number of freedom independent travellers using the Milford Road and a decrease in coach tour parties."[7] Often freedom travellers use vehicles with poor fuel efficiency, namely camper vans or older vehicles. There is no empirical evidence that either the monorail or tunnel proposals will reduce numbers of Milford Sound visitors wishing to travel independently rather than on a tour bus or multi-modal experience, nor evidence that numbers of people travelling by tour group will increase disproportionately to numbers travelling independently.

For the above reasons, claims of carbon savings by the applicants are suspect; and no detailed carbon review has been published.

Road safety
Milford Road (SH94) is ranked third highest nationally in terms of personal risk by KiwiRAP, with 13.7 annual average fatal and serious injury

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[1] https://www.gov.uk/transport-appraisal-and-modelling-tools

[2] http://fiordlandmonorail.com/project/project-summary Riverstone Holdings says: "The electrically-powered monorail will significantly reduce the carbon footprint of each visitor."

End note

[3] Riverstone Holdings proposed multi-modal return journey for 160 people includes:
20km one way catamaran trip x2 = 40km two way;
45km one way in four all-terrain vehicles carrying 40 people each (so a total of 180km travelled) = 360km travelled two way;
41km one way electrically powered monorail trip = 82km travelled two way;
89km one way in three coaches, presuming capacity of 54 people each (so a total of 267km travelled) = 534km travelled two way.
The total distance travelled by multiple vehicles to transport a projected 160 people per multi-modal trip from Queenstown to Milford Sound and back is therefore 1016km, with no estimated time saving due to modal changes required. This compares favourably with 160 people travelling in three Real Journeys coaches on a 290km coach trip from Queenstown to Milford in three coaches (580km round trip) = 1740km.

[4] The tunnel project would require a 50km journey from Queenstown (100km return) plus an 11.3km tunnel journey (22.6km return) plus a 42km from the tunnel exit to Milford Sound (84km return) = total of 412km return journey. For 160 visitors, this is a total 1236km travelled in three coaches.

[5] As per above calculation

[7] Assessment of Access Options for Milford Sound, Final, Prepared for Environment Southland November 2012

crashes per 100 million vehicle-km; meaning a death and injury rate six times higher than on, for comparison, SH1 (Dunedin to Mosgiel).[8] The majority of casualties involve freedom travellers in 'loss of control' crashes due to inappropriate speed, fatigue, and driving on the wrong side of the road. For the six year period 2006 to 2011, 81% of tourist crashes involved rental vehicles,[9] often in speed related crashes resulting in loss of control, forgetfulness regarding which side of the road to drive on, and fatigue.

The priority of any transport scheme is to prevent death and injury. The priority of a transport solution for the Milford Road should be to decrease the high numbers of freedom travellers who are a primary cause of bad driving and casualties. However, the tunnel and monorail proposals are not aimed at this market.

Tunnel and monorail safety

The monorail and tunnel schemes both raise additional transport safety risks. The risks of road tunnels are well documented and the subject of research internationally; tunnel risk models[10] highlight fire, ventilation and escape difficulties heightened in an earthquake zone. The risks of a monorail in a earthquake zone traversing forested slopes and meandering river beds are the subject of concern by geologists.

Neither proposal negates the need to continue to use the avalanche-prone Milford Road and the sub-standard single-track Homer Tunnel to access Milford Sound, which are in themselves existing safety headaches. The upgrading of the Homer Tunnel is a project considered by Environment Southland of "national significance and should be funded on that basis. Funding an activity of this value and importance from the modest level of funds allocated for new and improved infrastructure for Southland's state highways is not realistic. Doing so would overshadow the other necessary activities required to keep the network operating effectively."[11]

There is no reason to compound the existing difficulties of the route to Milford with further and similar difficulties introduced inevitably by the monorail or tunnel proposals.

Tourist experience and time savings

The existing road (and former rail) route from Queenstown via the central farming and servicing communities of Five Rivers and Mossburn then south west to Te Anau is along a wide, flat, and consequently earthquake-tolerant valley. It is serviced by several commercial bus services (TrackNet and Intercity) in addition to being used by the Milford sound coach providers such as Real Journeys, Southern Discoveries, Kiwi Discovery, Ultimate Hikes (and many more) and stimulates employment in rural centres providing service stops, while also enabling people to change mid-route for forward journeys to Dunedin and Invercargill. The route is used by New Zealanders and tourists for road travel around Southland, as well as to Milford Sound. The vibrant township of Te Anau, which provides many tourist attractions most notably the Kepler Track and Lake Te Anau, is mid way on this journey and provides an appropriate stopping point for tourists wishing to visit Milford Sound; including all necessary facilities such as accommodation, right on the edge of Fiordland National Park.

While it could be argued that spending some time on a boat and monorail is a tourist experience of equal or indeed slightly greater value, there is no estimated time saving provided by the monorail proposal compared with the existing road journey, due to the inconvenience of all modal changes required (boat, to all- terrain vehicles, to monorail, to coaches). This was admitted at a 2012 public meeting in Te Anau by Riverstone director John Beattie.[12] It is likely that research into tourists' preferences for a multi-modal option including boat and monorail versus the convenience of a single mode would generate mixed results.

While some time saving can be claimed by the tunnel proposal, it is unlikely that a convincing argument could be made that spending time in a lengthy road tunnel constitutes a qualitative tourist experience (a place of fear for many travellers).

Te Anau

The objective of both proposals is to connect more directly Queenstown and Milford Sound. This is a forced and unnecessary objective, as Queenstown is not the nearest tourist service town to Fiordland. Te Anau is the gateway to Milford Sound; and has all necessary services including a full range of accommodation, restaurants, and supermarkets. Travel from Queenstown to Te Anau is already easy by public transport, via scheduled minibus service and multiple coach providers. Te Anau is the obvious choice for the starting point of any improved transport solution for access to Milford Sound.

Park and ride: a simple solution without expensive constructions costs and environmental damage

A park and ride option was identified by a 2012 report for Environment Southland as having "potential to manage peak visitor numbers and congestion at Milford Sound and improved public safety" and a preferred solution to manage tourist travel into Fiordland National Park.[13] Such a scheme could have track drop off points along the Milford Road, allow for integration with existing tour operators in Queenstown and the local Tracknet minibus service provider, and reduce casualties cased by freedom travellers. An options assessment within the report rated a park and ride scheme on SH94 from Te Anau Downs to Milford Sound as highly as the monorail even when judged against a range of criteria including tourist experience and economic impacts as well as factors more central to a transport scheme such as safety and access.

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[8] Risk maps for Otago and Southland at: http://www.kiwirap.org.nz/pdf/Otago%20brochure.pdf

[9] Crash summary from OPUS State Highway safety report

[10] For example, http://www.ilf.com/fileadmin/user_upload/publikationen/34a_Austrian_Risk_Analysis_for_Road_Tunnels_Development_of_a_New_Method_for_the_Risk_Assessment_of_Road_Tunnels.pdf

[11] Environment Southland, Draft Regional Land Transport Programme, 2012-20

[12] Meeting of 20 February 2012, Distinction Hotel, Te Anau

[13] Assessment of Access Options for Milford Sound Final, Prepared for Environment Southland November 2012

Conclusion

Given the simplicity of a park and ride scheme's implementation compared with the construction of a monorail or tunnel and their environmental destruction and safety risks for minimal or questionable benefits, and given the ability of a park and ride scheme to impact on freedom travellers and significantly reduce their carbon miles and casualties caused by them, a park and ride scheme is overwhelmingly the preferable option and negates the need for more adventurous, costly, and ultimately unnecessary options.