SUBMISSION **LEVEL CROSSING SAFETY: TRAIN ILLUMINATION**

JANUARY 2009

AUSTRALIAN TRUCKING ASSOCIATION

Minter Ellison Building, 25 National Circuit, Forrest ACT 2603
P 02 6253 6900 **F** 02 6253 6999 **E** ata@atatruck.net.au **W** www.atatruck.net.au

Contents

1 Introduction

On 27 November 2008 the Standing Committee on Infrastructure, Transport, Regional Development and Local Government resolved to update its 2004 report titled: *Train Illumination: inquiry into some measures proposed to improve train visibility and reduce level crossing accidents.*

This submission details the views of the members of the Australian Trucking Association (ATA) and the wider trucking industry on the approaches required to raise the standard of safety at level crossings, with a particular focus on train illumination as is the focus of the Committee's update inquiry.

The views expressed in this submission are consistent with the policies agreed by members of the ATA's General Council and are reflected in earlier submissions made by the association to other inquiries; most recently, to the Parliament of Victorian Road Safety Committee's inquiry into improving safety at level crossings.

2 Australian Trucking Association

The ATA was originally established in 1989 as the Road Transport Forum and is the peak national body uniting and representing the interests of the Australian trucking industry.

Establishment of the ATA arose from a strong desire of transport operators to improve safety in the industry and raise professionalism in the conduct of the business and operations of trucking companies.

Membership of the ATA's General Council comprises the peak state and sector based trucking associations, the Transport Workers' Union, some of the nation's largest transport enterprises and elected representatives of small fleet owners and owner drivers.

3 Level crossing safety

Raising the standard of safety at level crossings and reducing the devastating incidence of road-rail crashes requires strong support for the delivery of a multi-faceted approach to raise safety standards, improve the ability of road users to assess the risk of collision and address elements of risky behaviour by road users in approaching and passing level crossings.

The issues concerning level crossing safety are numerous and the contributing factors identified in inquiries into road-rail crashes are not necessarily straightforward.

In acknowledging this, the ATA and its members support the application of a risk based benefit-cost assessment of the factors imposing on level crossing safety and the potential solutions that could be applied to improve safety.

The task ahead to improve and deliver appropriate levels of safety at level crossings is significant; however, the consequence and tragedy of road-rail crashes demands attention and coordinated action.

Many reviews into level crossings, including the 2004 inquiry by this Committee, have recommended programs requiring increased government funding for level crossing safety. The trucking industry supports this.

In optimising funding to ensure the greatest safety benefits are delivered to the community and road and rail industries, the ATA believes good opportunities to improve level crossing safety through the application of some cost effective solutions exist.

The discussion below does not attempt to detail the full range of issues and potential solutions to improving level crossing safety, but rather, seeks to place the importance of train illumination into context as forming part of a safe systems approach to the management of level crossing safety.

Within such an approach there appears to be scope to raise the standard of level crossing safety through improved train illumination, as discussed in more detail in Section 6 below.

4 Safe systems

In the *National Road Safety Action Plan 2009 and 2010*, the Australian, state and territory governments adopted a safe systems approach as a core measure to improve road safety outcomes.

The approach recognises there are collective responsibilities on all parties in improving road safety, including infrastructure providers, infrastructure managers, transport regulators and road users.

Importantly, the approach recognises that human error is inevitable and that road users will make mistakes or fail to respond appropriately to prevailing conditions.

A safe transport system should make allowances for human error and seek to minimise the consequences in the event of an incident.

For example, under a safe transport system, a driver straying over the edge of line on a road, should not be presented with an immediate transition onto a broken shoulder that could divert the vehicle off the road or, worse still, into a non-frangible roadside object. Rather, the edge line would provide an auditory signal, the shoulder would be sealed, and the road edge free of hard objects, thereby making suitable provision for driver error.

On the issue of the importance of drivers detecting and responding appropriately to trains at level crossings, the Chair of the Parliament of Victoria Road Safety Committee commented in the 2008 Inquiry Report into Improving Safety at Level Crossings that "nevertheless we are humans and humans are prone to make mistakes, and as governments we should try as much as practical to make level crossings as safe as we can".

5 Safety risk and level crossing type

In order to improve level crossing, to reach the ultimate goal of providing a safe system across Australia's road and rail networks, significant investments in safety infrastructure upgrades will be necessary.

The Railway Safety Regulators' Panel reported that in 2006-07 Australia had 7,943 public level crossings, with approximately 70 percent of these being passive crossings and an even greater proportion being crossings without boom barriers.

The fiscal commitment required by governments to bring level crossing infrastructure up to standards are considerable and likely only to be delivered over a period of years.

To maximise the safety benefit during this interim period, it is necessary for infrastructure works to proceed on a priority basis, guided by an assessment of the safety risk as against the level crossing type and prioritised on the basis of the divergence of crossing type suitability from the assessment of prevailing risks.

Infrastructure options, including road-rail grade separation at the nation's most risky crossings, boom barriers and other active crossing devises such as flashing lights and passive advisory signs and rumble strips, vary significantly in expense and therefore need to be balanced on consideration of risk.

Train visibility is a key consideration in the base assessment of risk across all level crossings and therefore highly relevant to level crossing safety.

6 Visibility

A driver approaching or stopped at a passive level crossing cannot yield to an approaching train they cannot see.

At the bare minimum, a safe transport system must ensure a motor vehicle driver's entitlement to make a safe decision whether to proceed through a level crossing or not and provide train operators and passengers with an expectation that the level crossing they are approaching is at an adequate level of safety.

Accordingly, ensuring train illumination is appropriate in the prevailing conditions is an important part of improving the early detection of trains by road users.

The ATA enjoys the strong support of National Transport Insurance (NTI), who is the major insurer of hire and reward trucking fleets in Australia.

In an updated December 2008 release, NTI advised that since 1986, 84 level crossing incidents have been notified, with 44 per cent having occurred since 2000.[1]

Important for this Committee inquiry, given its focus on train illumination, is that 85 per cent of the reported incidents occurred during daylight hours.

A normal expectation is that visibility would be better in day light hours; however, the evidence suggests that some drivers are not detecting trains approaching at level crossings.

Assuming an attentive and rule abiding motor vehicle driver and adequate lines of sight toward approaching trains, two primary factors affect a driver's ability to detect a train approaching a level crossing: environmental factors and visibility factors.

6.1 Environmental factors

The environment affects the ability of people to see. The impacts of darkness and fog on visibility are easy concepts to understand thereby making intervention readily apparent.

The loss of visibility caused by heat shimmers or reflected sunlight are much harder to assess, thereby determining risk assessment and appropriate levels of intervention a relatively difficult undertaking.

[1] National Transport Insurance, Media Release: Insurer Concludes Investigation Into Truck-Train Crashes, 17 August 2007 (updated December 2008). For further information on the investigation please contact Owen Driscoll by phone: 0438299205, or email: owendriscoll@nti.com.au.

These effects can be severe but they can also be short lived or apparent in only a limited range of circumstances. While good crossing design and more active controls and warning may reduce the risks, the fact remains that many level crossings in Australia have these issues and reconstruction to mitigate risk will not occur in the near future due to the high costs involved.

Low cost speed management (road and/or rail) and road user awareness management may also be of assistance and is a logical part of the mitigation actions where adverse environmental factors may be present or have been identified.

For both darkness and fog the logical and accepted primary intervention is to light the locomotive and provide retro-reflective delineation of the carriages. It would appear that these may be of some benefit in providing improved delineation or contrast to trains in difficult visual environments.

Additional strobe lighting or crossing lights and enhanced retro-reflective materials with a wider "cone of effect" may have also merit. The ATA understands these more advanced materials are referred to as Class 1W with regard to the AS/NZS1906.1:2007 standard.

The additions would appear to be a relatively low cost approach that may improve train detection by road users. While such enhancements would need to be budgeted for and implemented within train operators' schedules, the ATA submits that the committee should seek to implement progress in the next few years, to avoid road-rail accidents becoming more frequent and of increased severity.

There are maintenance issues with providing these additional devices on trains and operational matters that train operators and regulators will need to address to ensure these devices remain operational, including ensuring retro-reflective material does not become obscured during use so as to be ineffective.

The use of the more advanced retro-reflective material should also be progressively implemented on roadside signage approaching level crossings as its wider 'cone of effect" provides increased visibility to truck drivers due to the larger separation between the headlights on the truck and the drivers eyes.

Similar advances have been made in road line marking technology so that there is little reduction in light return (visibility) when the lines are wet, whereas many existing materials suffer significant reduction in light return.

The ATA understands that most crossings in Australia are not identified with the latest generation of high retro-reflectivity materials.

6.2 Visibility factors

The operation of the human eye is complex; however, it is also one where there is some degree of knowledge about how well the general population sees and what are reasonable limitations on accepted visual performance, including the decline of sight with age.

For example, eyesight tests and screening procedures are widely used in the driver licensing processes of governments. It is also know that delineation of objects can be enhanced by treatments – for example, retro-reflective materials on signs and carriages, flashing beacons on wide loads, high-visibility and high-contrast material in safety vests.

All of these treatments can be shown to have some positive effect in improving visibility of the object.

The trucking industry has developed and promotes the use of an advisory procedure – *Australian Heavy Vehicle Visibility* – to assist other road users to see heavy vehicles. This advisory procedure has been endorsed by the Department of Infrastructure, Transport and Regional Development and Local Government.

A report by the United States National Highway Traffic Safety Administration in March 2001 recorded a reduction in fatality and injury accidents of 44 percent in dark conditions resulting from the use of marked trailers.

It would appear similar treatments could be applied to trains with commensurate improvements in visibility expected to be delivered.

The advisory procedure recognises that the use of reflective graphics and corporate logos can complement safety. The adoption of a similar approach to "branding" trains by rail operators may assist in offsetting the costs of enhanced visibility and delineation for trains.

A copy of this document is attached to this submission and can be downloaded from the ATA's website: http://www.atatruck.net.au/advisory_procedures.html

The ATA notes there are relevant Australian Standards on lighting and visibility for rolling stock[2]; however, it is not clear the extent to which these standards have been adopted.

The ATA further notes the minimal lighting requirements for locomotives and rolling stock are well below the standards applying to a similar sized heavy vehicle combination.

6.3 Train illumination

Train illumination may also be a factor at some crossing incidents where active control devices are applied, as evidence suggests motorists do not always obey active controls at level crossings. Education and enforcement is important in this respect and improvements in train visibility may mitigate the occurrence in circumstances where road users are unable to see a train approaching.

The ATA notes train illumination is not the silver bullet for attaining the desired improvements in level crossing safety, however, we acknowledge that it does form an important part of a multi-faceted approach to raising safety standards at level crossings.

The views expressed by the ATA in relation to train illumination are similar to recommendations 21, 22 and 23 of the 2008 Parliament of Victoria Road Safety Committee inquiry report.

Improving train illumination is undoubtedly one strategy that will assist to increase train visbility and thus reduce the risk of a road-user failing to see an approaching train. A cognate, immediate and effective improvement which can and should be adopted universally, is to ensure an unobstructed view along the rail line, in both directions, as the road-user approaches and arrives at the level crossing. This must include giving priority to maximising road-rail safety over the current policy of opposing the clearing of vegetation well back from each level crossing so as to ensure clear line-of-sight for the road-user back along the rail line. The amount of vegetation that would be affected by this is so small as to not even be recordable as a percentage of the Australian vegetation without resorting to many decimal places. Human life must be placed above the protection of this extremely small amount of vegetation.

[2] AS7531.1-2007 & AS7531.2-2007

7 Conclusion

There are a range of other contributing factors to road-rail accidents that require the attention of governments, transport regulators, infrastructure provides, infrastructure managers, road and rail operators and other road users.

These may include, but are not limited to:

- additional warning devices and signage;
- advance warning systems potentially including interoperability between truck and train GPS management systems and UHF and FM radio polling;
- speed management;
- enforcement and education;
- installation of active controls;
- level crossing redesign and construction to improve sight lines,
- road-rail grade separation;
- closure of redundant crossings;
- adopting fail to safe barriers; and
- interventions providing fail to safe train management.

The application of these interventions should be assessed on the basis of a consistent criterion of prevailing risk and benefit-cost assessment to ensure the same outcome in same circumstances will prevail across the entire transport network.

The ATA wished to state that the use of the "evidence quality" Intelligent Access Program (IAP) to monitor level crossing activities will not be cost effective. The specific technology known as "IAP" is costly to install, and operate. To have any measurable effect it must be able to cross match any truck to any train to any level crossing, and conclude a risk of conflict at the relevant crossing. We understand IAP cannot currently do this. Further, driver to device interoperability, in motion, is specifically limited, and we do not believe it would currently provide automatic warnings to drivers that would be superior the simple mapping GPS systems already fitted to many trucks and cars. We are concerned about reducing the incident of level crossing events we do not see that providing evidence quality attribution of blame will be particularly helpful.

Moreover, whilst any number of level crossing accidents is unacceptable, the fact remains that many tens of thousands of trucks cross rail lines every day and millions each year, around the country. The cost-benefit ratio of mandating a system that is costly on a per unit basis for all trucks is simply unjustifiable, particularly given that such an approach would not address the causal issues anyway.

In order to positively contribute to the improvement in level crossing safety, the ATA in partnership with the Australasian Railways Association are developing an interactive display to promote responsible road user behaviour at level crossings and draw attention to the dangers of unsafe practises.

The interactive display will form part of the trucking industry's The Road Ahead travelling exhibition that, since its launch in mid-2008 has delivered road safety messages about 18,000 people, including some 12,000 school-aged children.

This is important undertaking reflects the joint concerns of the trucking and rail industries regarding the consequence and human tragedy of road-rail crashes and the need for concerted action to improve the standards of safety at rail level crossings.

The ATA and its members appreciate this opportunity to make a submission to the Committee's update inquiry on train illumination.