

Use of Truck-Mounted Attenuators in Short Term/Mobile Lane Closures: Operator Perspectives in Southeast Queensland

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Abstract

Truck-mounted attenuators (TMAs, e.g. Figure 1) are deployed to provide positive protection for roadworkers and reduce the impact of vehicle intrusions into work zones. The aim of this research was to explore operational issues and perceived effectiveness of TMAs from the perspective of TMA operators in Queensland, Australia. Participants perceived TMA deployment procedures as sufficient overall, but concerns were expressed about lack of driver awareness, inappropriate driver behaviour, and consistency of deployment. In the first research focusing directly on driver behaviour and TMAs in Australia, the interviews revealed TMA operators' perspectives on risks and hazards associated with TMA use, as well as the supporting safety measures deemed most effective.

Background

Lane closures on multilane roads require motorists to transition safely from closed to open lanes before entering a roadwork site. While informative traffic controls help to alert drivers to upcoming lane closure, drivers sometimes fail to transition safely, exposing workers and motorists to substantial collision and associated injury risks. Accordingly, TMAs are used to reduce the incidence and severity of work zone intrusions. While international research demonstrates the general effectiveness of TMAs (Ullman & Iragavarapu, 2014), there is a need to optimise their deployment to maximise positive outcomes. With this objective, research examining driver behaviour in relation to TMAs and associated traffic management was undertaken by CARRS-Q in 2018 on behalf of Queensland Transport and Main Roads (TMR). The current content focuses on interviews with TMA operators, while the broader study also included traffic observations at relevant worksites. Prior to this, empirical research on TMA use and effectiveness in Australia was lacking.

Method

Six experienced (minimum 4 years) TMA operators employed by TMR were interviewed in Southeast Queensland using a semi-structured format to discuss their knowledge and perceptions regarding TMA use and related safety issues. Four operators participated in a group interview and two were interviewed individually. Interview duration was approximately 45 minutes. The interviews were structured around four main themes, including TMA Deployment, Risks and hazards, Effectiveness of safety practices, and Improving TMA design and deployment.

Results and Conclusions

Due to the wide range of activities and environments in which TMAs are used, there was said to be no typical or standard deployment procedure. Where traffic control involved external contractors, variation in procedures also related to inconsistent operational approaches and policies. The need to achieve an appropriate balance between rigour, consistency and flexibility can sometimes lead to compromise, particularly if multiple organisations are involved.

Numerous concerns were expressed regarding driver behaviour, including speeding, inattention, fatigue, impairment, phone use and lack of understanding of controls and signals. Wet weather was considered hazardous due to driver failure to adjust for conditions. Reportedly, drivers often do not

look far enough ahead and also tend to ‘tailgate’, increasing the risk of rear-end crashes. These risks and hazards are all consistent with the international literature on TMA safety research and work zone safety generally, as are operators’ perceptions that visible police presence at work sites has the most notable positive influence on driver behaviour (Smith et al., 2006; Debnath et al., 2017).

Among the most prominent general concerns expressed by TMA operators was the lack of understanding among drivers about TMAs and associated traffic controls and signals. Participants described being followed by drivers who mistook arrow boards for indicators and stopped behind the TMA, either confused or expecting the TMA to change lanes in front of them. It was also reported that curious drivers sometimes drive too close to the TMA so as to observe the attenuator device. Participants said that such events indicate a need for advertising and education to inform drivers of the purpose of TMAs and appropriate driver behaviour.

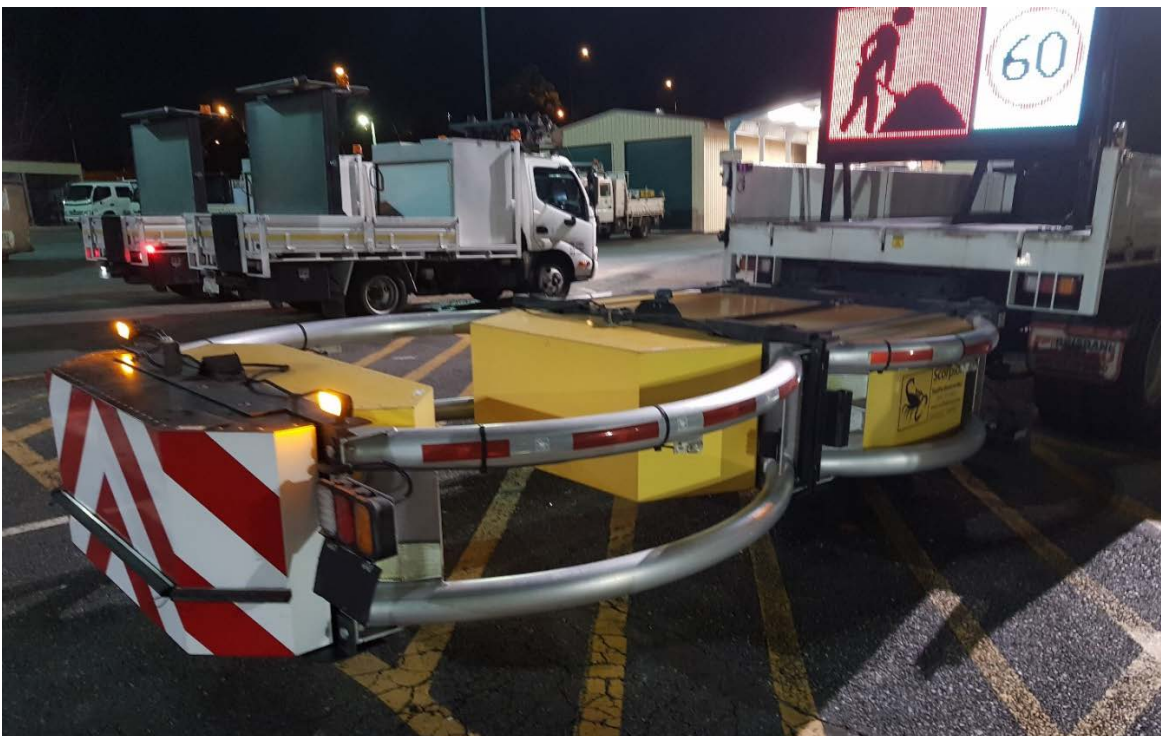


Figure 1. Truck-mounted attenuator (TMA) used in the study area

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