

## **Increasing Safe System Awareness in Queensland Road Authorities**

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### **Abstract**

In Queensland the Safe System framework first appeared in the Queensland Road Safety Action Plan 2008-2009. In mid 2009 it was recognised that there had been no specific communication strategy targeting the engineering community in Queensland. As a result, two approaches were adopted to improve knowledge and awareness:

**Safer Roads Technical Update** - This quarterly publication contains news and articles on road safety, predominantly safe roads and safe speeds. It covers innovative treatments, research findings from Australia and worldwide, road safety data analysis and road safety success stories. Some editions focus on a particular topic, such as speed, vulnerable road users, or the Safe System. The target audience is not just road safety practitioners but also engineers and technicians whose work has road safety implications.

**Safe System Regional Workshops** - These one day workshops were delivered in thirteen regional centres around the state in 2010. They were designed to inform regional and council engineers and technicians of the practical steps they could take to contribute towards achieving a safer road system and reducing road trauma. They included interactive sessions as well as presentations.

The Technical Update has increased the knowledge and the profile of road safety issues across the engineering community within the Department of Transport and Main Roads (TMR) and local councils. Feedback was very much encouraged at the workshops. An outcomes report identified areas of concern in delivering road safety at the regional and local levels and potential areas of improvement to enhance future road safety outcomes. The Technical Update and Safe System Workshops have effectively raised the awareness and knowledge of road safety issues within state and local government agencies.

### **Key Words**

Safe Systems, Safer Roads, Workshop, Technical Update, Education

## **Introduction**

In Queensland the Safe System framework first appeared in the Queensland Road Safety Action Plan 2008-2009. In mid 2009 it was recognised that there had been no specific communication strategy targeting the engineering community in Queensland. There was also a need to promote a culture of road safety throughout the newly integrated Department of Transport and Main Roads (formerly Main Roads and Queensland Transport).

## **Purpose**

The key to implementing the Safe System approach in Queensland is ensuring that Transport and Main Roads (TMR) and local government technical staff understand and utilise this approach in their day to day operations and strategic planning. As the Safe System is dependent on a high degree of cooperation between road authorities and other stakeholders, all parties need to be able to perceive its benefits and be prepared to adopt an approach which may be more time consuming initially but which has the potential to lead to a far safer road transport system.

The purpose of this paper is to outline and evaluate the two initiatives undertaken by the TMR Safer Roads Unit (SRU) to improve awareness and understanding of the principles and practices of the Safe System.

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## **Safer Roads Technical Update**

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## **What is the Problem?**

The fundamental problem with road safety is that 'human behaviour' can have a significant influence on safety outcomes. For a road authority this means accepting that humans will often make errors of judgement or take reckless actions which can directly lead to fatal or serious injury crashes. Despite this, recognising our responsibility for reducing risk on the roads we design, maintain and operate is paramount. The Safe System approach typically aims to:

- Develop a road transport system that accommodates human error

- Ensure that road users are not exposed to crash forces likely to result in death or serious injury
- Recognise the shared responsibility of the road user, the vehicle manufacturer, the road authority the licensing authority and the enforcement agency
- Take an holistic approach to identifying, treating and managing road safety problems.

The Safe System requires a paradigm shift from primarily focusing on driver failure to looking at a system failure. For an example scenario of a run-off-road-hit-object crash that is primarily due to driver fatigue, it is recognised that the driver is at fault. However, this is not the end of the matter, as the Safe System would require that this type of error is accommodated by the system. Rather than the driver (and their passengers) potentially paying for this mistake with their lives, a forgiving roadside free of solid objects and with traversable slopes would minimise the chances of a fatal outcome.

A holistic approach would potentially address all aspects of the crash, for example, campaigns to educate road users about driver fatigue, targeted police enforcement, access to driver training, car safety checks, emergency response times as well as engineering treatments, and speed reductions.

### **Safe System Workshops**

#### **Purpose of the Safe System Workshops**

There has been a growing recognition that while the Safe System framework had been used to develop the last two Queensland Road Safety Action Plans it is not well understood by engineers and technical staff within TMR regions. It was also assumed that local government engineers and other regional road safety stakeholders would have had limited exposure to the approach.

Without a shared understanding and commitment to implementing the Safe System approach it is at risk of just being perceived as a way of organising or framing road safety initiatives within strategies and action plans and not as a practical approach to understanding road safety and developing effective practices to improve road safety.

To start the process of embedding the safe system approach throughout Queensland, the SRU coordinated the delivery of thirteen regional awareness workshops throughout 2010. The workshops were designed to provide information about the safe system approach and encourage participants to consider how they could implement aspects of the system into the way they address local road safety issues and manage their road network. While the workshops were designed specifically for TMR engineers, Transport Services Division (TSD) road safety officers, Queensland Police Service (QPS) and local government engineers were also invited to attend and provide participants with the opportunity to work together.

#### **Workshop Aims/Outcomes**

The stated aims/outcomes of the workshops were to:

- Develop awareness of the safe system approach within the operational divisions of TMR and local councils.
- Contribute to the development of a regional approach to road safety.

- Build relationships for regional road safety stakeholders.
- Facilitate an understanding of how safe system principles can be applied in practice.

### **Delivering the Safe System Workshops**

The Safer Roads Unit delivered the thirteen one day safe systems workshops from May through to December 2010. SRU was assisted in developing content and also in delivering workshops by the Road Safety Policy Speed Management Team. In recognition that outer regional areas will sometimes have more limited access to new information and approaches, SRU delivered the workshops in the outer regional areas first and held the South East Queensland (SEQ) workshops later in the year.

To ensure regional ownership the district offices were responsible for developing the invitation list. The session plan was amended a number of times in response to feedback from participants, to allow more time for discussion of their particular road safety issues or delivery problems. The workshops were designed to give participants the opportunity to provide feedback through three mechanisms:

- Group discussion opportunities throughout the day as well as a dedicated discussion session
- Workshop feedback forms
- Workshop questionnaire

To continue to maintain their interest in and awareness of road safety, every workshop participant was also registered to receive the Safer Roads Technical Update.

### **Workshop Content**

For each of the thirteen workshops similar session plans were developed. These did change from workshop to workshop to take into account any feedback received at previous workshops that could improve subsequent sessions. After an introduction and welcome, the workshop consisted of the following sessions:

- Regional road safety perspective – input from TMR, local government and Queensland Police Service (QPS) on their perspectives of local road safety issues.
- Setting the scene – review of the state wide and regional crash data including comparisons.
- The Safe System Approach – identifying key aspects, roles and responsibilities.
- Safe Roads – how the safe system approach can be used to address road related issues.
- Safe System Application – 1st case study and reporting of solutions.
- Safe Speeds - speed reductions are a cornerstone of the safe system.
- Safe System Application – 2nd case study and reporting of solutions.
- Barriers and challenges.
- Summary of Key learnings, workshop feedback and closing.

Of specific note was the Safe Roads session which addressed the following key points:

- Mainstreaming road safety

- Consideration given to potential road safety implications in everything we do
- Take actions to manage the road safety risks that have been identified.
- Think about, and mitigate, road safety risks when carrying out activities where road safety is not the primary project benefit.
- Working collaboratively
  - Discuss safety issues with other states
  - Work with other government departments
  - Align State-wide programs with other Government agencies and stakeholders
  - Discuss safety issues between TMR and local council engineers
  - Share information and learnings
- Innovative solutions – assessing innovative solutions to safety concerns

To encourage a regional approach to road safety the SRU prepared an analysis of each region's crash data which included both local and state controlled roads. The data analysis session was delivered through a question/answer format and provided detailed analysis of major crash types and highlighted any significant differences between regional data and the State averages. The data analysis session generally took 30-40 minutes and based on the level of discussion generated in the session and feedback was highly valued by participants.

### **Workshop benefits**

The workshops overall were considered by attendees and presenters to have successfully delivered on the stated aims/objectives of the workshop and have provided a good starting point for further work to embed the Safe System approach at the regional level. The workshops delivered the following tangible and intangible benefits:

- Nearly 300 regional road safety staff received Safe System awareness training
- Provided an opportunity for local government, TMR and QPS staff to discuss road safety problems, share concerns and solutions
- Provided valuable information on regional road safety issues
- Improved central office relationship with regions
- Opportunity for TSD and TMR regional staff to work together
- Improved exposure to up-to-date road safety information
- Road safety highlighted as a significant issue within the regions
- Opportunity to gather regional feedback on road safety operational and policy issues

### **Workshop feedback and analysis**

There were three mechanisms to gather feedback from participants. Information from the three sources has been analysed separately. This report will mainly focus on the analysis of the comments received in the formal questionnaire process

*Workshop Feedback Sheets* - Participants provided feedback using standard feedback sheets which captured feedback on the design, content and delivery of the workshop. These sheets were reviewed after each workshop and where possible suggestions for improvement were acted upon.

*Workshop Discussion* - Throughout the workshops participants made suggestions on how to improve the way we deliver on road safety and discussed their impediments to improving

road safety outcomes. Workshop presenters have developed a descriptive summary of the major themes raised in the workshops.

*Workshop Questionnaire* - Participants were provided with a question sheet at the end of the workshop and asked to spend five minutes in answering three prepared questions. Participants were advised that this information would be analysed and compiled into a report to inform senior managers within TMR of their views on road safety and their experience in delivering on road safety. The responses were anonymous. The three questions asked were:

- How could the Safe System approach help you achieve better road safety outcomes?
- How can TMR improve the way we address or deliver on road safety?
- Are there any challenges to implementing the Safe System approach in this region?

This approach has yielded a valuable source of data which provides a diverse range of ideas on how TMR can improve its road safety performance as well as views on how the Safe System can assist with achieving safer outcomes. The participants at all workshops seemed to value this opportunity to share their ideas and experiences which was reflected in the response rate of 73 %.

The responses given by all workshop attendees for each of the three questions has been transcribed for each workshop. The responses for Question 1 has been analysed and a descriptive summary of key themes and suggestions has been produced. The responses for Question 2 and 3 have been coded into seven main categories and a detailed analysis of responses has been undertaken.

### **Analysis of Information Sources**

*Workshop Feedback Sheets* - 221 workshop feedback sheets were completed. The majority of participants gave a favourable ranking to most aspects of the workshop. Some of the suggestions for improvement included allowing more time for discussion and interaction, making the case study specific for the region, providing manuals and detailed handouts. Where possible, presenters responded to these suggestions and the presentation and session plan were modified a number of times. Some examples of the comments given about the workshop include:

- A good opportunity to network with road safety colleagues within TMR and local government
- Valued the data analysis and practical application sessions
- Cross discipline approach valued – provided an opportunity to have open discussion about operational aspects of road safety issues
- Reinforces need to put safety first,
- Need specific examples and practical ideas for implementation
- Need to have political will and policies to implement the vision
- Reinforced processes and concepts currently used
- General awareness of the issues but constrained by funding

*Workshop Discussion Analysis* - Throughout the workshops, participants were given many opportunities to engage in open and frank discussion of the various impediments they faced in

doing their job to reduce road trauma in their region. The summary below provides an overview of key themes that were consistently raised in discussions at the workshops:

- Operational issues, particularly making road safety a high priority and the need for appropriately skilled technical and professional staff.
- RPEQ requirements discouraging innovative low cost treatments.
- Design standards sometimes being applied at high cost.
- Funding inflexibility meaning funds are sometimes not available for the 'best solution.'
- Communication/Marketing could be stronger to present a more positive road safety message.
- Implementing Safe Systems approach
- Environmental requirements sometimes restrict the effectiveness of projects that treat hazardous roadsides.

*Workshop Questionnaire Analysis* - Analysis of the responses given to Question 1 overwhelmingly revealed that workshop participants understood the potential benefits from adopting the Safe Systems approach to road safety. The key benefits of the Safe System approach which participants identified are presented below:

*Question 1: How could the Safe System approach help you achieve better road safety outcomes?*

- Integrates engineering and behavioural, holistic and consistent approach, more comprehensive safety analysis
- Supports innovation, alternative solutions, better outcomes, more treatment options
- Improve collaboration, community acceptance of solutions, ownership of road safety
- Give safety a higher priority, with political and organisational support, and a strategic framework

Based on the analysis of responses given to Question 2 and 3 the following issues in descending order of significance were identified. The responses of these two questions have been combined due to the similar responses provided by the participants:

*Question 2: How can TMR improve the way we address or deliver on road safety?*

*Question 3: Are there any challenges to implementing the safe system approach in this region?*

- Funding (169) - More funding for safety, local input to funding decisions, funding for councils, funding for proactive countermeasures, fairer distribution of funding, elements allocations restrictive, better targeting of funding
- Operational/policy issues (141) - Higher priority for safety, holistic and integrated approach, need for guidance on Safe System implementation, system to share knowledge/learnings, proactive and multi-disciplinary approaches, road safety audits
- Relationships/TMR culture (82) - TMR integration, stakeholder engagement, working with councils, collaborative approaches, culture change required, sharing information, building a safety culture
- Marketing (77) - More education for public, internal marketing of Safe Systems, media protocols restrictive, improved internal communication

- Other (56) - Political inaction and interference, environmental restrictions – resource intensive, isolation, large travel distances, non specific issues
- Technical and data issues (50) - Speeding tolerance, speed dials, signage, route inspections, infrastructure provision for all road users, road design standards, Brownfield design standards, road safety audits, proactive maintenance, conduct trials, innovation in infrastructure solutions
- Capability (44) - Lack of resources, need Safe System manuals, lack of time, need Safe System training

### **Safer Roads Technical Update**

The aim of the Safer Roads Technical Update (SRTU) is to help develop and encourage a road safety culture in the design, delivery and maintenance of road projects. The purpose of the technical update for key stakeholders is to inform and update them of the latest trends and innovations.

The delivery of the first SRTU occurred in Spring 2009. This was the first of six quarterly technical updates produced so far by the SRU. Each publication has included between eight and twenty articles, with input from a large number of the staff, mainly from the Safer Roads unit. The articles have, in general, being grouped together in the various publications based on a specific theme. The themes that have been covered so far have been:

- Safer Roads (Spring 2009)
- Road Safety (Summer 2010)
- Rural Roads (Autumn 2010)
- Speed (Winter 2010)
- Vulnerable Road Users (Spring 2010)
- Safer Roads (Summer 2011)

The target audience of the SRTU is not just road safety practitioners but also engineers and technicians whose work has road safety implications in Queensland. It is released for general circulation to all work units within TMR. In addition, it is emailed to targeted TMR stakeholders, to many council engineers in the state and consulting engineers that provide design services to the road authorities. Other interested parties have expressed interest and have been added to the circulation list.

### **Article Content**

Articles for this quarterly publication, as indicated by its name, predominantly deal with road safety issues with a road safety engineering significance. It covers innovative treatments, research findings from Australia and worldwide, road safety data analysis and road safety success stories. A number of articles are also included on new technologies in the area to inform the readers of these new developments. A minority of articles on non-engineering subjects are included, for example, police enforcement, vehicle technology and road user behaviour. This provides some variety to keep the readers engaged and raises awareness of the other cornerstones of the Safe System.



The articles are primarily focused on work in Australia, although there is always an article on some overseas development. There are also frequent articles on interstate topics that are of benefit to the readership. This variety of articles allows a diversified gathering of information to occur. A number of articles that have been included to date include:

- Would one metre passing distance keep cyclists safer on the roads? – a review of a proposal by the cycling community to introduce a legal requirement to enforce a gap of at least one metre when overtaking a cyclist
- Vehicle Activated Signs trial – the introduction of vehicle activated signs in Queensland to inform road users of specific road safety risks at known crash sites.
- How much is your life worth? – what approach should be adopted in valuing a life or an injury, either the human capital approach or the willingness to pay approach
- Roundabout visibility – is it safer to have more or less sight distance at a roundabout
- Centreline audio-tactile line marking – a US study into Audio-tactile Line Marking treatments as a cost effective way to reduce head-on collisions

Every article has the name of the author and their contact details.

### **Followed up Articles from Previous Editions**

For a number of articles published so far in the Safer Roads Technical Updates, follow up pieces have been written on these articles in subsequent technical updates. Continuing on from an article on School Zones on Multi-Lane Roads in the first technical update, the second technical update in Summer 2010 gave an update on how the trial was proceeding. In all publications to date, apart from the Summer 2011 edition, at least one follow up article has been included.

Another recurring article is a section on some aspect of crash data analysis in Queensland. The crash data analysis reviewed is primarily dependant on the theme for that specific quarterly technical update with the following topics covered so far:

- 2008 Queensland Road Crash Statistics
- 1998-2007 Queensland Road Crash Statistics
- Fatal Queensland Rural Road crashes 2005-2009
- Queensland Road Toll update 2005-2010
- Vulnerable road users: Queensland 2000-2010
- Queensland Road Toll 2010

### **Technical Updates Benefits**

The SRTU;

- Promotes a general interest and increases awareness in road safety,
- Gives a consistent message to all stakeholders,
- Is a useful medium for disseminating important road safety innovations., and
- Provides opportunities to build relationships between article providers and the wider professional community.

## **Technical updates feedback and analysis**

There has been no formal evaluation process undertaken to measure the value of the SRTU. However, anecdotally it appears to be valued by the target audience. All feedback has been positive and has indicated that the SRTU is presenting relevant, valuable and interesting information. Also, by word of mouth, the circulation list has grown significantly as new people request to receive future copies of the update.

## **Conclusion**

It is clear from the workshop and SRTU feedback that there is a strong commitment to road safety within the regions and generally speaking TMR regional staff have a genuine interest in new ideas and are willing to try new approaches to road safety. This commitment to road safety however is somewhat tempered by the many obstacles/impediments (either perceived or actual) at which many participants expressed frustration. While lack of funding was identified as a major obstacle, on the positive side a good majority of the workshop participants saw that they could increase road safety outcomes by improving their processes and working more closely with other stakeholders within the current funding provisions.

Both the workshops and the technical update were designed to raise awareness of the Safe System approach and hopefully engender an ongoing interest in road safety. While they have been successful in meeting the overall objectives there is still much work to be done at both the cultural and operational levels if the Safe Systems approach is to be effectively implemented within TMR.

These two initiatives contribute towards a broader long term strategy to embed Safe System principles and practices within Queensland road authorities. The Safer Road unit is planning more activities to provide technical support and systems that align with the new Road Safety Strategies and the Safe System.

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