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Road Safety Committee

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BY: .....

3 October 2007

Improving safety at level crossings submissions  
Road Safety Committee  
Parliament House  
Spring Street  
East Melbourne 3002

Dear Mr Eren,

### Submissions for inquiry into improving safety at level crossings

Thank you for the opportunity to make a submission to this Road Safety Committee Inquiry into improving safety at level crossings. ARRB Group Ltd (ARRB) is the leading Australian provider of value added research and technical services addressing transport problems. The organisation employs over 180 staff who form a multi-disciplinary pool of highly qualified research professionals, experienced engineers, and specialist technical and support staff.

#### Previous ARRB research

ARRB has extensive experience in conducting research on rail safety at level crossings. Dr Peter Cairney has been responsible for much of this research at ARRB. Recent work has included an Austroads funded study titled *Reducing Collisions at Passive Railway Level Crossings in Australia*. The project involved the collection and collation of information on State policies, guidelines and initiatives relating to passive railway crossings with the aim of identifying best practice solutions to reducing collision risk at passive railway crossings. The project notes that Australia has a lower population rate of collisions at passive railway crossings than other comparable countries. It makes a number of recommendations including improved data collection and better linkages between existing road crash and rail crossing data systems, improved signage and road markings, train lighting and reflective materials, public education, proactive risk management, and further investigation of the potential for developing lower cost active treatments. The report concludes that passive railway crossings may not be appropriate on lines used by high-speed trains and recommends the wider use of active crossings on such lines. The report recommends guidelines for ensuring good practice in managing risk at passive railway crossings.

A second study, *Prospects for improving the conspicuity of trains at passive railway crossings*, assessed possible changes to the trains rather than the crossings themselves to improve safety. The study suggests that since there are fewer locomotives (approximately 2300) than passive crossings (approximately 6000), and since locomotive lighting treatments are likely to cost less than even the low-budget active warning systems currently being trialed, treating locomotives appears to be an attractive option. Empirical studies of the effectiveness of auxiliary lighting treatments were reviewed. The study found evidence to suggest that all auxiliary lighting treatments are effective and increase detectability or improve estimations of time to arrival compared to headlights alone. Studies have also shown that strobe lights can improve detection when added to locomotives previously equipped with headlights alone. However, a recent study for Western Australian Government Railways indicated that a single strobe light did not improve detection when added to locomotives already fitted with both headlights and crossing lights. If further research into improving locomotive conspicuity is judged to be worth pursuing, it is recommended that it should commence with careful modelling of the photometric properties of proposed conspicuity-enhancing treatments.

### Current ARRB research

ARRB is also currently involved in a number of projects relating to rail safety. These include:

- an evaluation of rumble strips at railway level crossings (for VicRoads)
- development and trial of enforcement guidelines for railway level crossings (for Australasian Railway Association)
- an investigation of incident costs at metropolitan railway crossings which will contribute to work to prioritise crossings for grade separation (for the Department of Infrastructure).

### The future

In our view, the most important issue is a strategic one which poses a serious challenge to the future viability of Australia's land transport system.

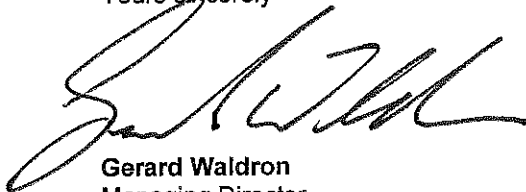
There is a prospect that fuel prices will increase in real terms in the future, perhaps considerably. This is likely to result in increased rail traffic, and a greater proportion of road traffic being carried by large trucks. A laden B-double truck, stopped at a crossing, requires approximately 17 seconds to clear a single-track rail line. If three seconds are allowed for driver decision-making then approximately 20 seconds are required to just clear the line in time. Current freight train speeds are 115 km/h, or 32 m/s. This means that the truck driver must decide whether to proceed or not when the train is approximately 650 metres away. Looking straight down the railway line, very few cues are available to indicate to the driver how fast the train is travelling, so that it is very difficult for drivers to make this decision. On some occasions, their decision is likely to be wrong, placing themselves and the train at risk of a collision.

Australia has some 6000 passive crossings at present. The cost of converting all these to active control is likely to be prohibitive. Unless some cost-effective alternative to conventional active treatments is developed, future developments in rail speed and/or deployment of larger road vehicles are likely to be compromised.

ARRB staff are developing some specific suggestions for technical solutions which it is intended will be published in a paper presented at the ARRB conference in July 2008. In the view of these staff, there is an urgent need for a concerted program of technical research and development into new ways of managing the interaction between trains and road vehicles at level crossings. Unless new ways of managing these interactions are found, increased train speeds are likely to present unacceptable risks, to the detriment of the Australian land transport system and the economy.

I trust that this submission is of interest to your inquiry. If you require further information, please contact Dr Peter Cairney at the above address, or by phone (9881 1621) or email ([peter.cairney@arrb.com.au](mailto:peter.cairney@arrb.com.au)).

Yours sincerely



**Gerard Waldron**  
Managing Director

### References

Cairney, P 2003, *Prospects for improving the conspicuity of trains at passive railway crossings*. Australian Transport Safety Bureau (ATSB). Canberra, Australia.

Cairney, P, Gunatillake, T & Wigglesworth, E 2002, *Reducing Collisions at Passive Railway Level Crossings in Australia*. Austroads report AP-R208/02 Sydney, Australia.

Yours sincerely,