



SAFE JOURNEYS
for **ACTIVE KIWIS**

18 May 2018

Submission on draft Investment Assessment Framework for the 2018–21 National Land Transport Programme

The case for change

NZTA's business case and the Cost–benefit appraisal methodologies are clearly not working. New Zealand's transport system is underperforming in many critical areas: it is overly dependent on private motor vehicles, prone to traffic congestion, lacks resilience, has poor integration between modes, is our fastest growing source of CO2 emissions, a significant cause of air pollution causing respiratory illness especially in young and old, and is unsafe - especially for vulnerable road users, thus the active modes of transport are not an option for many New Zealanders and lifestyles have become sedentary.

We agree with the Government's GPS 2018: New Zealand's transport system needs to be transformed so that all modes are integrated into a safe, efficient and sustainable system.

The Investment Assessment Framework must change the way projects are assessed so that the strategic priorities of the GPS 2018 are met. In order to improve quality of decisions, the satisfaction with the decision process and increase the productivity of the decision-makers, we strongly recommend NZTA considers replacing its business case and the Cost–benefit appraisal methodologies with:

1. Multi-criteria Assessment and
2. the Hierarchy of Treatments

The case for these best practice methodologies follows.

The case for Multi-criteria Assessment

As pointed out by the Productivity Commission in its draft Low-Emissions Economy Report, the complexity of land use and transport planning “poses a challenge to conventional economic assessment methods that focus on short-run impacts and put heavy emphasis on travel time savings”.

However, the “travel time savings” used by NZTA to justify project investment are typically fanciful and over-valued, because:

1. NZTA excludes “newly generated trips” when calculating the expected travel time savings. This is significant because newly generated trips take up the new capacity, resulting in:
 - 1.1. travel times return to similar levels before the road widening project
 - 1.2. the newly generated trips cause greater congestion downstream at the next bottleneck and intersections. The extra traffic undermines efforts to improve the social, safety and environmental strategic priorities of the GPS.
 - 1.3. the original problem remains unsolved (in fact it is worsened per 2 above) and awaits another significant investment¹, hopefully this time by applying the Hierarchy of Transport – see Figure 1, Page 6.
2. Furthermore, the actual value of NZTA’s forecast time savings is highly questionable. The vast majority of the forecast travel time savings are due to peak hour travel time by commuters who work routine hours, eg: 8:30am to 5pm. If their journey time is reduced by 15 minutes then what do they do with that extra time in the morning? Given their hours are fixed, it is likely most people will sleep in for an extra 15 minutes. NZTA however uses this extra sleeping time in BCR calculations to justify new roading projects.

In contrast to the historic assumption that time delays to motorists are a cost to be included in a CBA calculation, recent research² published by the Institute of Transport Economics considers such delays to be a benefit:

¹ “Every road project built today is going to be a temporary and expensive ‘fix’ that will be just as congested in 10 years as current roads are today, solving nothing and just delaying the provision of a real solution until crisis point is once again reached.” City Centre Residents’ Group submission to draft RLTP.

² Institute of Transport Economics, 2010: Measures for Pedestrians and Public Transport in City Intersections.

Effect for other road users

In this review, the focus is what effect the measures have for pedestrians and bus traffic. Several of these measures reduce mobility for private cars. However, reduced mobility can also be seen as a measure to promote more environmentally friendly urban transport. Measures that result in poorer conditions for private cars are therefore no disadvantage when the objective is to promote environmentally friendly urban transport.

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If the objectives of GPS 2018 are to be met, then the “benefit” of travel time savings for private motor vehicles users must be weighed up against the “cost” of making private motor vehicles use more attractive (or as is often the case in NZ, a continuation of being the only transport option). Such costs include:

- Greenhouse gas emissions and environmental degradation
- Health effects on population (air pollution, noise pollution, sedentary travel effects, crash deaths & injury, etc.)
- Community severance and degradation

However CBA is incapable of measuring social, cultural and environmental aspects of projects. CBA appraisal was developed by the business sector to select projects that maximise return on investment. It is fundamentally inappropriate for organisations that have objectives beyond maximising financial return.

CBA therefore must not be used as a benchmark to determine whether projects proceed (eg: “a BCR of greater than one”), instead it is only suitable for helping determine the priority of projects as one factor feeding into a multi-criteria assessment.

The IAF and Multi-criteria assessment

The draft IAF is prescriptive yet open to misinterpretation/misuse with its various “investment criteria tables” for each of the different modes. We are uncertain that it will deliver the transformative approach required for NZ’s transport system to become safe, integrated and efficient.

We suggest a superior approach is to use a multi-criteria assessment such as Multi-criteria decision analysis (MCDA). This is a transparent process which assesses project options on the outcomes sought: Access, Safety, Environment, Integration, Place-making, Value for money, etc.

We refer you to the Technical University of Denmark’s “Multi-criteria decision analysis for use in transport decision making” (copy of paper attached) and note this extract from the Introduction:

The most common methodology applied so far to the evaluation of transport systems has been conventional cost-benefit analysis (CBA) (Janic, 2003), which supported by

traffic- and impact model calculations provides the decision-makers with a monetary assessment of the project's feasibility. A socioeconomic analysis is in this respect a further development of the traditional CBA capturing the economic value of social benefits by translating social objectives into financial measures of benefits (Wright et al., 2009). Internationally seen there has been a growing awareness over the recent years that besides the social costs and benefits associated with transport other impacts that are more difficult to monetise should also have influence on the decision making process. This is in many developed countries realised in the transport planning, which takes into account a wide range of impacts of also a strategic character (van Exel et al., 2002). Accordingly, appraisal methodologies are undergoing substantial changes in order to deal with the developments (Vickerman, 2000) that are varying from country to country and leading to different approaches (Banister and Berechman, 2000). It is, however, commonly agreed that the final decision making concerning transport infrastructure projects in many cases will depend on other aspects besides the monetary ones assessed in a socio-economic analysis. Nevertheless, an assessment framework such as the Danish one (DMT, 2003) does not provide any specific guidelines on how to include the strategic impacts; it merely suggests describing the impacts verbally and keeping them in mind during the decision process.

A coherent, well-structured, flexible, straight forward evaluation method, taking into account all the requirements of a transport infrastructure project is for this reason required. An appropriate ex-ante evaluation method for such projects can be based on multi-criteria decision analysis (MCDA) (Tsamboulas, 2007. Vreeker et al. 2002), which in most cases can be combined with a CBA (Leleur, 2000). Scanning the literature (Belton and Stewart, 2002; Goodwin and Wright, 2009; Keeney and Raiffa, 1993; von Winterfeldt and Edwards, 1986) it is found that the use of MCDA in the decision process usually provides some or all of the following features:

- 1. Improvement of the satisfaction with the decision process*
- 2. Improvement of the quality of the decision itself*
- 3. Increased productivity of the decision-makers*

Based on the material provided above, we strongly recommend NZTA adopts Multi-criteria decision analysis for the assessment of transport projects.

Hierarchy of Treatments

A new over-arching approach to transport planning is required

The last 60 or so years of transport planning in New Zealand has been predominately roading orientated in order to allow/encourage the growth in private motor vehicle use. The underlying approach has been that “we can build our way out of congestion”. However this approach has failed us because new roading generates more traffic and it is not physically or financially possible to create sufficient road space for every person to efficiently use their own vehicle.

The future is likely to see the rise of electric and self-driving cars. However they are a slow and gradual evolution of the current transport system that doesn't address the key issues. In fact self-driving cars may generate a significant increase in traffic.

We need a new approach that delivers success based on the following Key Performance Indicators:

- NZ's rate of road death and serious injury compared to the best OECD nations
- The degree to which all aspects of the transport system are regarded by users as very safe
- Measures of mobility for school children and disabled persons
- Whether carbon and pollution emissions are in steady decline (in absolute terms)
- Whether traffic congestion delays have plateaued or are in decline
- The portion of the freight task carried out by coastal shipping and rail
- The degree to which transport modes are integrated and complement one another

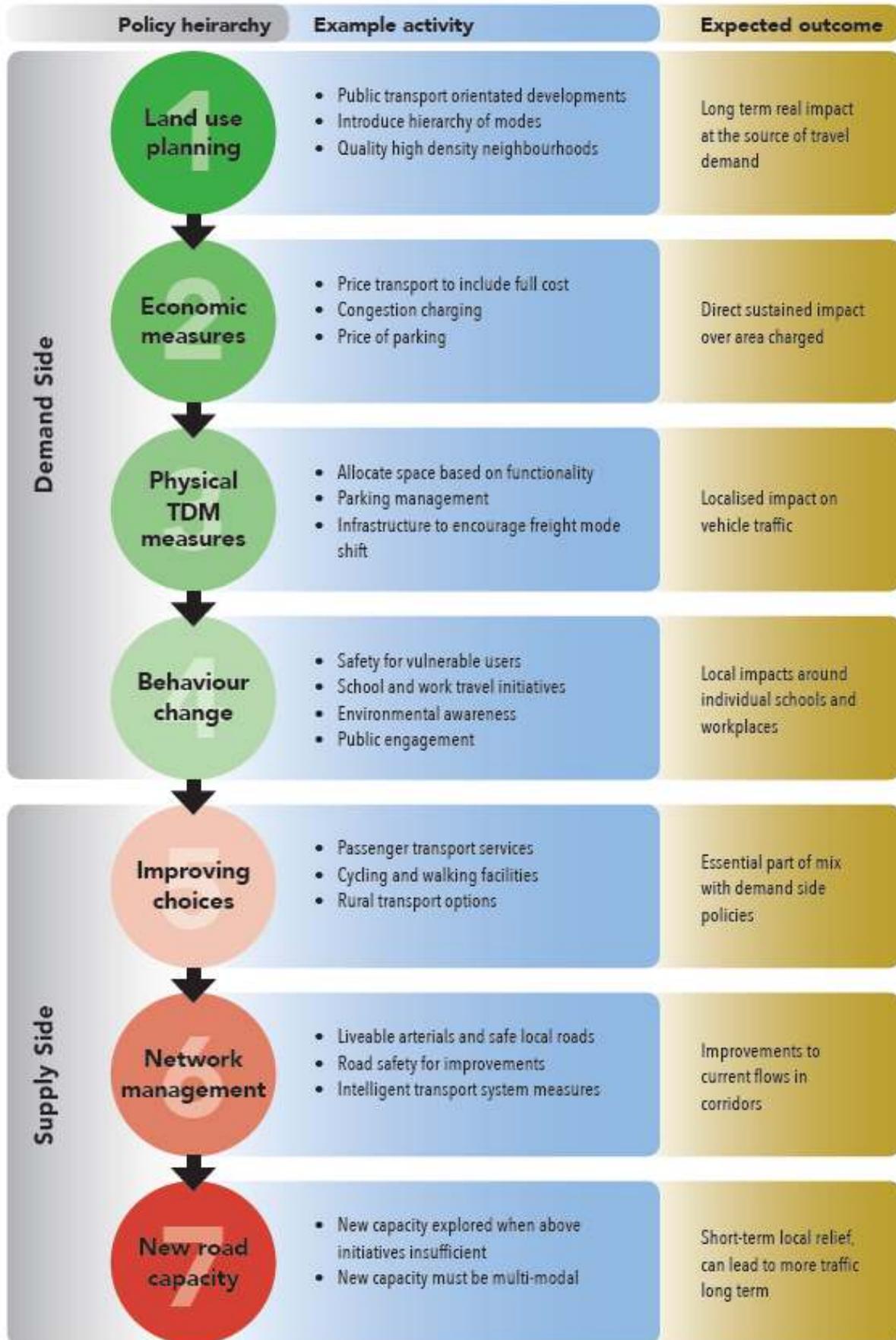
A comprehensive and effective approach is required to meet these formidable challenges along with the needs of different industries and people in all communities (from freight movers and vehicle owners to public transport users and those who walk or cycle).

Such an approach is found in the Hierarchy of Treatments for Transport Planning, see Figure 1 on next page. This is a best practice approach to transport planning that encompasses the 'big picture' yet provides succinct prioritisation of the many various transport interventions to deliver on the Key Performance Indicators above.

The Hierarchy of Treatments is the heart of the planning and implementation regime for a safe, efficient and sustainable transport system. All policies and plans must align with land demonstrate how they support the Hierarchy of Treatments³.

³ An example is provided in Attachment 2: Hierarchy of Treatments for Transport Planning prepared by the Auckland Regional Land Transport Committee (2008)

Figure 1: Hierarchy of Treatments for Transport Planning



In reviewing the Hierarchy of Treatments for Transport Planning for New Zealand’s context, **Movement** has identified nine key actions areas:

<p>Nine key actions for a safe, efficient and sustainable transport system in NZ</p>	<p>Alignment with the Hierarchy of Treatments:</p>
<p>1. Greater investment in active transport to provide high quality facilities for all New Zealanders wishing to get about on foot, horse, bicycle or mobility device.</p> <p>Increase investment for active modes to at least 5% of GPS to provide more and wider footpaths, safe pedestrian crossings, protected cycle lanes and shoulders on rural roads.</p> <p>Review all transport projects (including maintenance) before implementation for opportunities to improve conditions for active transport users.</p>	<p>Policy hierarchy 1 and 5</p>
<p>2. Sensible speeds. Safer traffic speeds are the single most effective invention to make our roads safer.</p> <p>Adopt the Vision Zero⁴ approach to speed management. Typically this means 80km/h on undivided rural roads, 60km/h for unsealed roads and 30 km/h around schools, shops and community facilities. Cost-effective traffic calming and enforcement (eg: speed cameras) are an important tool to ensure adherence to the safer speed limits.</p>	<p>Policy hierarchy 2</p>
<p>3. Safe space for people walking, cycling or using mobility aids.</p> <p>Legislate for a mandatory 1.5 metres minimum passing distance of cyclists by motorists. More safe pedestrian crossings (raised table) and treatment of unsignalised slip lanes. Education campaign to ensure motorists accessing driveways give way to pedestrians on the footpath. Stiffer penalties for motorists causing the deaths of pedestrians and cyclists.</p> <p>Adopt the <u>Road User Hierarchy</u>⁵ and implement it in conjunction with good urban design.</p>	<p>Policy hierarchy 1</p>
<p>4. Improve road safety. Central Government to adopt Vision Zero and make greater investment in road safety improvements, especially road median barriers, centreline rumble strips, road shoulders and foot paths on rural roads.</p> <p>More policing of our roads focused on speed, seat belts, alcohol and mobile phone use. Prohibit the use of speed radar detectors. Increased automatic</p>	<p>Policy hierarchy 6</p>

⁴ See: “Vision zero: a toolkit for road safety in the modern era”

⁵ See: <https://www.nzta.govt.nz/assets/resources/pedestrian-planning-guide/docs/chapter-5.pdf>

speeding tickets and red light cameras. Introduce compulsory third party insurance to deter modified high performance vehicles, eg: boy racers, loud mufflers.	
<p>5. Fewer Trucks. Trucks are involved in 1 in 4 fatalities on our roads. Prioritise freight onto rail and coastal shipping (by having trucks pay their fair share for road maintenance).</p> <p>Restrict the heaviest trucks from accessing urban areas and roads not designed to handle their weight or mass.</p>	Policy hierarchy 3
<p>6. Enhanced public transport through greater investment and priority.</p> <p>Implement a reward scheme to encourage more people to use public transport because it contributes to safer, stronger and more equitable communities, reduces congestion, transport pollution, and the need to build more roads.</p>	Policy hierarchy 5
<p>7. Economic measures: These include road pricing, carbon tax on fossil fuels and car registration fees to encourage reduced use of private vehicles and ownership of smaller (or alternatives to) combustion vehicles.</p> <p>Remove the full hypothecation of fuel taxes, as this motivates NZTA to prioritise transport solutions for greater motor vehicle use. Review NZTA's Financial Assistance Ratios and provide greater flexibility to the GPS ranges to remove mode bias eg: Motorways 100% Government funded but public transport over the same route is only 50% funded.</p>	Policy hierarchy 2
<p>8. Higher standards Emissions testing (eg: Euro 5 or 6) introduced as part of the Warrant of Fitness testing. Mandatory professional driver licence training (including in-class driving education) and re-testing of licences every 15 years to help raise the standard of driving behaviour.</p>	Policy hierarchy 1
<p>9. Replace NZTA's Cost/Benefit business case with multiple criteria decision analysis (MCDA) to evaluate transport projects within the framework of the options within the Hierarchy of Treatments for Transport Planning. This is a more transparent approach that considers the broader social, economic and environmental impacts and has been found⁶ to be more successful with regard to:</p> <ul style="list-style-type: none"> - Improvement of the satisfaction with the decision process - Improvement of the quality of the decision itself - Increased productivity of the decision-makers 	Policy hierarchy 7

⁶ Technical University of Denmark research paper: Multi-criteria decision analysis for use in transport decision making, (2014)

The results of implementing these nine key actions in conjunction with the hierarchy of treatments for transport planning (Figure 1 above) will be significant and positive. We can reduce the serious rates of road death and injury, improve travel choice and efficiency for all New Zealanders whilst reversing the significant environmental footprint of transport.

We can make our transport system safe, efficient and sustainable by 2030.

Movement is an alliance of organisations working to achieve a safe, efficient and sustainable transport system that provides for all; including those New Zealanders wishing to get about on foot, horse, bicycle or mobility device.