



# REGIONAL ROADWORKS SIGNAGE REVIEW

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## Recommendations Report

August 2021

Prepared for:

The Minister for Transport

Prepared by:

The Regional Roadworks Signage Review Reference Group

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# Foreword

From Dennis O'Reilly  
*Chairperson, Regional Roadworks Signage Review*



This report presents the themes, recommendations and actions identified and supported by the Regional Roadworks Signage Review in Western Australia during 2021.

In late 2020 The Minister for Transport announced a Regional Roadworks Signage Review to look closely at whether temporary traffic signage installed in regional areas across Western Australia was being properly secured and displayed at roadworks sites.

The review was initiated in response to community concerns raised that temporary road signs frequently fall over and fail to warn drivers of hazards on the regional road network. It included research and technical work by the Australian Road Research Board (ARRB), forming a stakeholder reference group and delivering a comprehensive community engagement program across regional Western Australian between January and July 2021.

The Regional Roadworks Signage Review Reference Group was a coordinated and collaborative group made up of leading industry stakeholders.

The technical component of the review by ARRB investigated all aspects of temporary traffic management signage including standards, design, training and the resulting practices and outcomes to deliver the Regional Roadworks Signage Review Technical Report 2021.

The regional communications and community engagement program, implemented between April and July 2021, used a project portal on MySayTransport to manage a community survey, ideas board, question and answer facility and community forum registrations. To support this program, project representatives travelled to regional centres in Western Australia seeking feedback from the community and other key stakeholders about their experiences with and thoughts about roadworks signage on regional roads.

The technical review, and communications and community engagement program identified synergy between the crash risk identified in the technical review and the concerns raised by members of the public. It was also identified that both road users and signage at roadworks sites contribute to the risk of a crash occurring. As such, recommendations have been made to improve technical guidance and on-site signage and empower

safer road users by educating them about the risks at roadworks in the Graduated Licensing System and by undertaking safety campaigns discussing risks at road works as identified in this review.

The technical report, along with community and stakeholder feedback received has now been considered by the review's stakeholder reference group to inform the recommendations to the Minister for Transport.

I want to extend my thanks to the reference group who have worked collaboratively to discuss the review's technical findings, as well as to consider the outcomes of the community and stakeholder engagement program to formulate the recommendations in this report.

The individual reference group members below support the recommendations and actions provided in this report and are keen to continue their support during the implementation program. Members included:

- Dennis O'Reilly Independent Chairperson
- Stephen O'Dwyer The Traffic Management Association of Australia WA
- Iain Dainty WorkSafe
- Phillip Yap Engineers Australia WA
- Peter Pikor Institute of Public Works Engineering Australasia WA
- Sarah Macaulay RAC
- Cam Dumesny Western Roads Federation
- David Fyfe Livestock and Rural Transporters' Assoc.
- Tim Dawson Transport Workers Union
- Andy Graham Civil Contractors Federation
- Nick Sloan / Ian Duncan WA Local Government Association
- Adrian Warner Road Safety Commission
- Commander Mick Sutherland WA Police

*\*Note: The undersigned support the recommendations as individuals involved in the reference group and recommendation development process only,*

The image shows a collection of handwritten signatures in blue ink, arranged in three columns. The signatures are:
 

- Column 1 (left): A large signature, a signature with a horizontal line, 'D Fyfe', 'A G', and 'A B'.
- Column 2 (middle): 'M Sutherland', 'S Macaulay', 'Ian Duncan', and 'D. O'Reilly'.
- Column 3 (right): 'Iain Dainty', 'U', and 'C'.

# 1. Introduction

The themes, recommendations and actions in this report were developed as part of the independent review of regional roadworks signage in Western Australia. The independent review, facilitated by an industry reference group under Terms of Reference, was chaired by Dennis O'Reilly.

These recommendations and resulting actions were developed following a comprehensive body of technical work and an extensive community engagement program, following a facilitated workshop with the Regional Roadworks Signage Review Reference Group. The group used the Australian Road Research Board (ARRB) Regional Roadworks Signage Review (RRSR) Technical Report 2021 and the community engagement program outcomes (survey results and information session records) to inform the recommendations.

The data in the ARRB Technical Report provides comprehensive supporting data to be used as part of the implementation program to improve road worker and user safety.

The information provided for consideration and endorsement by the Minister for Transport are identified across seven themes, 13 associated recommendations and complementing actions listed from a) to n). Immediate actions have also been identified for implementation by road managers as soon as possible following the endorsement of this recommendation report.

The *Implementation* theme, recommendation and actions is essential for the overall success of this program.

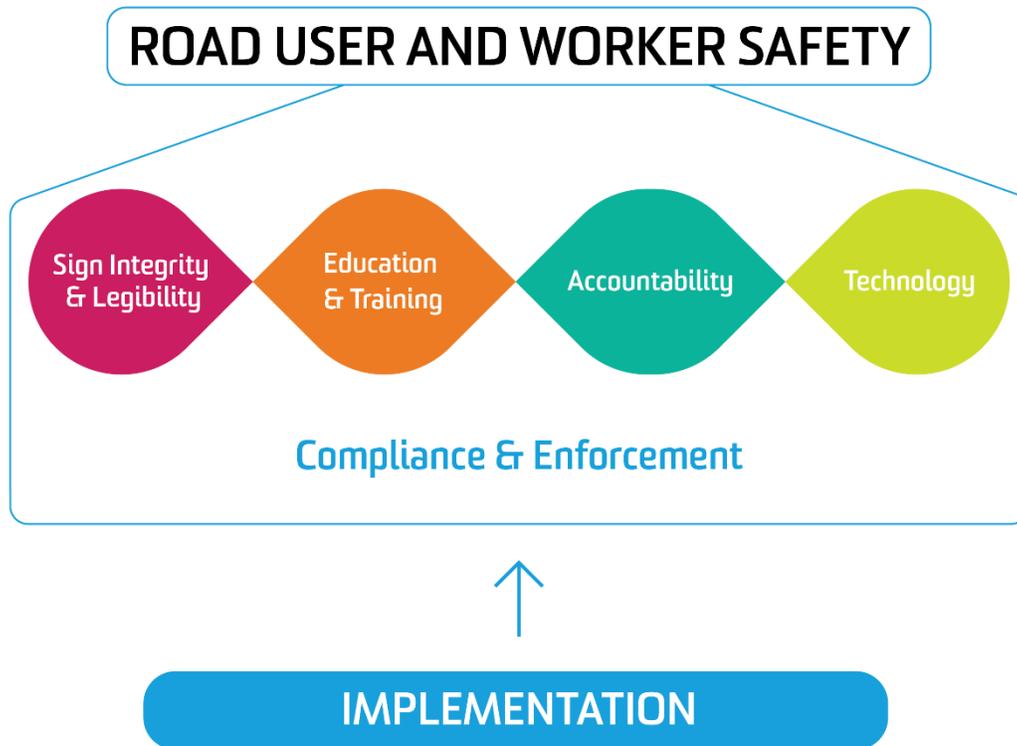
Supporting information has also been captured and reported in this document, however, this requires further investigation, discussion and / or development before being considered further over what is anticipated to be a two-year implementation program.

The recommendations are grouped by the following themes:

1. Road user and road worker safety
2. Education, training and support
3. Accountability - drivers, road and traffic managers and planners, legislation, worksite owner, client
4. Technology
5. Signage integrity and legibility (visibility, security, installation, removal, standards & auditing)
6. Compliance and enforcement, and
7. Implementation.

Each theme contributes equally to improving practice; however, each theme will be actioned individually. The following figure identifies how each theme contributes to improvements in road user and road worker safety.

*Figure 1 Theme influence on road user and worker safety*



## 2. Recommendations

The following themes, recommendations and actions are based on the information gathered via the reference group's monthly meetings, the Australian Road Research Board's (ARRB) technical work, and the community engagement activities around the state.

The recommendations will be actioned with a focus on providing changes and improvements to reduce the risks identified in ARRB's technical report and address the concerns identified by members of the public during public consultation. The themes will be delivered through 13 recommendations and supporting actions (a to n). Some of the recommendations and corresponding actions require pre-planning.

In addition, Section 3 outlines seven immediate actions to initiate the start of the Regional Roadside Signage Review's implementation program, with an expected start within three months. See Section 3 for details.

*Table 2.1 - Table of Themes, Recommendations and Immediate Actions*

*\*Note - timing is defined as short = 6 months, medium = 6-12 months and long = 12 to 24 months. Noting that this may mean start, implement, or complete.*

Theme	Recommendations	Implementation Time (short , medium and long-term)	Stakeholder Responsibility	Actions
<p><b>Road user and worker safety:</b></p> <p><i>Identify, implement, and maintain improvements that promote safety across the regional road network.</i></p>	<ol style="list-style-type: none"> <li>Revise tender documents and evaluation criteria to ensure temporary traffic management requirements are given increased focus and is priced fairly and transparently in bids.</li> <li>Improve traffic controller safety, by expanding the use of Portable Traffic Control Devices (PTCD) on regional worksites. To achieve this, update Main Roads' standards and specifications and work with industry to develop an implementation plan to phase in expanded PTCD use.</li> <li>Investigate mandatory use of speed management</li> </ol>	<p>#1 - Short / Medium</p> <p>#2 Short / Medium</p> <p>#3 Medium</p>	<ul style="list-style-type: none"> <li>Main Roads</li> <li>Road managers (State, Local Government)</li> </ul>	<ol style="list-style-type: none"> <li>The project manager to work with road managers to review policies and processes and identify a mechanism to structure the review including identifying assessment criteria to support Recommendation #1.</li> <li>Investigate the use of technology (e.g. speed feedback signs, speed enforcement cameras) and speed reduction devices (e.g. rumble strips and speed humps) to ensure compliance with reduced speed limits at active worksites to support Recommendation #3.</li> </ol>

Theme	Recommendations	Implementation Time (short , medium and long-term)	Stakeholder Responsibility	Actions
	technology to ensure road user compliance at active work sites.			
<p><b>Education, training and support:</b></p> <p><i>To enhance awareness of the role this plays in creating a safe road user and worker environment.</i></p>	<p>4. Improve community and driver awareness of safety risks at regional roadworks through training and education campaigns.</p> <p>5. Improve traffic controller and traffic management practices by identifying and developing support tools (e.g. training, safety campaigns and new / improved technical requirements) to ensure traffic management plans and on-site actions mitigate identified crash risks at regional roadwork sites.</p>	<p>#4 Short / medium</p> <p>#5 Long</p>	<ul style="list-style-type: none"> <li>• Main Roads</li> <li>• Road Safety Commission</li> <li>• Department of Transport</li> </ul>	<p>c) Engage with DoT, RSC, RAC and others to identify and deliver campaigns for development and implementation to enable Recommendation #4.</p> <p>d) Undertake a gap analysis to determine regional and remote traffic management training and delivery capability and improvements to support Recommendation #5.</p> <p>e) Identify opportunities to improve traffic management training for local government authorities and utility providers and develop an implementation plan to execute the improvements to support Recommendation #5.</p>
<p><b>Accountability:</b></p> <p><i>To guide and hold to account road managers, road users; traffic management planners, controllers and managers through the application of</i></p>	<p>6. Establish clearer lines of traffic management accountability, and chain of responsibility on roadworks sites in Western Australia.</p> <p>7. Establish a performance monitoring system that evaluates traffic management compliance with approved traffic management plans, and</p>	<p>#6 - Medium</p> <p>#7 - Long</p>	<ul style="list-style-type: none"> <li>• Main Roads</li> </ul>	<p>f) Review examples of chain of responsibility frameworks and assess for suitability in roadworks and traffic management contexts to support Recommendation # 6.</p>

Theme	Recommendations	Implementation Time (short , medium and long-term)	Stakeholder Responsibility	Actions
<i>standards, Codes of Practice, and legislation.</i>	apply penalties for poor performance.			
<p><b>Technology:</b></p> <p><i>To be adopted to provide safety, efficiency and improved communications for road users and workers.</i></p>	8. Establish a framework to assess and approve the use of current and emerging technologies that improve road worker and road user safety.	#8 - Medium	<ul style="list-style-type: none"> <li>Main Roads</li> </ul>	g) Review policy and procedures regarding the use of courtesy speed cameras and Variable Message Boards (VMBs) to maximise safety outcomes while considering remote location constraints (security), and application on low-use roads to support Recommendation #8
<p><b>Signage integrity and legibility:</b></p> <p><i>To support sign visibility, security, installation and removal, and be considered in updated standards and auditing.</i></p>	<p>9. Assess and implement new / or alternative sign-mounting solutions to allow signs to be visible and remain upright.</p> <p>10. Update the Temporary Traffic Management Code of Practice to reinforce the requirement that signs clearly visible and legible. Signs not relevant to the work activity / time of day (e.g. outside of work hours should be covered or removed). This links with Action #6.</p>	<p>#9 - Short / Medium</p> <p>#10 - Medium</p>	<ul style="list-style-type: none"> <li>Main Roads</li> </ul>	<p>h) Through a formal study, assess the suitability of known sign mounting solutions, or the need to design new sign mounting solutions. That is, that they are capable of remaining upright and visible on the roadside. Identify a clear path for fast-tracked implementation at regional roadworks sites to support Recommendation #9.</p> <p>i) Establish requirements to conduct video checks of site signage setups and retain the recordings. The recordings are to be available on request for review and compliance checks / audits. Recordings for the preceding seven-day period to be archived. This</p>

Theme	Recommendations	Implementation Time (short , medium and long-term)	Stakeholder Responsibility	Actions
				<p>supports Recommendations #9 and #10.</p> <p>j) Undertake a technical review to identify sign reflectivity options and investigate policy changes to mitigate the effect and risk of sign reflectivity resulting in glare and risk to driver safety to support Recommendation #10.</p>
<p><b><i>Compliance and Enforcement:</i></b></p> <p><i>Building relationships, standards and practices to drive excellent safety outcomes for road workers and users</i></p>	<p>11. Establish an audit and compliance framework to monitor and measure the performance of all parties involved in traffic management activities. This links with Action #6 and #7</p> <p>12. Build on the relationships developed as part of the state-wide Regional Roadworks Signage Review with WA Police and other stakeholders to achieve more visible and effective enforcement and promote collaboration between stakeholders.</p>	<p>#11 - Long</p> <p>#12 - Long</p>	<ul style="list-style-type: none"> <li>Main Roads</li> </ul>	<p>k) In parallel to the broader comprehensive work with Recommendation #11, work with Main Roads to expand education programs to encourage community-based feedback on traffic management measures in use on regional roadworks sites, and use this feedback to identify and respond to emerging traffic management trends and themes with road managers and traffic management providers.</p>
<p><b><i>Implementation:</i></b></p> <p><i>Create an implementation plan that delivers review-related priority actions, considers the review's supporting</i></p>	<p>13. Develop and implement a project plan to deliver the review recommendations and priority actions.</p>	<p>#13 - Short</p>	<ul style="list-style-type: none"> <li>Main Roads</li> </ul>	<p>l) Establish a supporting communication framework for road managers, road users, traffic management and utility providers and other stakeholders outlining short, medium and long-term targets</p>

Theme	Recommendations	Implementation Time (short , medium and long-term)	Stakeholder Responsibility	Actions
<i>documentation and investigates new actions with key stakeholders road managers, industry bodies and traffic management personnel).</i>				to support Recommendation #13. m) Engage with road managers to identify and agree the evaluation framework to support Recommendation #13. n) Investigate the feasibility of supplementary actions outlined in the supporting information (ARRB Technical Report 2021).

### 3. Immediate Actions

Seven immediate actions have been identified for implementation to deliver tangible improvements to road worker and road user safety as soon as possible. Listed below, these items are to be actioned within the first three months of the start of the program.

Immediate actions:

1. Appoint a suitably qualified and resourced project manager to implement and report against the wider recommendations in the short, medium and long-term to support Recommendation #13 - ***Implementation***.
2. Add traffic management and roadworks centric questions to learner driver education books, school curriculum and driver theory testing to support Recommendation #4 - ***Education, training and support***.
3. Create a list of applicable road managers to support Recommendation #1 - ***Road user and worker safety***.
4. Review Main Roads' existing standards and specifications in consultation with stakeholders to assess suitability for phased implementation procedures and the threshold for use on regional roads i.e. vehicles per day, posted speed, general road conditions to support Recommendation #2 - ***Road user and worker safety***.
5. Develop education materials for industry and the community to communicate traffic management accountability and chain of responsibility information to support Recommendation #6 - ***Accountability***.
6. Develop and implement a community education program (Main Roads) to inform road users and workers about how, where and when to submit feedback about traffic management, road and sign conditions to support Recommendations #9 and #10- ***Compliance and Enforcement***.
7. Create a project evaluation reporting process to measure the review outcomes and benefits, and present updates on progress to key project stakeholders i.e. Minister for Transport, industry representatives and the community to support Recommendation #13 - ***Implementation***.

## 4. Supporting Information

Further supporting information has been captured and reported in the below table to reflect ideas, concepts and topics considered by the reference group to support the formation of the review's recommendations.

The information within the table is not an action list, it is only a summary of relevant discussion points and/or potential opportunities for future investigation. These contributed to the development of the resulting themes, recommendations and immediate actions presented in this report, and could be investigated further and/or feasibility studies be considered as part of the development and implementation of the project plan identified in **Implementation** - Action #13.

Table 4.1 - Supporting information summary

<b>Technical Design (supporting information)</b>
<ul style="list-style-type: none"> <li>• Advanced warning of regional roadworks to manage driver expectations about delays and provide clear advanced warning about the need to reduce speed on the immediate approach to roadworks. This includes catering for heavy vehicle stopping distances.</li> <li>• The use of speed management devices such as speed humps and rumble strips to encourage speed compliance.</li> <li>• Coordination of adjacent worksites to minimise impacts on road users.</li> <li>• Investigate the development of signage to identify the unseen hazards at inactive work sites for road users.</li> <li>• Develop guidance to provide VMB delay signage at the beginning of a route with extended delay due to multiple roadworks sites.</li> <li>• Develop guidance for the use of countdown timers on traffic lights to communicate delays to drivers.</li> <li>• Investigating the use of distinguishing colours for traffic controllers, traffic management devices and associated vehicles.</li> <li>• Coordination of line marking and sign placement activities to avoid long periods of traffic management at work sites.</li> <li>• Use of repeater signage in long work sites to reinforce reduced speed limits and risks to drivers.</li> <li>• Use of "Follow Me" vehicles to coordinate controlled movements through worksites.</li> <li>• Investigate sign reflectivity standards and effects of different reflective materials on 'halo' and 'glare' at night.</li> <li>• Develop a list of approved sign covers to assist the traffic management industry in covering signs without incurring sign damage.</li> <li>• Revise the guidance and training provided to traffic management planners and implementors to assist them in providing consistent signage that is both suitable for and reflective of the work site context e.g. duration of site, traffic volume and speed etc.</li> </ul>
<b>Education, Training and Guidance (supporting information)</b>
<ul style="list-style-type: none"> <li>• Investigate the role of Technical and Further Education (TAFE) and Registered Training Organisations (RTOs) in traffic controller training and transition the traffic management industry to being recognised as a profession.</li> <li>• Revising the suite of guidance documents and aligning/consolidating the various sources of information. Including example Traffic Management Plans and Traffic Guidance Schemes for regional roads.</li> </ul>
<b>Temporary Traffic Manager Support (supporting information)</b>
<ul style="list-style-type: none"> <li>• Develop and provide tools and systems to assist in the development and implementation of traffic management plans, traffic guidance schemes including on-site monitoring to ensure that the design reflects site and road-use conditions.</li> </ul>

### Community Education (supporting information)

- Raising the profile of traffic controllers and the traffic management industry generally to increase road user understanding and support.
- Providing information signage to explain why traffic management is in place, particularly at inactive work sites.
- Developing and including roadworks in driver training materials and assessments.

### Governance (supporting information)

- Provide a method for members of the community to identify traffic management issues and the road manager and traffic controller to respond in a timely manner.
- Evaluate and report on the outcomes of this review, including progress of recommendations.

### Compliance and Enforcement (supporting information)

- Liaise with Police to increase their presence and enforcement activity for speeding and ignoring traffic control directions at roadworks sites to reduce the risk to all road users, traffic controllers and road workers.
- Traffic managers to video record site drive throughs at the start and end of the work activity, and at two hourly intervals for longer works. Videos to be kept as a record of compliance and available to compliance reviews.
- Investigate setting the requirements for signage inspections and accountability for incorrect sign layouts outside of work site hours.
- Create (or expand their database) a database (cloud based), managed by Main Roads, that co-ordinates and integrates all permit, audit and chain of responsibility activities.

### Innovation and Technology (supporting information)

- Investigate the use of technology to monitor sign position (upright or fallen) in between drive throughs and outside of hours.
- Investigate security options to overcome damage and theft of traffic management devices left on site.
- Investigate the use of real-time traffic flow information and applications to provide drivers with delay information.
- Investigate the use of symbolic signage in remote communities, and where English is not the primary language.
- Partner with national and international industry groups to capture outcomes of traffic management device trials.

## 5. Next Steps

- Review and endorse the recommendation and action profile presented.
- Appoint a suitably qualified and resourced project manager.
- Develop and implement a project plan and program informed by the ARRB Technical Report and Community Engagement Report.
- Report and evaluate implementation of the project.

## REFERENCES

1. Regional Roadworks Signage Review Technical Report, Draft Report 2021, Australian Road Research Board (ARRB), David Milling, Haris Zia, Zia Rice, Claudia Trejo and Joseph Affum
2. Region Roadworks Signage Review Community Engagement Report, 2021, JAC Communications, Estill and Associates