

SUBMISSION TO TASMANIAN LEGISLATIVE COUNCIL

PROPOSED DEFAULT RURAL SPEED LIMIT REDUCTION

Introduction

A statistical and technical analysis of the proposal to reduce default speed limits on Tasmanian roads is presented in this submission.

The draft 2010 – 2020 National Road Safety Strategy promotes a “Safe Systems” approach to road safety. This is the system of safety management required by Tasmanian workplaces to comply with the *Workplace Health and Safety Regulations*, so I looked at this proposal from the approach that Tasmanian industry is required to use, by legislation, to manage health and safety.

For example, a “Safe System” approach recognises that humans will always make some mistakes, and that the work environment, equipment and procedures should be as “forgiving” of human error as possible by lowering the inherent risks. The mining industry has stated that progress began to be made on safety as soon as the simplistic approach of blaming people for accidents was dropped.

Also note that risk (as per, for example, the Australian Standard) is a product of exposure time x likelihood x consequence. Many commentators fail to understand the complexity of risk assessment by only considering a worst case consequence, without consideration of the exposure time and likelihood of the event occurring.

It is also prudent to note the major strides made in active and passive safety by car manufacturers over the last forty years – this has been the single largest factor in reducing road trauma.

All of the documentation released to support the proposed default speed limit reduction was analysed, including the Monash University Accident Research Centre (MUARC) “Economic Evaluation of the Introduction of Lower Rural Default and National Highway Speed Limits in Tasmania”, the two MUARC reports on the KiSS and TaSS trials, and reports from the Bureau of Transport and Regional Economics (BTRE) and Austroads referenced by these documents.

Discussion

The proposal is based on the MUARC Economic Analysis, with references to trials of reduced rural speed limits in two Tasmanian municipalities (Tasman and Kingborough - the TaSS and KiSS trials). The Road Safety Advisory Council (RSAC) then produced a number of promotional pamphlets.

The conclusion being promoted by RSAC is that reducing the default speed limit on rural Tasmanian roads to 90km/hr on sealed and 80km/hr on unsealed roads will save a number of lives per annum. An unspecified number of “high standard” roads

will be unaffected, including roads currently zoned at 110 km/hr. Whilst recognising that increased travel times result in an economic loss, the RSAC claims that slower travel speeds more than compensate economically by reducing crash, environmental, and maintenance costs – however, serious mathematical errors were found in their statements as outlined below.

There are numerous issues with the way the Economic Analysis and the promotional documentation have been prepared, and the statement that the reduced speed limit trials have been a “success” is questionable. The released documentation contains a substantial number of mathematical, logical, factual and even spelling errors.

For example, one of the promotional pamphlets states that “Crash, environmental and vehicle operating costs would be reduced by 26%”. This is a simplistic mathematical error – the author *added* the hypothetical cost reduction percentages (18.5%, 6.5% and 1.2% respectively) instead of calculating the percentage reduction of the whole – which calculates to approx 6%. This undermines the argument that savings under this proposal will compensate for increased travel costs.

There are other basic mathematical errors in RSAC documents, such as the claim “a 10km/hr reduction in travelling speed will result in a 30% reduction in crashes”, which is a simplistic misinterpretation of the Nillson graph and report – the claim is only made that a 2 to 3% reduction in crash risk for the *first* one kph reduction, with the reduction percentage declining for additional speed reduction.

The current Chairman of the Road Safety Taskforce has also stated, in response to criticism of the proposal from the RACT: “The proposal will result in a 10kph reduction in speed and a 30% reduction in the road toll.” Unfortunately, this indicates that he has either not read, or not understood, the Economic Evaluation and Tas / KiSS trial reports:

- This proposal will only result in, at best, a 5 kph reduction in travel speed. (The TaSS and KiSS trials showed 0.9 – 2.4 kph reduction). This is stated numerous times in RSAC documents – we are not talking of a 10kph reduction in travel speeds.
- The Nillson graph does *not* show a linear decline – a 5kph speed reduction is claimed to give a 10% reduction in casualty crashes – not 15 or 30%
- The proposal will only result in this reduction of speed on certain 100kph signed roads, which involve less than half of casualty crashes.
- Based on a desk top interpretation of the Nillson graph, at best a reduction of 2 to 3% in casualty crashes could be claimed by this proposal – a tenth of that claimed by the Chairman of the Road Safety Taskforce.
- If we use the evidence based approach of considering the reduction in travel speeds achieved by the TaSS and KiSS trials, this reduction falls to 1 to 2%.
- Note that the exaggerated public statements about any possible benefits of this proposal, renders surveys of public support meaningless.

In their reports on the reduced speed limit trials, the conclusion of MUARC was that any reduction in crash frequency was “not statistically significant”. This has not deterred the RSAC from declaring the TaSS and KiSS trials to be a “success”, with “the benefits of reduced speed limits being experienced first hand”, and “reduced

rural speed limits in Kingborough having a positive and substantial impact upon the local community” – a bizarre conclusion given the statistical summary of the consultants. Technical analysis shows the trials, if they were intended to show that speed limit reductions result in a safer road environment, have in fact been a failure.

For the TaSS trial, MUARC simply declared that due to the low crash frequency in the municipality the results were inconclusive. For the KiSS trial, accidents on gravel roads actually *increased* under the trial speed limits ie slower speeds resulted in more accidents. Further, while the findings appear to be supported by a claimed (but not significant statistical) reduction in crashes on sealed roads vs the control municipality of Central Coast, further analysis proves that this result was not a result of the speed limit reduction. The control municipality recorded a *greater* reduction in free travel speeds than the Kingborough Municipality – *thus the best road safety outcome was obtained by the municipality where the drivers maintained the highest speeds!*

Note that it is expected that crash statistics will decline over time anyway, given the 3 – 5% yearly reduction due to vehicle active and passive safety improvements.

The RSAC documentation contains numerous statements which are factually incorrect. For example, one document states “Countries that have successfully reduced their road tolls consistently apply 100km/h zones only to roads of very high standard, usually roads that are divided or dual carriageway or have other crash protection treatment.” This is simply not true, England and Australia (including, Tasmania!) are two countries that have had major reduction in road tolls, both these countries have 100km/h (or the Imperial equivalent) zones applying down to single lane sealed and gravel roads.

A further incorrect statement from RSAC is that “upgrading roads is not always possible” – (a statement not supported by any evidence) – “and the reduction in speed limit will provide as much if not a greater benefit”. This statement is contradicted by Austroads and even by the MUARC reports prepared for DIER, which show that increasing lane widths, and sealing verges and gravel roads, and ultimately dividing roads, result in crash reductions of 25 to 50% or more, far in excess of that claimed under this proposal.

This whole proposal is underwritten by the lengthy MUARC Economic Analysis document. This complex document refers to some potential speed reductions not being considered by the RSAC proposal, so careful analysis is necessary. It is puzzling that the report showed the most economical significant reduction (and fully one third of the potential reduction in casualty crashes) could be obtained by reducing undivided 110 kph zones to 100 kph, yet the RSAC did not pursue this option. Again, the conclusions of the Economic Analysis require careful scrutiny, as the RSAC proposal, and the MUARC analysis are based on significantly different scenarios.

It should be noted that the MUARC economic evaluation is conducted by a simulation program entitled “Managing Speeds of Traffic on **European** Roads” (my emphasis) – a program optimised for European conditions, and the Tasmanian evaluation is simply a modified version of earlier reports used by the author. This

desk top simulation relies on an assumption of road curviness, the number of cross roads and occasions requiring stopping expressed in terms of per 100km of rural roads.

A very “curvy” road will result in increased fuel consumption and crash risk at higher speeds, starting again from a stop increases fuel consumption at higher cruising speeds, and an increased number of cross roads increases crash risk.

MUARC found that if Tasmanian roads are assumed to be straight with no cross roads or stops, then the proposal results in a significant economic loss. The report’s author correctly dismisses this scenario as not being typical of Tasmanian roads. He then however, decides to use a study of the curviness, cross-road and stopping density of English rural roads as being 100% equivalent to Tasmanian roads – despite having no data as to whether Tasmanian roads are in fact like English roads, or how much of the road network may or may not be similar!

Unlike MUARC, I conducted some field research on actual Tasmanian roads. (Data is expressed per 100km as per MUARC Report).

Actual Tasmanian Roads Profile vs “Desk – top Assumption”

Road locality	Curves requiring slowing to 70km/h	Crossroads	Stops
English Rural Roads	50	14	3
Harford to Frankford	12	0	0
Sheffield to Sassafras	64	0	4.6
Sheffield to Lower Barrington	0	0	0

Thus whilst some Tasmanian rural roads are reasonably well simulated by the English study, many bear little relation. It should also be noted, as it would be by anyone who has driven in both England and Tasmania, the lower population density in Tasmania leads to a much lower cross - road density and thus a much lower intersection crash risk. This reality undermines the economic report and the whole validity of this proposal. For example, if a very conservative assumption of Tasmanian roads being 1/10 straight and 9/10 curvy is used in the simulation, an economic evaluation would show the proposal is not economically justified.

Note that the revised proposal using criteria to assess individual roads for a speed reduction is more realistic than the MUARC blanket reduction, however the conclusions of the MUARC report cannot be used without heavy adjustment downwards of both the reduction in casualty crashes and any financial benefits.

Desk top surveys using assumed road profiles are simply not accurate enough to be of any value in economic determination of marginal proposals such as this.

Furthermore, the RSAC proposal also modifies the MUARC report, which appeared to exclude B double routes – thus for a proper economic evaluation the travel costs of expensive B doubles needs to be factored in. This has not been done.

Competitive Issues

Despite quoting from a BTRE report that elsewhere states that speed limits are an economic competitive issue, and unilateral actions that increase or decrease travel costs affect that jurisdiction's competitiveness, the Regulatory Impact Statement blandly states that there are no competition issues involved – a simplistic oversight, as longer travel times and increased freight costs will affect Tasmanian industry competitiveness.

Transport Industry Fatigue

Much has been made by supporters of the proposal that it will only add 3.5 minutes to an hour's drive. However, this ignores the fact that many drives are not of an hour's duration – travelling sales reps, couriers, transport drivers etc do not have the luxury of doing one hour drives in a day. A driver doing 10 hours drive on rural roads would now face a further fatigue inducing thirty – five minutes behind the wheel, at a speed where concentration is known to be reduced.

Also, drivers of a speed limited truck know that, unless faced by a significant downhill run, they cannot exceed the default speed limit no matter what gear or throttle position they are using. Under this proposal, drivers would face the increased complication of having to now worry about exceeding a limit on good, straight stretches of road. This will increase fatigue, which is the opposite of the "safety systems" approach meant to be adopted in the new National Road Safety Strategy.

Conclusions


The draft National Road Safety Strategy promotes a safe systems approach to road safety – similar to that required to be used by workplaces for in excess of the last 15 years. This approach champions risk management tools which we are familiar with, such as using the hierarchy of control for managing risks (ie an engineering solution (divided road, increased lane widths, sealed verges) should be used in preference to an administrative solution (put up a sign).

However, this default speed limit reduction undermines such an approach by overstating the potential results, both safety and economic wise, of the speed reduction proposal. This influences public understanding of and support for

increased spending on road infrastructure, or making safer vehicles more affordable by reducing government fees, charges and duties.

It must be noted, however, that the intention to use road design / condition criteria to assess individual roads for potential speed limit reduction is an improvement on the earlier blanket reduction proposal.

Documentation and public comments supporting the proposal contain spelling (for example, "braking" is spelt incorrectly), simplistic mathematical (for example, incorrect determination of a percentage reduction, incorrect reading of a graph) and misleading statements (ignoring the actual results of the TaSS and KiSS trials – no statistical valid reduction in crashes - and simply declaring them a success).



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