Delivering safer roads – the Roads and Traffic Authority of New South Wales model

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Abstract

The New South Wales (NSW) Government has identified road safety as one of its key State Plan priorities. The Roads and Traffic Authority of New South Wales (RTA) has been nominated as the lead agency for this priority. This presented the RTA with an important opportunity to reduce the State’s road toll even further. A new focus was introduced for the RTA to take up the challenges and priorities set by the NSW Government and to provide improved outcomes for communities across the State.

RTA’s refocus required every facet of its business to take responsibility for road safety and ensure that road safety related capabilities were developed across the spectrum of its business. To achieve this, numerous initiatives, strategies, and actions were developed and implemented across the organisation.

Under this new approach, road safety became an important driver for all RTA managers. In order to bring about change, RTA needed to change the processes used in the development of its programs and change some of the systems that support its management. The major impact of these changes was in the way that RTA managed the road network and the infrastructure programs that maintain and develop its network.

This paper discusses the processes and systems that were developed or enhanced in the areas of infrastructure management to underpin RTA’s delivery of road safety outcomes.

Keywords

Safer roads, road infrastructure management, speed engineering management, road safety impact statements, route reviews

Introduction

The New South Wales (NSW) Government is strongly committed to improving road safety for all road users. The NSW Government identified road safety as one of its key State Plan priorities (1). The Roads and Traffic Authority of New South Wales (RTA) has been nominated as the lead agency for this priority. This presented the RTA with an important opportunity to reduce the State’s road toll even further. A new focus was introduced for the RTA in 2007 to take up the challenges and priorities set by the NSW Government and provide better outcomes for communities across the State (2). In essence, to continue the downward trend in the road toll, new strategies and organisational processes needed to be devised.

RTA’s refocus required every facet of its business to take responsibility for road safety and to ensure that road safety related capabilities were developed across the spectrum of its business. To achieve this, numerous initiatives, strategies, and actions were developed and implemented across the organisation.

The NSW Centre for Road Safety plays a major role in providing strategic road safety policy advice to government, and is committed to being at the forefront of road safety engineering, technological and behavioural research to advance road safety issues. The main goal of the NSW Centre for Road Safety is to focus its efforts on the initiation, development and provision of high level policy, research, road engineering improvements and behavioural change strategies.

The NSW Centre for Road Safety focussed on enhancing RTA’s practices in the areas of infrastructure management to underpin the delivery of RTA’s road safety outcomes. This included reviewing RTA’s strategic directions, its program management and project systems and processes in relation to management of the road network to deliver safer roads.
Background
RTA adopted the Safe System approach. This approach promotes the building of a road transport system which accepts that human error is inevitable, recognises that safe travel is a shared responsibility between road users and road system designers/operators, and acknowledges that road user errors should not result in fatal or serious injury. The integrated method also recognises that for the Safe System approach to be successful organisation-wide responsibility of road safety is required or, in other words, mainstreaming of road safety (3).

The RTA formed the NSW Centre for Road Safety in January 2008 to ensure that road safety related capabilities were developed across the spectrum of its business. The NSW Centre for Road Safety’s role is to champion road safety as a core RTA value and lead and influence all road safety policy and decision making processes across the organisation. It works collaboratively with the RTA’s external partners to change community attitudes and ensures that the safe system approach is implemented in all RTA business areas. It identifies new opportunities and strategies to influence network management and maintenance decision-making so that road safety benefits can be quantified.

The road toll has been reducing dramatically in NSW, with six consecutive years of road fatality reductions (2003-2008). This has been a significant part due to the adoption of the safe system approach and greater focus on road engineering through the highway reviews. (However, to date 2009 is indicating an increase in the road toll).

Delivering Safer Roads
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Some of the key improvements to RTA’s road engineering practices which have been implemented included:

1. Introducing new business strategies
2. Leading and performing research relating to safer roads
3. Enhancing assessment processes supporting the delivery of road safety outcomes
4. Conducting reviews and assessments on the road network
5. Amplifying the transfer of road safety related knowledge

1. Business strategies
The RTA established and implemented a number of business strategies. Some of the key business strategies which have been successfully implemented included:

- Establishment of the Executive Road Safety Management Committee. The Executive Road Safety Management Committee (ERSMC) is chaired by the RTA’s Chief Executive and attended by all RTA Directors. The RSEC was created to develop and monitor road safety across the RTA. It is a high-level accountability mechanism that also reviews road safety performance measures. Through the ERSMC all RTA Directorates report on road safety mechanisms (whether achieved or not).

- Development of road safety performance indicators. All RTA Directorates needed to have specific accountabilities for safety outputs and outcomes. To achieve this, the NSW Centre for Road Safety developed specific road safety objectives, performance indicators and targets in consultation with Directorates. The ERSMC reviewed and adopted these and they are being integrated into Senior Executive Service agreements and Directorate business plans. The ERSMC has the role of reviewing Directorate performance against the agreed deliverables and to ensure accountability of the various business units of this large organisation.

- Progressive establishment of inter-Directorate governance frameworks. The governance frameworks incorporate the NSW Centre for Road Safety as part of the endorsement and monitoring process.

2. Research
The NSW Centre for Road Safety developed and implemented a Safer Roads Research Program. The Research Program’s key objective is to identify and influence best practices in planning, designing, constructing, maintaining and operating roads to reduce the risk of crashes and reduce the risk of harm to
people if a crash does happen. In other words, this is the research base for refining the ‘engineering’ component of the safe systems approach.

Some of the key research projects which have been successfully implemented included:

- Incremental safety principles to existing roads. This developed principles in the application of design standards to sections of existing roads where the road is exhibiting poor safety performance and the “do nothing” option is not ethically appropriate and the application of “Greenfield” design standards is financially, physically or environmentally unachievable (4). Incremental safety principles have been applied to areas such as clear zones, and shoulder widening.

- On going crash testing of road infrastructure furniture. This involves full-scale crash testing of road and roadside furniture, such as pedestrian fences, sign structures, and safety barrier systems. This continues to provide an understanding of the operational performance and the levels of risk to road users. For example, it has allowed refined use of relevant barriers to deliver the most cost effective safety outcome.

- Alternative design principles for horizontal curves. This established cost effective engineering initiatives such as asymmetrical design principles and incremental clear zone widths which reduce crashes and their severity yet achieve maximum impact by focusing limited road safety and road maintenance funding onto those sections of rural roads that have the most serious off road type of crashes.

- Management of utility poles in the road corridor. This established partnerships with utility agencies and developed guidance for the RTA and utility agencies on the road safety management of utility poles within the road corridor (5).

Some current key research projects include:

- Centreline treatment countermeasures to address cross over crashes. This research is quantifying the safety benefits generated by the implementation of wider painted centerlines with wire rope median barriers and their effects on both the reduction of the occurrence of cross-over crashes as well as the reduction in the severity of cross-over crashes.

- Trial of wide centreline delineation configurations. This research is conducting field trials on a number of new wide centreline delineation configurations that further separate opposing traffic but still cater for overtaking manoeuvres (where appropriate) to evaluate if they have a beneficial effect on reducing crashes caused by fatigue and driver inattention.

- Safety performance of T-junctions on high speed rural roads. This research is evaluating the road safety performances of a range of unsignalised T-junction configurations on high speed rural roads in NSW and identifying easy to implement measures to improve the safety performance of the T-junctions.

- Wire Rope Safety Barrier and its efficacy in crashes involving motor cycles. The RTA in partnership with NSW Health and the Motor Accidents Authority have provided funding to the University of NSW Injury Risk Management Centre to investigate injury mechanisms that motorcycle riders and pillions are subjected to when they impact a road safety barrier. In particular the research is looking at how to reduce injuries to motorcyclists for wire rope safety barriers and guardrail systems utilising injury mitigating engineering systems.

Outputs from the Safer Roads Research Program have been developed into policies, procedures on the RTA’s practices, incorporated into amendments in the RTA publications relating to road design, such as RTA’s Road Design Guide, RTA’s Brownfield Road Design Guide, RTA’s Delineation Manual and RTA’s Traffic Signals Manual, or development / enhancements to assessment methodologies. In some cases these have also been augmented by the development or enhancement of training sessions / courses delivered across the Authority on the subject matters.

3. Assessment Processes
A number of different assessment processes are available to assist in delivering road safety outcomes such as, crash investigation and prevention, road safety audits, and road safety impact statements. The NSW Centre for Road Safety monitors these analytical tools to ensure that they are providing the highest support towards delivering the road safety priorities for the RTA. These are either enhanced or newly developed based on the latest research or performance findings.
Some of the key assessment processes supporting the delivery of road safety outcomes which have recently been successfully implemented include:

- **Development of Road Safety Impact Statements.** This is a process of prioritising projects on a “road safety” basis. The primary purpose of Road Safety Impact Statements (RSIS) is to provide project and program managers with a tool to assess the road safety impact of their proposed infrastructure works. A RSIS will produce a set of data that a manager can utilise to: measure forecast crash reductions of prospective works; model alternative works within a project to maximise road safety benefit; and prioritise works according to forecast road safety benefit. This methodology has the ability to focus a larger portion of the RTA infrastructure budget towards improving road safety. RSIS enabled the NSW Centre for Road Safety to measure and benchmark modelled road safety performance. Performance indicators were then developed. These Performance indicators were reviewed through the Road Safety Executive Committee and converted into Directorate based key performance indicators.

- **Introduction of road safety ‘focus areas’ for program management.** Accurate targeting of investment was required to ensure that the RTA was able to increase the productivity of its investment in road safety improvement to the road network. This required sound information on crash history and risks considered examination of both the existing road network and projects developed across all RTA programs. To achieve this, the NSW Centre for Road Safety in collaboration with each region undertook region-wide analysis of crash potential. These ‘focus areas’ for each RTA Region were used to provide input into decisions on project selection for all infrastructure programs, focussed works to areas of the greatest road safety need and in the development of key performance indicators.

- **Development of a new benefit cost ratio methodology used in crash investigation and road safety impact statements.** This new methodology was based on a “crash by type” approach and introduced extra factors into the process such as, where in the State the crash happened and the lighting conditions at the time of the crash, to improve the accuracy of the road safety economic evaluation.

- **Enhancement of speed management engineering techniques.** This included establishing and publishing guidelines on conducting speed reviews and implementing outcomes from the speed reviews (6); developing and implementing a Speed Zone Management System; and conducting reviews at high pedestrian activity areas and implementing road infrastructure treatments to create safer operating environments for all road users.

- **Enrichment of road safety auditing practices and the supporting framework.** The procedures and guidelines relating to road safety audits were expanded to include guidance for project managers on commissioning an audit and developing and completing corrective actions (7). The training courses for road safety auditors were expanded to target project managers and lead road safety auditors. The performance scheme for road safety auditors was improved.

Some of the RTA’s current key assessment processes supporting the delivery of road safety outcomes being further enhanced include:

- **The economic evaluation method used in crash investigation and road safety impact statements.** The RTA commissioned work to undertake the studies needed to include the “willingness to pay” method for the economic valuation of road safety benefits in the RTA’s Economic Assessment Guidelines. The method uses “stated preference” techniques to estimate the willingness to pay. This technique relies on asking individuals to reveal the value they place on different levels of risk. This method has been adopted by NSW State Treasury and is to be incorporated into RTA practices.

- **Amendments to the roadside advertising practices.** The RTA is working in partnership with the Department of Planning and the Outdoor Advertising Association of Australia to enhance road safety in transport corridor outdoor advertising practices. This includes working with the Department of Planning on amendments to legislation (8) and associated guidelines (9); and working with the Department of Planning, the Outdoor Advertising Association of Australia and other State road jurisdictions on developing guidelines for electronic static displays.

- **Refining crash rates for rural roads.** The RTA previously undertook research on rural road crash rates by road stereotype (10). These crash rates for rural roads are being refined to improve accuracy in determining relative priorities for programs and projects, as well as for potential application in other RTA practices.
In most of the cases these upgraded assessment methodologies have been augmented by either the development or enhancement of training sessions / courses delivered across the RTA on the subject matters.

4. Reviews
The NSW Centre for Road Safety conducts reviews of road infrastructure to develop and provide direction on road safety strategies. RTA employs a variety of review processes. The type of review process applied is dependant upon the operational level of the project, such as strategic, tactical or operational.

Some of the key reviews techniques which have been recently successfully implemented have included:

- **Road safety route reviews.** These reviews employ the safe systems approach. The goal of a review is typically that a substantial reduction in the incidence and severity of road crashes on the selected route (11). A range of strategies are developed to support the goal. Underpinning these strategies is usually a range of programs such as an engineering program based on priorities focused on risk and addressing issues, a behavioural program to address issues such as speeding and fatigued driving, an enforcement program to address issues such as speeding and compliance to regulations, and a technology program to support other programs such as point to point speed camera technology. This approach has been successfully used on sections of the Newell, Princes and Pacific Highways. Outputs from these reviews have typically been developed into strong business cases for additional funding to improve road safety or re-prioritisation of existing funding.

- **Road safety infrastructure assessments.** These assessments employ the safe systems approach and apply the concept of the road safety route review methodology to a number of thematic locations and expand on the level of detail to an operational level (rather than a strategic level). This approach has been successfully used on a selected number of Aboriginal communities across New South Wales where the road infrastructure within the community as well as road infrastructure connecting the community to their nearest town was assessed to enhance road safety for the Aboriginal communities.

- **Major project reviews.** These reviews are at the detailed level of a particular project. The reviews involve either participation of a road safety representative on approving groups or committees, such as Alliance groups, RTA’s Major Projects Review Committee, or collaborating directly with the design team prior to endorsement of the project. This approach has been successfully used on projects such as the Hume Highway duplication with representatives on both Alliance groups, and Princes Highway duplication from Gerringong to Bombaderry.

5. Knowledge transfer
The NSW Centre for Road Safety communicates road safety business strategies, research, assessment processes and reviews to ensure road safety outcomes for the RTA and NSW State Government are achieved. The communication techniques employed vary from influencing International, National, State and Local bodies through avenue such as policies, regulations, and publications on practices, to educating such as by developing or delivering training courses on specific matters, and speaking at conferences, forums, etc.

Some of the recent successful communications have included:

- **Speed Engineering Management.** Publishing and implementing a Speed Zoning Guide (6) and technical directions for RTA staff. Developing and participating in both Austroads and RTA’s training courses on speed management. Representation on the National Speed Management Strategy committee.

- **Newell Highway.** Publishing the Newell Highway road safety review (12) and a launch by the Minister for Roads. Acquiring an additional $30 million funding over three years for implementing strategies identified in the Newell Highway road safety review.

- **Road infrastructure assessments of Aboriginal communities.** Establishing partnerships with the Department of Aboriginal Affairs, NSW Aboriginal Land Council, Department of Local Government, and Local Government and Shires Association to deliver the project. Leading and educating local Aboriginal Land Council representatives and local government representatives on site assessments on road safety matters.
Conclusion

The RTA refocussed every facet of its business to take responsibility for road safety and to ensure that road safety related capabilities were developed across the spectrum of its business. To achieve this, numerous initiatives, strategies, and actions were developed and implemented across the organisation.

The NSW Centre for Road Safety played a major role in enhancing RTA’s practices in the areas of infrastructure management to underpin the delivery of RTA’s road safety outcomes. This was achieved by focussing on RTA’s strategic directions, its program management and project systems and processes in relation to management of the road network.

Some of the key improvements to RTA’s practices which were implemented and continue to be advanced have included:
1. Introducing new business strategies
2. Leading and performing research relating to safer roads
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5. Amplifying the transfer of road safety related knowledge

These road safety enhancements in RTA’s business practices in the areas of infrastructure management have strengthened RTA’s knowledge, support and practices in delivering safer roads. This in turn propels the NSW State Government towards achieving one of its priorities. Ultimately this benefits the community through reduced road trauma.

The NSW Centre for Road Safety has only been in operation for just under two years. The true impact on road safety from these implementations will not be realised for a few years. The Centre still has a great challenge and opportunity to integrate and take road safety further into RTA’s core business. There is ongoing work and continual improvement. The NSW Centre for Road Safety will continue the drive of delivering safer roads.

References