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# **Driver distraction—a factor in level crossing fatalities**

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Every year a number of crashes, some involving fatalities, occur at road/rail intersections, commonly called railway level crossings (RLX). In the five years 1997-2002, 220 fatalities have occurred at railway level crossings in Australia. These comprise both vehicle and pedestrian crashes.

Railway level crossing safety is a very high priority for the rail industry and significant efforts are being devoted to improve the safety of these environments where road and rail meet. For example, the rail industry recently announced new uniform lighting standards to improve train visibility when approaching railway level crossings. In addition, research into driver behaviour at railway level crossings is being conducted under the auspices of the Rail Cooperative Research Centre for Railway Engineering and Technologies based at Central Queensland University.

As well as this, in April 2005 the Australasian Railway Association held the inaugural National Railway Level Crossing Behavioural Workshop where road and rail safety experts came together to discuss ways of reducing incidents at railway level crossings. Emerging from the workshop is a way forward to develop a National Plan to coordinate the activities and information sharing of the States on improving railway level crossing safety, and specifically educating drivers about the dangers of railway level crossings.

Of considerable concern to the rail industry is the fact that unintended driver error is a factor in 46% of fatal railway level crossing incidents, as opposed to 22% for other fatal road crashes. The focus on driver distraction on the whole provides an opportunity to examine the special features of railway level crossings and to develop behavioural countermeasures to improve this important area of road-rail safety.

# PRESENTATION SLIDES

## Level Crossing Fatalities in Australia

- Approximately 100 crashes between road vehicle and train each year since 1997
- Prior to 1997, poor data
- 8% are fatal - often multiple fatalities
- 22 pedestrians are killed each year



## Level Crossing Occurrences

- Events that have the potential to be fatal are more frequent, averaging well over 1000 each year.
- Categorised as 'level crossing occurrences'
- Issues exist with definition of 'occurrence', so actual number is significantly higher



## High Cost of Level Crossing Accidents

- Economically, are among the most expensive
  - Between \$180,000 and \$450,000 to community (BTRE, 2003)
- Cost to rail industry for single accident is often in millions
- Trains cannot take detours, often key freight & passenger networks tied up for many hours or days
- Significant potential human cost, beyond road user
  - Train drivers
  - Passengers
  - Residents
  - Businesses



## Potential for Disaster

- When involved in level crossing accident there is real potential for train to derail
  - Freight trains often carry dangerous goods, increasing the possible consequences
  - Passenger trains derailing.....
- In Europe, an average of TWO major events occur each year as a result of level crossing accidents



## Issues in Australia

- Australia has a large area and low population density
- Collisions occur less frequently, but still occur
- Freight Rail is experiencing resurgence
  - increased rail traffic
- Only a matter of time before major incident occurs here
- Rail industry does not want to wait for such an event to occur



## Level Crossing Priorities in Australia

- Level crossing fatalities involving vehicles are considered part of the National Road Toll
  - And form less than 1%
- Level crossing fatalities involving pedestrians are considered part of the National Rail Toll – why?
  - And contribute over 60%



## Shared Responsibility between Road and Rail

- Level crossings are a road-rail intersection
- High priority for the rail industry
- Low priority for road safety interests
- Little interaction between the two
- Rail industry is committed to improving safety but:
  - Road users operate outside rail's jurisdiction
  - Rail industry has little experience in dealing with road users



## Rail Industry Initiatives

- Rail industry has taken significant steps in 2005
  - Announced development of National Locomotive Visibility Standards
  - Hosted National Workshop to focus on behavioural programs to improve level crossing safety, engaging road safety experts & police



## Rail Industry Initiatives

- Following on from National Workshop:
  - Cooperating with Governments to fund the development of National Behavioural Plan involving all key stakeholders
  - General agreement that road safety support is vital to resolve problem
  - Goal of May 06 for ATC approval of National Plan, with implementation commencing July 06



## Factors in Level Crossing Fatalities

- ATSB conducted study of 87 fatal crashes between 1988 and 1998
- Small sample size, but interesting results
- “unintended road user error” was key cause of accident in 42% of fatal level crossing accidents
  - Compared to 22% in other fatal road accidents



## Factors in Level Crossing Fatalities

- Other interesting findings:
  - 83% occurred in daylight
  - 85% occurred in fine weather
  - Almost as many accidents occur at level crossings with flashing lights (41%) as at level crossings without (44%)
  - In all cases, rail was cleared of any fault
- Why are drivers not avoiding trains?





## What role is Distraction playing?

- Unintended road user error is a considerably higher factor in fatal level crossing accidents than other fatal accidents
  - Suggests issues are external to the vehicle
- What might these issues be?
- What can be done?



## Potential Causes of Distraction?

- Unusual nature of Level Crossings - not often encountered
- Are road users spending too much time interpreting signs?
  - Signage and Signals are unfamiliar, possibly not well understood
  - Signage often in 'jumbled' state





## Potential Causes of Distraction?

- Difficulty in assessing train speed, position and point of intersection
- Noise associated with level crossings
  - Train horn
  - Bells
- Road design and Crossing design often not complementary



## Signage at Level Crossings

- Everyone knows a Stop sign
- Does the customisation of the sign distract from its message?
- Is there a standard that dictates the appropriate level of signage
  - If not, should there be?
- Is it time to review current practice?



## What can be done?

- Could specific driver distraction research or programs be focused on level crossings, and would it add value?
- Can driver distraction education be targeted at improving safety in unfamiliar environments, particularly level crossings?
- Can driver distraction issues be incorporated into the National Behavioural Plan?



