

THE DEVELOPMENT OF NEW ZEALAND'S ROAD SAFETY STRATEGY 2010

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ABSTRACT

With New Zealand's road safety targets expiring in December 2001, New Zealand's Road Safety Strategy 2010 was developed to establish a new set of targets backed up by new or improved road safety interventions, and a new performance management framework with accountability assurances for the Strategy's implementation. Initial work on the Strategy began with the development of a robust target-setting model. A realistic and achievable level of safety was determined to form the basis of proposals for the consultation, taking into account current safety performance, anticipated efficiency and effectiveness gains, forecast increased mobility, and a set of new or intensified interventions. Research was undertaken concurrently which looked at world's best practice measures and into strategic directions being developed overseas. A new performance management framework was proposed, which recognised that interventions which address road user behaviour are not the only way to tackle road safety problems. Changing the roads and/or vehicles instead can often be more effective. Three sets of interventions which reflected strategic trade-offs between standards and compliance measures were identified as broad options for improving road safety: an engineering based option; an enforcement based option; and an option with a mix of engineering and enforcement measures. A public consultative process was developed to determine the desired level of safety for 2010, before the final targets could be set. This paper outlines the development process of strategic proposals for New Zealand's road safety effort over the next decade. Government decisions will be made later in 2001.

INTRODUCTION

This paper presents an overview of the development of New Zealand's new road safety strategy. It looks at New Zealand's current road safety performance and it considers the need for a new strategic direction supported by a clear performance management framework. The paper then outlines the core research and development work, including the development of the target-setting model. The consultative process and its outcomes are addressed, and the core components of the final strategy are briefly discussed.

BACKGROUND

With a population of about 3.8 million people, about 2.5 million licensed drivers, and 2.9 million licensed motor vehicles, New Zealanders are highly mobile. We have over 90,000 kilometres of public roads. This road network carries about 37 billion vehicle kilometres of traffic annually. The annual social cost of road crashes exceeds \$3 billion.

New Zealand's road safety strategic direction over the last 10 years has been provided by the National Road Safety Plan. This Plan, which was launched in 1991 and revised in 1995, provided a co-ordinated framework within which best practice safety measures have been developed and implemented. These safety measures have been aimed at achieving safer people, safer vehicles, safer roads, and safer management systems.

Under this Plan, New Zealand has seen significant road safety improvements, with our road toll gradually decreasing from a high in 1987 of 795 to 462 in 2000. This has been achieved by considerable effort addressing key factors contributing to road crashes, and the observation, analysis and implementation of international best practice safety measures. These best practice measures have included: a blackspot programme targeting key sections of our roading network; the world's first Graduated Driver Licensing System; a community road safety education programme which has been effective at encouraging local community ownership and commitment to road safety; and intensive police enforcement in key areas such as speed, restraint use, and drink driving, supported by hard-hitting advertisements.

With the broad range of government agencies involved in road safety in New Zealand¹, the co-ordination of government interests has presented a challenge to the delivery of the National Road Safety Plan. Considerable work has gone into improving high-level road safety co-ordination structures and processes over

¹ The government's principal road safety agency and advisor is the Land Transport Safety Authority. The Ministry of Transport advises the government on general transport issues. The NZ Police undertake road safety enforcement and education activities. Transfund NZ is the funding agency for roading. Transit NZ manages the state highway network, and local road controlling authorities manage the local road networks. The Accident Compensation Corporation (ACC) has a strong interest in injury prevention for the purpose of reducing injury compensation costs.

the last 10 years. This included the establishment of: the National Road Safety Committee² (the principal inter-agency forum for communicating and agreeing top level road safety strategy); the National Road Safety Working Group (senior officials from Committee member agencies who provide support to the Committee); and the National Road Safety Advisory Group³ (a broader group of road safety partners which oversees National Road Safety Plan activities and brings issues to core government attention). The establishment of these groups has resulted in greater participation in road safety across the sector and greater ownership of road safety issues and responsibilities.

THE NEED FOR A NEW ROAD SAFETY STRATEGY

The National Road Safety Plan's safety performance targets are due to expire at the end of this year. New Zealand is set to achieve the Plan's current targets of 11 deaths per 100,000 population and 1.6 deaths per 10,000 vehicles. However, with sustained traffic growth, it is likely that future safety performance will plateau at these target levels unless new interventions are introduced and additional funding is found. A new strategic direction will help ensure continued improvement over the coming decade.

An international comparison of road safety performance clearly shows New Zealand can improve. Using the 1998 International Road and Traffic Accident Database (IRTAD), New Zealand had a safety record in the mid range of IRTAD countries. New Zealand had 2.2 deaths per 10,000 vehicles compared with Sweden's 1.2, the United Kingdom's 1.3 and Australia's 1.5 deaths per 10,000 vehicles.

Emerging international trends have shown that diminishing returns can be expected from strategic enforcement programmes. This has led to the view in some countries that current safety management practice places an undue emphasis on driver behaviour. Although driver behaviour contributes to most crashes, the most effective remedy may not always be to reform the driver. It can sometimes be more effective to improve the roads or vehicles, as such improvements can reduce the number of crashes and their severity, regardless of 'cause'. The road network itself is becoming the focus for development of future road safety strategies in some of the better performing countries.

The demand for stronger links between road safety outputs and outcomes means the challenge for the next 10 years lies in ensuring greater accountability and a performance management framework for road safety agencies. This necessitates an evidence-based approach to assessing what targets could be achieved. Expert analysis of benefits, costs, and funding required, must show that the interventions or new strategies proposed will achieve the overall level of safety set for 2010. Improving the efficiency of road safety partnerships and accountability for achieving the targets, is a challenge that the new Strategy needs to address.

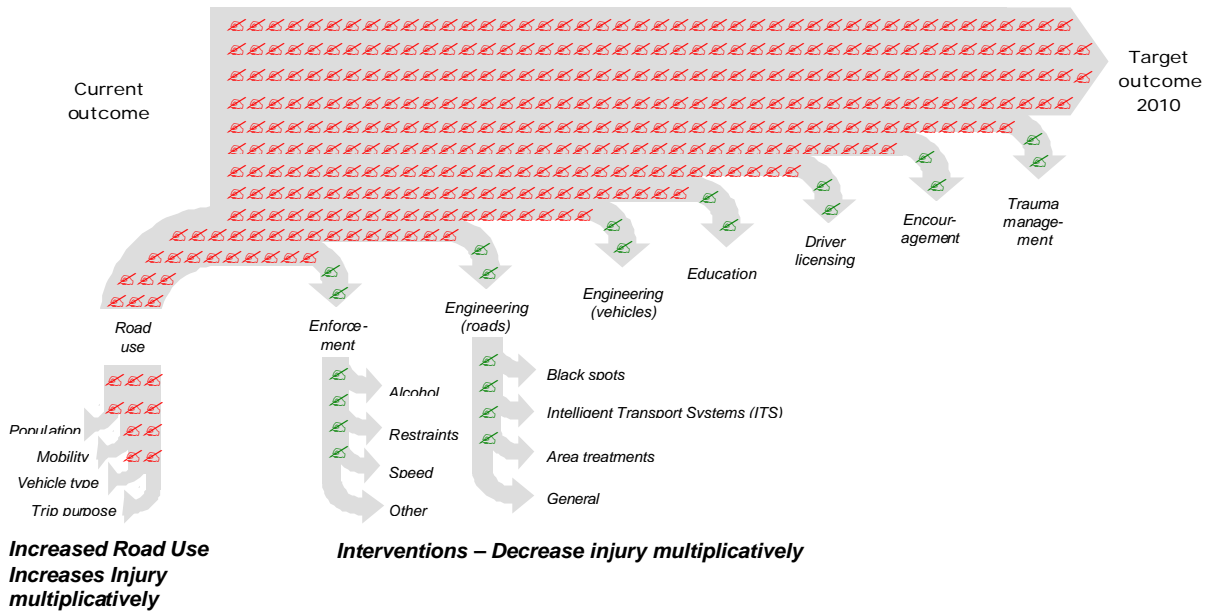
RESEARCH AND DEVELOPMENT

Work on the new strategy began with the development of a robust target-setting model. The need for accountability for targets, mean that the assumptions used in their development have to be clear and defensible. Clear statements of the assumptions concerning resource inputs required to achieve the target, and underlying external conditions such as traffic growth, also allow for renegotiation of the targets should the resource inputs or underlying conditions change for whatever reason.

Many factors interact to influence road safety outcomes. These factors include changes in road use and road safety interventions. The target-setting model uses expert estimates of risk reduction for these factors to calculate their effect on the road toll and to arrive at a target outcome. This target outcome is estimated by making successive adjustments to the current road safety outcome to allow for changes in the influencing factors. The model's structure is multiplicative to avoid double counting of benefits from different proposed interventions. This is illustrated in Figure 1 below.

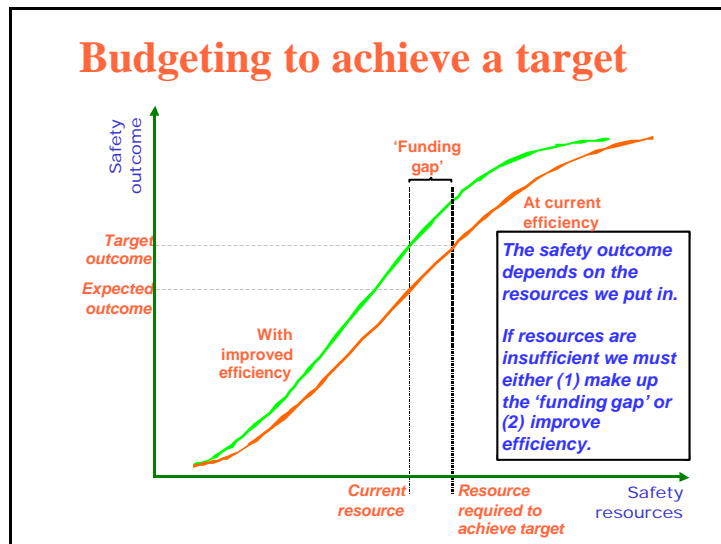
² Membership of the National Road Safety Committee consists of the Chief Executive Officers of the Land Transport Safety Authority (Chair), the Ministry of Transport, NZ Police, ACC, Transit NZ, Local Government NZ (as of August 2000), and Transfund NZ (as of November 2000).

³ Membership of the National Road Safety Advisory Group consists of the Land Transport Safety Authority, Transfund NZ, NZ School Trustees Association, NZ Automobile Association, Alcohol Advisory Council, Te Puni Kokiri (the Ministry of Maori Affairs), Ministry of Pacific Island Affairs, Local Government NZ, Transit NZ, NZ Police, ACC, Department of the Prime Minister and Cabinet, Ministry of Transport, Ministry of Health, Ministry of Justice, Ministry of Youth Affairs, and regional Road Safety Co-ordinators.



When developing the model it became clear that a high degree of data disaggregation would be needed for the purposes of making decisions on a new Strategy. The model has therefore been developed to give us the potential to provide final outcome targets for subgroups (eg cyclists) and intermediate outcome targets (eg mean speeds).

Of vital importance for the new Strategy is the model's ability to generate year-by-year projections which can be used to match proposed targets with funding levels. This enables the government to budget to meet a target. The safety outcome depends on the resources put in. If the resources are insufficient to meet a target then either additional sufficient resources are required to close the 'funding gap' or efficiency must be improved. This is illustrated in Figure 2 below.



Research was undertaken concurrently with the development of the target-setting model, which looked at world's best practice measures and strategic directions being developed overseas. This research revealed that European countries have been experiencing a philosophical shift in focus. Countries such as Sweden and the Netherlands now recognise the importance of systems design in avoiding and counteracting the consequences of inevitable human error. This has led to the development of targets relating to improvements in the system or road network itself, such as reductions in conflict situations through function/road use separations. Other key observations of overseas strategies include: the common focus on speed management as an issue of significance; an emphasis on partnership development with the private sector; a focus on injury prevention through crash

prevention measures; a focus on the role of communities and regional work; and a significant emphasis on monitoring and evaluation of new programmes.

When consideration was given to the key areas where New Zealand can make safety gains over the next ten years, three types of interventions stood out: speed management; an expanded road construction programme; and improved vehicle standards. It was estimated that open road speed management has the potential to reduce the total annual social cost of crashes by 19%. To achieve this, however, mean speeds on our open roads ⁴would need to be reduced to 93km/h. This could be achieved by means of the introduction of demerit points for speed camera offences ⁵, the introduction of lower tolerances for speeding offences ⁶, enhanced police surveillance, and a lowering of the speed limit to 90km/h. The lowering of the speed limit to 90km/h would be highly unpopular. Without lowering the speed limit (but still introducing demerit points, lower tolerances and enhanced surveillance) we estimated that mean speeds would still be able to be reduced, but only to 99km/h. This equated to a potential reduction in total annual social cost of 11.6%.

With the move to a focus on systems design and crash prevention in overseas strategies, we were also keen to explore the potential for risk reduction in the road network environment. Initial work on the potential for risk reduction in this area resulted in an estimated total annual social cost reduction for an expanded construction programme of up to 18%, depending on the level of funding available. More recently, work has been done and is continuing on identifying the types of engineering measures that would produce the greatest safety benefits.

Improved vehicle standards are likely to reduce total annual social cost by up to 19%. New Zealand accepts the standards of leading vehicle safety jurisdictions, and New Zealand's fleet is progressively being renewed to higher standards of safety as the newer and safer vehicles permeate into the fleet. A computerised model was built to estimate the contribution of improved vehicle standards to social cost reduction over the next 10 years. The model forecast the age profile of vehicles involved in crashes and linked this result with a timetable for the introduction of new vehicle standards and estimates for their effect on crashworthiness of vehicles.

Although open road speed management, expanded construction and vehicle standards are the three greatest areas in which it was estimated that social cost reductions could be achieved over the next 10 years, many other interventions were investigated for which risk reduction estimates were derived. These included urban speed management, additional restraint wearing enforcement, blackspot treatments, reducing the blood alcohol content limits, introducing alcohol interlocks, additional compulsory breath testing enforcement, raising the driving age, and changing the legal hours of darkness ⁷. In all, risk reduction estimates were produced for 18 interventions that would reduce the level of road trauma over the period of the 2010 Strategy. It was determined that, using various combinations of these interventions in addition to baseline interventions, New Zealand had the potential to reduce total annual social cost by 2010 by up to 57%.

THE PROPOSED STRATEGY

A proposed Strategy was prepared to form the basis for nationwide consultation. A performance management framework, within which the entire road safety effort can be located, was presented in the proposed Strategy document. This framework recognises the fundamental importance of the road network itself to our road safety effort. The government allocates resources to road safety in order to achieve specific targets for reductions in injury and deaths on the road. To reach these targets, a series of interventions (relating to the design and operation of the roading network and the conditions of entry and exit for vehicles and road users) are maintained, introduced or intensified. These interventions comprise a series of standards and rules, and a compliance regime. Enforcement, performance assessment mechanisms (such as an operator performance rating system currently being developed) and education play an important role in the overall compliance regime applying to the land transport system. A range of implementation activities are undertaken to support these interventions.

An overall target was proposed for consultation, equivalent to the 57% social cost reduction we knew was achievable. This was expressed as New Zealand achieving a level of safety equivalent to current world's best

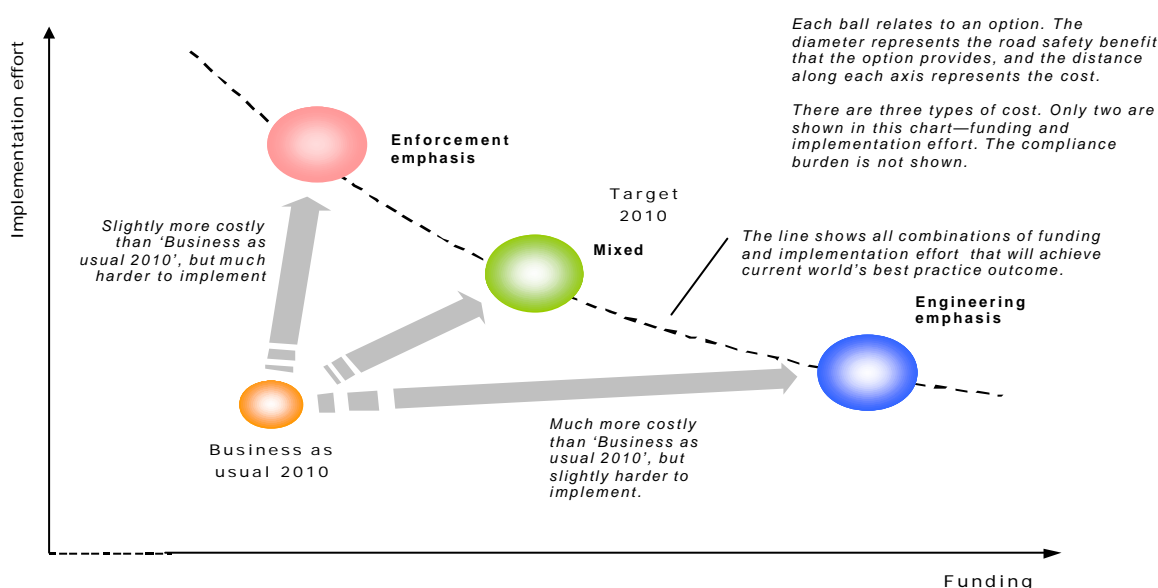
⁴ Open roads have a speed limit of 100km/h.

⁵ At present, demerit points for speeding offences apply only to those offenders apprehended by means other than speed cameras.

⁶ During the development of the Strategy, tolerances for speed offences were lowered, but the effects of this change were yet to be felt. Before this change only those drivers exceeding both the speed limit and the 85th percentile for the traffic stream at that spot (ie the fastest 15%) were ticketed. Tolerances are now set at 10km/h above the speed limit. This should reduce mean speeds.

⁷ Changing the legal hours of darkness would result in requiring the use of headlights for an extra half hour at each end of the day.

practice. This would mean halving our current fatality rates (in deaths/100,000 population and deaths/10,000 vehicles) and achieving an overall road toll in 2010 of about 295 deaths, taking full account of anticipated traffic growth. A range of final outcome, intermediate outcome, and output targets were proposed, including regional targets, targets for Maori and Pacific peoples, and targets for cyclists and pedestrians. Three sets of interventions were identified as broad options for achieving the proposed level of safety: an engineering based option; an enforcement based option; and an option with a mix of engineering and enforcement interventions. These options reflected the strategic trade-offs to be made between improving standards (related to the road environment and conditions of entry and exit) and compliance with these standards. It was noted that these options differed in their costs, timing, and other benefits. The enforcement option would require less additional funding, but would require the implementation of unpopular measures such as strict speed management. The engineering option would require significant additional funding, but less implementation effort than enforcement. Engineering measures produce a more enduring benefit and a wider range of benefits than do enforcement measures. Figure 3 below was used in the consultation documents to show the relative effort and funding required to implement each option:



CONSULTATION

The purpose of consultation was to get a broad steer from all interested parties on the level of safety New Zealand should be aiming for and the preferred option for getting there: enforcement based, engineering based, or a mixture of both. The robustness of the consultation process was based on the strength of the preliminary analysis we had undertaken. This enabled specific questions to be asked of the public based on a clear understanding of what the options for improving road safety in New Zealand are.

The consultation process used a variety of methods to seek feedback, including a national launch, public meetings in regions, meetings with various interest groups, focus groups with the general public, and written submissions. An extensive media campaign was used to publicise the proposed Strategy and the documentation available included a detailed proposed Strategy, an Overview document, a pamphlet, and 2 working papers outlining the analysis undertaken. Over 850 written submissions were received.

The first of the specific questions asked of the public was whether they supported the proposed target for 2010. There was a clear message from the consultation process that the public wanted a higher level of safety, and there was a strong endorsement of achieving a level of safety in 2010 equivalent to where the safest countries in the world are now. The second question related to the preferred option for achieving this level of safety. There was broad support for a mix of engineering and enforcement based measures. The preferred 'mix' would consist of an emphasis on enforcement measures backed up by targeted safety engineering measures and long-term education programmes. The public were concerned at the costs of engineering initiatives, but were also supportive of addressing priority road safety issues. Many people wanted education to play a larger part in the Strategy. When asked whether they were prepared to pay for the additional costs of the strategy, many people indicated they were not prepared to pay anything over and above the current road user related taxes.

The fourth consultation question asked what specific targets should be defined in the final strategy. There was strong support for the range of targets proposed in the consultation documents, including targets for cyclists,

pedestrians, and regions. However Maori and Pacific people for the most part preferred not to have specific targets set for their communities. The question concerning willingness to help implement the strategy received a positive response at both a community and individual level, particularly from local road controlling authorities.

Finally, the public were asked what other matters needed to be resolved as part of the Strategy. The role of education in the strategy was the focus of many comments, with there being a clear perception that education was downplayed in the strategy documents. Driver training, community and school-based education were considered to be very important. The lack of promotion of other modes of transport was a concern raised, as was the difficulties experienced by road controlling authorities in securing funding for safety projects.

Of the interventions proposed in the Strategy, the proposed 90km/h speed limit for open roads received most attention and most opposition. A majority supported a reduction in the Blood Alcohol Content limit, and submissions were generally in favour of expanded construction. Raising the minimum driving age was not supported. There was general support for increased compulsory breath testing and restraint wearing enforcement.

A series of focus groups was held to ensure the general public's opinions and views on the proposed Strategy were heard. A research company was contracted to undertake this qualitative research. Many of the opinions expressed in the focus groups mirrored issues raised in submissions or at public meetings. It was found that although New Zealanders clearly wanted to halve the country's fatality rate by 2010, they also had a lack of confidence that their money would be used in the intended way. The issue of accountability was a recurrent theme with the public wanting assurances that public money would be appropriately channeled so that results would be evident to all. The focus groups indicated a preference for a mixed option of enforcement and engineering measures, with a lean towards enforcement. Concern was expressed at the level of funding required to lower the road toll and the hardship paying for this would cause. A lack of visible police enforcement on the roads was noted, and there was a strong perception that unsafe driving attitudes and behaviours are the key factors contributing to the road toll. Many people were unwilling to acknowledge their own unsafe driving behaviours.

A FINAL STRATEGY

The government is yet to make decisions on the content and strategic directions for a final Strategy, currently scheduled to be launched later this year. The need for greater accountability and a performance management framework for road safety agencies, driven by the demand for stronger links between outputs and outcomes, are likely to be a central components of the Strategy. Using the road network itself as a central element for consideration of road safety issues will broaden New Zealand's road safety focus beyond that of driver behaviour oriented interventions. Clearly defined output and outcome targets, backed up by rigorous analysis of the costs, benefits and the funding required to achieve those targets, will provide the accountability needed and a strong co-ordinated focus for road safety over the coming decade.

REFERENCES

1. Officials Committee on Road Safety, *National Road Safety Plan 1995*, November 1994.
2. National Road Safety Committee, *Road Safety Strategy 2010: A Consultation Document*, October 2000.
3. Land Transport Safety Authority, *A road safety resource allocation model. Safety Directions Working paper 1*, November 1996.
4. Land Transport Safety Authority, *The Safety Directions Development Programme. Safety Directions Working Paper 2*, June 1998.
5. Land Transport Safety Authority, *An international comparison of road safety enforcement, Safety Directions Working Paper 3*, June 1998.
6. Land Transport Safety Authority, *Setting road safety targets. Safety Directions Working Paper 4*, June 1998.
7. Land Transport Safety Authority, *Predicting and costing road safety outcomes. Safety Directions Working Paper 6*, October 2000.
8. Land Transport Safety Authority, *Estimated effects of interventions on road safety outcomes 2010. Safety Directions Working Paper 7*, October 2000.
9. Land Transport Safety Authority, *New Zealand Road Safety Programme 2000-2001*, July 2000.
10. Department of the Environment, Transport and the Regions, UK, *Road Safety Strategy, Current Problems and Future Options*, 1997.
11. Department of the Environment, Transport and the Regions, UK, *Tomorrows roads: safer for everyone. The Government's road safety strategy and casualty reduction targets for 2010*, March 2000.
12. European Transport Safety Council, *A strategic road safety plan for the European Union*, 1997.

13. Ministry of Transport, Public Works and Water Management, Directorate-General of Public Works and Water Management, Netherlands, *Putting Policy into Practise, Long-range programme for road safety 1996-2000*, May 1996.
14. Ministry of Transport and Communications, Sweden, *En Route to a Society with Safe Road Traffic : Selected extract from Memorandum prepared by the Ministry of Transport and Communications*, 1997.