Submission to
The Law Reform, Road and Community Safety Committee of the Victorian Parliament

Inquiry into VicRoads’ Management of Country Roads

FINAL

Transport Accident Commission (TAC)
28 February 2018
Contents

1 Executive Summary .................................................................................................................. 2
  1.1 Background.......................................................................................................................... 2
  1.2 Infrastructure Management ............................................................................................... 2
  1.3 Victoria’s Safety Performance .......................................................................................... 3
  1.4 Recommendations ............................................................................................................. 3

2 Background .............................................................................................................................. 4
  2.1 Terms of Reference and Approach to this Submission .................................................... 4
  2.2 Transport Accident Commission ..................................................................................... 4
  2.3 The Safe System ............................................................................................................... 4
  2.4 Victoria’s Towards Zero Strategy ..................................................................................... 5

3 Management of Safe Roads Infrastructure ............................................................................ 6
  3.1 Safe System Road Infrastructure Program ....................................................................... 6
  3.2 TAC’s Experience of Infrastructure Management ............................................................. 7
  3.3 Road Maintenance and Safety .......................................................................................... 8
  3.4 Best Practice in Road Infrastructure Safety Management .................................................. 9

4 Benchmarking Victoria’s Safety Performance ........................................................................ 9
  4.1 Victorian Country Roads .................................................................................................. 10
    4.1.1 Road Network .............................................................................................................. 10
    4.1.2 Road Trauma Data ..................................................................................................... 11
    4.1.3 Community Sentiment ............................................................................................... 12
  4.2 Other Jurisdictions .......................................................................................................... 13
    4.2.1 Leading Jurisdiction Comparison .............................................................................. 13
    4.2.2 What Works .............................................................................................................. 13

5 Conclusions & Recommendations ....................................................................................... 14

6 References .............................................................................................................................. 16
1 Executive Summary

1.1 Background

The principle guiding the Transport Accident Commission’s (TAC) response to this inquiry is the prevention of deaths and serious injuries on Victoria’s roads. The TAC has an interest not only in terms of safety outcomes but as an infrastructure funding partner via the Safe Systems Road Infrastructure Program (SSRIP).

The TAC takes a Safe Systems approach to road safety which acknowledges that humans make mistakes, recognises the limitations of the human body to withstand forces in a crash and places life and health as the highest priority. This approach underpins Victoria’s Towards Zero road safety strategy. Responsibility for making changes to safety rests with the system designers. The TAC approach to countermeasure development is evidence-based to ensure that investment results in the best outcomes for Victorians.

1.2 Infrastructure Management

The TAC is experienced in the management of safe road infrastructure through SSRIP. The program highlights the benefits of a coordinated central approach to road infrastructure management and has invested heavily in safety on country roads. Compared to an approach where administration and implementation is fragmented across two roads authorities, centralised management of infrastructure is likely to:

- deliver economies of scale
- deliver more cost-effective provision of services with centralised procurement
- foster the development of expertise across the range of safety problems
- foster systematic delivery and implementation

The Safe Systems approach to infrastructure management adopts network-based treatments rather than the historically favoured blackspot approach. Safety problems on Victorian roads are not neatly divided into the country versus Melbourne categories; there are roads of a rural nature in Melbourne and built up areas in country Victoria. Having a central roads authority means that the appropriate skill and knowledge should be applied to the problem regardless of where it exists.

As the roads authority, VicRoads leads management of Victoria’s roads. VicRoads sits underneath the newly established Transport for Victoria (TfV), within the Department of Economic Development, Jobs, Transport and Resources (DEDJTR). TfV is responsible for leading transport strategy and policy, including road safety policy and the legislative program for the roads portfolio. It brings together the planning, coordination and operation of Victoria’s transport system and its key agencies to ensure improved integration of Victoria’s transport network. TfV also leads and coordinates the Victorian Road Safety Partnership.

Victoria can learn from work on best practice in the management of safe roads infrastructure in Europe by:

- Benchmarking against high performing jurisdictions
- Conducting evaluations and monitoring of safety performance
- Ensuring investment in and capacity of road authorities is adequate
- Safety being embedded in the life cycle of the road infrastructure management including in maintenance and renewal stages

Lack of data, financial constraints, lack of expertise and administrative burdens are barriers to effective implementation of road infrastructure safety management.
There is some evidence that improving rough pavement surfaces is associated with small crash reductions along major rural highways/freeways. More research is required to understand which pavement conditions increase crash risk; accurate road condition data would be required to measure the relationships between safety and pavement condition. The TAC acknowledges that road maintenance is important, however under Safe System principles, investment in road safety must be directed to the initiatives which have been demonstrated to have significant effects of the greatest magnitude. Typically, this approach favours initiatives that address injury outcomes rather than initiatives that address crash risk.

1.3 Victoria’s Safety Performance

When standardised by population, the length of Victoria’s road network is comparatively longer than many high performing nations, although similar to NSW and Sweden. Sweden’s ability to achieve very low levels of death and injury on the roads provides evidence that better safety performance can be achieved in Victoria and concrete examples of how it can be achieved. Many of the Swedish initiatives are already being implemented across Victoria’s road network.

Victoria’s country roads account for a large proportion of lives lost and serious injuries. High speed rural roads are particularly problematic. Key crash types which feature on rural roads are run-off road, head-on crashes and crashes at intersections. The installation of median and centreline barriers, reduction in speed limits on undivided high-speed roads, speed enforcement and audio-tactile edge lines have been shown to be effective in reducing deaths and injuries on the roads. These initiatives are well supported by the community and are central to SSRIP.

1.4 Recommendations

The TAC recommends that, before any changes are made to the organisational structure of VicRoads, the following be explored:

- The organisational structures used to manage road infrastructure in high performing jurisdictions, such as Sweden, Norway and the Netherlands.
- The expertise and data required to ensure safe management of roads infrastructure and the capacity of current workforce to meet these needs. Setting up two roads administration bodies would stretch current resources and expertise too thin.
- Further research on the relationship between safety and pavement condition.
- The ability of VicRoads to adequately lead and support local governments in the safety transformation of their road networks.

Structural changes to the roads authority could compromise the development and delivery of programs that improve safety on country roads. With larger scale interventions such as those funded under SSRIP being increasingly network-based rather than blackspot based, boundaries between metro and rural roads are less relevant than before. These programs should not be compromised in any structural change.

Any changes to the management of country roads must be considered with road safety as the guiding principle, consistent with Safe Systems approach to road safety and the Towards Zero strategy.
2 Background

2.1 Terms of Reference and Approach to this Submission

The Law Reform, Road and Community Safety Committee has been instructed by the 58th Parliament of Victoria to inquire into the VicRoads’ management of country roads and will report on the inquiry by 30 June 2018. There are four Terms of Reference:

1. the effectiveness of VicRoads in managing country roads;
2. the existing funding model and its lack of effectiveness for country Victoria;
3. the lack of consultation with regional communities and their subsequent lack of input into prioritising which roads are in dire need of repair; and
4. the option of dismantling VicRoads and creating a specific Country Roads organisation and separate Metropolitan Roads body.

The principle guiding the Transport Accident Commission (TAC) response to the inquiry is the prevention of deaths and serious injuries on Victoria’s roads. The TAC has an interest not only in terms of safety outcomes but as an infrastructure funding partner via the Safe Systems Road Infrastructure Program (SSRIP).

2.2 Transport Accident Commission

The TAC is a Victorian Government owned organisation established on 1 January 1987 under the Transport Accident Act 1986 to manage Victoria’s personal road traffic injuries scheme. In accordance with its legislation, the TAC administers a scheme of no fault compensation. No-fault compensation denotes that compensation will be paid regardless of who caused the road crash. The TAC also indemnifies owners and drivers of Victorian registered and insured motor vehicles. It pays damages to seriously injured claimants who are able to prove fault against another party.

The TAC can pay for the costs of reasonable medical treatment that a person needs to treat injuries sustained in a road crash. Services the TAC can pay for include ambulance, hospital, medical, chemist, therapy, dental and nursing services. The TAC can also pay for the reasonable cost of other, non-medical, services and items a person needs due to injuries from the road crash, for example, travel costs to attend treatment, or for special equipment to help overcome road traffic injuries. Other types of benefits the TAC can pay include: income, impairment and common law benefits. In 2016/17, the TAC paid out 788 million dollars in benefits and compensation to people injured in road crashes.

The other key objective of the TAC is to improve Victoria’s road trauma outcomes. The Transport Accident Act 1986 provides for the TAC to reduce the incidence of road traffic injury. Reducing road traffic injury has enormous social benefits for the Victorian community and contributes to the long-term viability of the TAC scheme. The TAC continues to play a key role in reducing the impact of road traffic injury in Victoria, and is a partner with VicRoads, Victoria Police and the Department of Justice in delivering Victoria’s road safety strategy.

2.3 The Safe System

Victoria’s ‘Towards Zero’ approach to road safety is explicitly based on the Safe System philosophy, which states as its vision that no one should be killed or seriously injured within the road transport system. The essence of this approach is underpinned by the notion that human beings are fallible and do make errors, regardless of the system in which they are operating. Recognising this, the Safe System approach dictates that the transport system should be designed in such a
way as to avoid road crashes from occurring in the first place and, if a road crash
does occur, to manage the forces so that they do not transcend the human physical
tolerance to external forces.

The Safe System approach starts from the ethical requirement that people must not
be killed or seriously injured in the transport system; the only acceptable number of
deaths and serious injury due to road crashes is zero (Vision Zero). This demands
and highlights the need for dramatic improvements in existing road safety levels. It is
not ethical to exchange life and health (road safety) with other benefits of the
transport system such as mobility and access. The Safe System approach is driven
foremost by ethical considerations.

The transport system is complex. The Safe System is based on “systems thinking”
and requires a systematic appraisal of road safety stakeholders’ roles and
responsibilities to better understand how the various components in the system
influence one another and road safety outputs.

The Swedish “Vision Zero” and the Dutch “Sustainable Safety” are paragons in
practising such an approach (OECD 2008).

Key principles of the Safe System approach are:

- **Ethics**: Road safety must correspond to the safety values in the society at
  large. Life and health should not be traded off against the benefits such as
  mobility and access.
- **Human capabilities and tolerance**: People do make mistakes and have certain
  biological limitations. People are the most unpredictable element in the
  transport system and it is extremely difficult to change their behaviour and
  attitude in a short time.
- **Responsibility**: The responsibility of road safety must be shared between road
  users and road designers/authorities. In other words, while it is the
  responsibility of the key governmental agencies, road authorities, designers
  and other stakeholders to provide the road users with a Safe System, the
  road users must obey the laws and traffic rules.
- **Scientific basis**: It has been established that scientifically-supported measures
  will lead to greater safety gains and more sustainable solutions. Therefore,
  the Safe System endeavours to apply scientific advances in the field of
  transport safety. Evidence from other jurisdictions clearly shows that ...
- **Sustainability**: Safety should be considered in terms of broad societal values
  and goals. We should view safety in a frame of a sustainable society and
  sustainable development.
- **System approach**: The transport system is an intricate system which
  incorporates numerous stakeholders from different disciplines and areas in
  society. A systematic approach must be adopted to coordinate all these
  groups and hone all their resources and activities toward the ambitious vision
  of zero fatalities and serious injuries within the transport system.

### 2.4 Victoria’s Towards Zero Strategy

The *Towards Zero* strategy sets out the Victorian government’s plan for improving
road safety over the period 2016-2020; setting targets for trauma reduction in Victoria.
It works across a number of action areas including:

- Rural roads, especially high speed rural roads
- Pedestrian and cyclist safety on local roads
- Speed management and travelling at safer speeds
- Drink and drug driving
- Fatigue
• Improving safety of road users including motorcyclists, young drivers, older drivers and children
• Safer vehicles and technology

SSRIP is fundamental to the delivery of infrastructure improvements under the Towards Zero strategy, in terms of barriers, tactile edge lines, traffic calming, roundabouts and speed management.

The government committed to a review of the Towards Zero strategy in 2018; the TAC has been tasked with leading the review.

The review will investigate the governance around the road safety partners' delivery of initiatives under Towards Zero 2016-2020 as well as the implementation of critical initiatives.

The review report will be considered by Government in 2018.

3 Management of Safe Roads Infrastructure

The following section outlines learnings from the TAC’s experience in roads management through the Safe System Road Infrastructure Program and available evidence from the literature and research projects.

3.1 Safe System Road Infrastructure Program

Safe System Road Infrastructure Program (SSRIP) is a partnership between the TAC and VicRoads to deliver safer roads infrastructure throughout Victoria. The TAC has committed $1.4 billion to the program over 10 years, with VicRoads responsible for managing the projects.

Team Mission:
• SSRIP team saves lives and prevents serious injury by transforming the hearts and minds of all providers, managers and users of the Victorian transport network
• Every transport decision must prioritise life and health before all other factors.
• We are passionate to return Victoria to being number one in the world for safe journeys.

The objective of SSRIP is to move Victoria towards zero road deaths and serious injuries by:

i. the cost effective implementation of effective road based treatments to the existing road network;
ii. strategically, systematically and efficiently addressing road and roadside conditions, travel, speed and their combined effects in accordance with the Safe System Philosophy; and
iii. influencing providers, managers and users of the Victorian transport system to make decisions that align with the Safe System Philosophy.

SSRIP has a strict Charter which governs its programs, portfolios and projects to ensure the required structure and controls are in place. The Charter outlines a governance structure which provides clear accountability and delegation at the strategic, tactical and operational levels, and defines clear lines of interaction with TAC, VicRoads and the Safe System Governance Committee (a VicRoads internal committee). This strict Charter ensures an efficient and effective delivery of SSRIP to save the maximum number of lives and injuries on Victoria’s roads.
Much of the SSRIP program has been implemented on Victoria’s country roads; 75% of SSRIP funding has been directed to country roads. With country roads accounting for approximately 55% of fatalities (35% of combined fatalities and serious injuries), clearly investment in country Victoria has been of the highest priority.

Some examples of SSRIP projects implemented across Regional Victoria include:

- Upgrade of intersections, e.g. installing roundabouts, realignment of Y intersections, trials of innovative treatments (e.g. side traffic activated rural speeds)
- Mass action treatment - signage and line marking improvements on rural roads with curves and installation of tactile line marking on high speed roads
- Installation of continuous barriers on nine divided highways
- Installation of centre line wire rope safety barrier and wide centre line treatments on high risk rural roads
- Improvements to pedestrian safety in high activity rural centres
- Upgrading cycling corridors in rural Victoria to improve connectivity and safety
- Installation of barriers and tree removal along high risk road lengths
- Lowering of speed on high risk rural roads

The Yea-Molesworth project is an example of one of the SSRIP interventions. Goulburn Valley highway between Yea and Molesworth is one of Victoria’s 20 most risky rural roads. Between 2010 and 2015, 11 crashes occurred along this stretch of road resulting in eight people losing their lives and 13 people sustaining serious injuries. All but two of the 11 crashes involved a vehicle crossing the centreline.

Community consultation and communicating the reasons underlying the improvements were important elements of the project. Safety improvements that were implemented include:

- High Crash Zone warning signs and rumble strips along the project length.
- A centreline wire rope safety barrier between the church entrance at Molesworth and Limestone Road, Yea.
- Roadside flexible safety barrier at high risk locations.
- Two additional overtaking lanes, creating a total of four overtaking opportunities between Molesworth and Yea.
- Two permanent electronic message signs to provide real time information about planned events, emergency management and general road safety.
- Resurfacing included the addition of rumble strips along the roadside.

3.2 TAC’s Experience of Infrastructure Management

Involvement in road infrastructure investment through SSRIP provides the TAC with the ability to speak from experience in the management of large scale infrastructure programs. In the experience of the TAC there are benefits of centralised management of safe roads infrastructure. The current SSRIP arrangement is conducive to:

• a central, systematic and consistent Safe System approach to deliver road safety infrastructure across Victoria
• embedding Safe System into other VicRoads areas to draw a larger safety benefit from the SSRIP investment
• a central, effective investment optimisation and investment plan development
• a consistent approach to project planning, development, delivery and evaluation
• a central, effective Program Management Office that monitors the management of finances, schedule, scope and risk mitigation

Compared to an approach where administration and implementation is fragmented across two roads authorities, centralised management of infrastructure is likely to:
• deliver economies of scale
• deliver more cost-effective provision of services with centralised procurement
• foster the development of expertise across the range of safety problems
• accelerate the adoption of the Safe System approach across State road authorities
• foster systematic delivery and implementation

The Safe System approach to infrastructure management adopts network-based treatments rather than the historically favoured blackspot approach. Safety problems on Victorian roads are not neatly divided into the country versus Melbourne categories; there are roads of a rural nature in Melbourne and built up areas in country Victoria. Having a central roads authority means that the appropriate skill and knowledge should be applied to the problem regardless of whether it exists in Melbourne or country Victoria.

3.3 Road Maintenance and Safety

The TAC was not in a position to conduct a literature review on this topic. However, experts consulted indicated there is limited evidence on the relationship of pavement condition to safety; more research is needed to establish how pavement condition contributes to Safe System objectives and how different conditions (e.g. rutting, roughness, etc.) influence safety. Accurate data about road condition is vital to understand its contribution to safety.

Experts at ARRB\(^2\) provided to the TAC indicative estimates on the possible effect of pavement improvements on safety. The estimates were calculated using the methods adopted in two papers on this topic (Anastasopoulos & Mannering, 2009; Cairney & Bennet, 2009); the calculations showed reasonably consistent results and indicated that:
• Improving rough pavement on road sections\(^3\) could be associated a reduction in injury crashes of approximately 30% on those specific sections.
• Improving rough pavement on major rural highways/freeways could be associated with a 2-8% reduction in injury crashes along the route.

---

\(^2\) Estimates were calculated by ARRB and provided to the TAC as indicative figures relating to Hume Highway and Western Highway. Further data and modelling is required to understand this relationship and to account for other road characteristics that could contribute to outcomes.

\(^3\) Rough sections were defined as those with an International Roughness Index of >3, accounting for approximately 6% of the Hume Highway, 16.4% of the Western Highway and 28.3% of the undivided section of the Western Highway.
The TAC acknowledges that road maintenance is important, however under Safe System principles, investment in road safety must be directed to the initiatives which have been demonstrated to have safety effects of the greatest magnitude.

Research suggests that reducing rough pavement conditions reduces resistance and subsequently fuel consumption, vehicle repair/maintenance and other vehicle operating costs (Tan, Thoresen & Evans, 2012). Evidence from the rural community consultations shows that country drivers are frustrated at the lack of maintenance and concerned about the impact of potholes and other faults on their vehicles (VicRoads, 2017). The extent to which local roads (managed by local government) and state roads (managed by VicRoads) are responsible for community concerns may need to be better understood in addressing the source of the problem for rural communities.

3.4 Best Practice in Road Infrastructure Safety Management

Following a European Parliament Directive (Directive 2008/96/EC) on the systematic use of road infrastructure safety management tools on the Trans-European road network (Sitran, Delhaye & Uccelli, 2016), a working group was set up to provide advice on best practice in management of safe road infrastructure (Persia, et al. 2016). Some of the recommendations included:

- Benchmarking against high performing jurisdictions
- Conducting evaluations and monitoring of safety performance
- Ensuring investment in and capacity of road authorities is adequate
- Safety being embedded in the life cycle of the road infrastructure management including in maintenance and renewal stages

The project showed that lack of data, financial constraints, lack of expertise and administrative burdens were barriers to the effective implementation of road infrastructure safety management tools.

Following on from the above the TAC recommends that, before any changes are made to the organisational structure of VicRoads, the following be explored:

- The organisational structures used to manage road infrastructure in high performing jurisdictions (e.g. Sweden, Norway and the Netherlands)
- The expertise and data required to ensure safe management of roads infrastructure and the capacity of current workforce to meet these needs.

Setting up two roads administration bodies would stretch current resources and expertise too thin. Indeed, Colin Jordan (formerly CEO of VicRoads and RACV) expressed such concerns in an interview on ABC Melbourne’s Drive radio program, 11 January 2018.

- Further research on the relationship between safety and pavement condition

4 Benchmarking Victoria’s Safety Performance

This section outlines key data about Victoria’s country roads and their safety performance and draws upon data and expertise from other jurisdictions.

---

4 Audio file can be found here: [http://www.abc.net.au/radio/melbourne/programs/drive/drive/9305376](http://www.abc.net.au/radio/melbourne/programs/drive/drive/9305376)
4.1 Victorian Country Roads

4.1.1 Road Network

Victoria’s road network covers approximately 151,000 km which is managed by the state, local governments and private operators. VicRoads manages approximately 24,000 kilometres of freeway and arterial road length\(^5\). When forestry roads are included Victoria has approximately 210,000 km of roads; of this 14.6% is in Melbourne and the remaining 85.4% in country Victoria (VicRoads, personal communication).

By way of comparison, Victoria’s network is a similar in length to the network in the Netherlands and shorter than the NSW road network (Table 1). Table 1 also illustrates that Australian jurisdictions have a comparatively longer network when standardised per 100,000 population; Victoria’s road length per 100,000 is slightly longer than the equivalent figure for NSW. Sweden has a road length per 100,000 population only marginally lower than Victoria. It is encouraging that a jurisdiction with a relatively large length of network for its population can achieve such an impressive safety record.

Table 1. Indicative\(^6\) road network length and calculated road length per 100,000 population for select Australian and International jurisdictions.

<table>
<thead>
<tr>
<th></th>
<th>Road network length (km) 2015(^6)</th>
<th>Road length (km) per 100,000 population(^7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>136,124</td>
<td>805</td>
</tr>
<tr>
<td>Norway</td>
<td>94,842</td>
<td>1,836</td>
</tr>
<tr>
<td>Sweden</td>
<td>215,091</td>
<td>2,207</td>
</tr>
<tr>
<td>UK</td>
<td>421,260</td>
<td>649</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Current road network length (km)</th>
<th>Road length (km) per 100,000 population(^8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria(^9)</td>
<td>151,000</td>
<td>2,388</td>
</tr>
<tr>
<td>NSW(^10)</td>
<td>185,000</td>
<td>2,353</td>
</tr>
<tr>
<td>Australia(^11)</td>
<td>873,573</td>
<td>3,551</td>
</tr>
</tbody>
</table>

\(^6\)Note that the road length data may not be directly comparable. Victorian data does not include forestry roads, but includes unpaved roads. In some jurisdictions unpaved roads may not always be included in the data. For this reason, the figures should be thought of as indicative only.

4.1.2 Road Trauma Data

A disproportionate number of people are killed on country roads in Victoria; at a rate of about four times the rate of deaths on city roads (see Figure 1). In Victoria, high speed rural roads account for 44% of deaths and 20% of serious injuries.\(^12\)

Fatality data from 2017 shows that:

- Country roads accounted for 60% of fatalities, of these 77% were on 100km/h roads
- In country Victoria, single vehicle, head-on/overtaking and intersection crashes were the most common crash categories, with single vehicle crashes into a fixed object accounting for 40% of all fatalities on country roads.

With country roads accounting for such a high proportion of the Victorian trauma picture, improving safety on these roads is a priority for the TAC and a fundamental part of the Towards Zero strategy and action plan. Safe road infrastructure treatments and safer travelling speeds have the potential to greatly improve safety on country roads.

This situation is not unique to Victoria. NSW data (average over 2014-2016) shows similar challenges to those experienced in Victoria:

---


Non-urban country roads (outside metro area with speed limit of at least 80 km/h) account for 54% of fatalities and 23% of serious injuries. 77% of these fatalities involved crossing the centreline or run-off road.

Figure 1. Fatality Rates per 100,000 population in Melbourne and Country Victoria, 2006-2017 (2017 data provisional)

4.1.3 Community Sentiment

The TAC maintains a program of research to ensure an evidence based understanding of community concerns and attitudes. TAC research around key principles of the Safe System approach shows that the community tends not to think of road infrastructure improvements when asked about what will improve safety on Victoria’s roads:

- 14% spontaneously mention the safer roads or infrastructure treatments as a way of reducing lives lost on the road
- 60% view driver behaviour as more important than road design in saving lives.

There is some way to go in communicating with the community about the fundamental life-saving role that road infrastructure can play.

However, when asked to consider a range of infrastructure treatments, there is a high level of community support for work in this area. The following percentages show the level of support (either completely or to some extent) among those surveyed for a range of safety infrastructure treatments:

- 92% support tactile edge lines
- 85% support separation of cyclists and vehicles via separate bicycle lanes
- 84% support the installation of flexible side barriers
- 82% support the use of flexible median barriers
4.2 Other Jurisdictions

4.2.1 Leading Jurisdiction Comparison

Comparing Victoria’s performance against other jurisdictions illustrates the potential for improvement in Victoria. The table below shows the fatality rates per 100,000 population on country roads and compares Victoria with Sweden. Victoria lags on country and metropolitan roads. Sweden’s record is impressive.

*Table 2. Metropolitan and country fatality rates per 100,000 population in Victoria, and Sweden, 2015*

<table>
<thead>
<tr>
<th></th>
<th>Metropolitan</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>2.5</td>
<td>10.2</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.65</td>
<td>3.02</td>
</tr>
</tbody>
</table>

4.2.2 What Works

The data from Sweden demonstrates their success in addressing road safety and provides solid evidence for improving safety on Victoria’s roads, especially in the light of their similar network length per population to Victoria.

Sweden has reduced the risk of death and injury on the high-speed country road network via investment in three major programs:

1. Flexible Barriers

Sweden transformed over 2,000 km of two lane high speed roads to 2+1 roads, where the two directions of travel are separated by a median barrier and the overtaking lane alternates in each direction. This resulted in a 45-50% reduction in fatalities and serious injuries (Larsson et al., 2003). Sweden has exceeded its targets and 90% of the traffic volume travelling on 100km/h speed limited roads is protected by median barriers (Sternland, personal communication).

2. 80km/h speed limits on two-lane undivided roads

Speed limits were reduced to 80km/h on over 17,000 km of rural two-lane roads which did not have roadside or median barrier protection. The reduction of speed limits from 90km/h to 80km/h was estimated to have reduced fatalities by 41% (14 deaths per year) (Vadeby & Forsman, in press).

France has just announced a reduction of speed limits on two-lane undivided secondary roads from 90km/h to 80km/h. This class of road accounted for 55% of fatalities and it is estimated that the measure would save approximately 350-400 lives per annum. Understanding extent of road trauma on equivalent roads would be of value and would reveal the potential benefits of adopting such a program in Victoria.

3. Automated speed enforcement

Automated speed enforcement is used extensively on high speed undivided two-lane rural roads which do not have median barriers. This program has been associated with a 20-30% reduction in fatalities; an estimated 8-20 lives saved in one year (Swedish Road Administration, 2009). Similarly, there have been significant reductions in fatalities with speed enforcement in Norway. An

---

evaluation showed that at 14 sites a 49% reduction in fatality and severe injury crashes was observed (Høye, 2015).

Audio-tactile edge line marking has been widely used to mark road edges to address single vehicle run-off road crashes and is increasingly being used to mark road centrelines. In a review of the research (Hatfield, Murphy, Job & Du, 2009) it was found that run-off road single vehicle crashes were reduced by an average of 22% (ranging from 7.3% to 49.8% in the studies reviewed). Such treatments are likely to be of benefit where it is not feasible to install flexible barriers.

5 Conclusions & Recommendations

Trauma is experienced on country roads at a rate far above that in Melbourne. Safety on rural roads should be of highest priority when making decisions about investment in roads infrastructure. High speed undivided roads are a key risk to safety. There is clear evidence that median and roadside barriers, and speed management offers great potential for improvement in country Victoria. Indeed these form key elements of the SSRIP approach.

Victoria can learn from work on best practice in the management of safe roads infrastructure in Europe by:

- Benchmarking against high performing jurisdictions
- Conducting evaluations and monitoring of safety performance
- Ensuring investment in and capacity of road authorities is adequate
- Safety being embedded in the life cycle of the road infrastructure management including in maintenance and renewal stages

Lack of data, financial constraints, lack of expertise and administrative burdens are barriers to effective road infrastructure safety management.

The TAC, through its experience in road infrastructure management, sees value in a centralised management model; benefits include the development of expertise, efficiencies in centralised procurement, economies of scale, centralised prioritisation and consistency of approach. The current level of investment and expertise may not stretch to support the establishment of two roads administration bodies.

Safety problems on Victorian roads are not neatly divided into the country versus Melbourne categories. Having a central roads authority means that the appropriate skill and knowledge could be applied to the problem regardless of where it exists.

The TAC recommends that, before any changes are made to the organisational structure of VicRoads, the following be explored:

- The organisational structures used to manage road infrastructure in high performing jurisdictions (e.g. Sweden, Norway and the Netherlands).
- The expertise and data required to ensure safe management of roads infrastructure and the capacity of current workforce to meet these needs. Setting up two roads administration bodies would stretch current resources and expertise too thin.
- Further research on the relationship between safety and pavement condition, including the collection and availability of reliable road condition data.
- The ability of VicRoads to adequately lead and support local governments in the safety transformation of their road networks.

Structural changes to the roads authority could compromise the development and delivery of programs to improve safety on country roads. With larger scale interventions such as those funded under SSRIP being increasingly network-based rather than blackspot based, boundaries between metropolitan and rural areas are
less relevant than before. These programs should not be compromised in any structural change.

Any changes to the management of country roads must be considered with road safety as the guiding principle, consistent with Safe Systems approach to road safety and the *Towards Zero* strategy.
6 References


Sternland, S. (personal communication). Internal data provided by Swedish Transport Administration.

[https://trafikverket.ineko.se/.../2009_162_effects_%20of_%20automated_%20road_safety_%20cameras_%20dec.pdf](https://trafikverket.ineko.se/.../2009_162_effects_%20of_%20automated_%20road_safety_%20cameras_%20dec.pdf)


[http://dx.doi.org/10.1016/j.aap.2017.02.003](http://dx.doi.org/10.1016/j.aap.2017.02.003)
