

Improving train visibility

- 2.1 Considerable effort has been put into the improvement of train visibility in recent years. More powerful lighting, audible signalling devices and better marking of crossings have all been tried. Experts continue to be mystified as to why despite these efforts, some people are still not sufficiently alerted to recognise the approach or presence of a train and to avoid an accident.

Additional lighting and reflective strips

- 2.2 Improved lighting was one of the methods proposed to the Committee to reduce level crossing accidents. Some of the statistics reported in chapter 1 appear to the Committee to be particularly significant, when considering the potential benefits of improved lighting. Many of the fatal accidents involving vehicles hit by trains at level crossings occur during the day and at actively protected crossings.
- 2.3 The latter point surprises the Committee, but as Dr Eric Wigglesworth stressed in his evidence to the Committee, when other warnings are available, the visibility of trains at actively protected crossings should not be an issue if drivers are paying attention:

It matters not a tuppence whether the locomotive has headlights, headlights and a strobe, no lights at all, or whether it is lit up like the Sydney Harbour Bridge on New Year's Eve. If the boom barriers come down, that is the information that tells a road driver

a train is coming. The conspicuity or other wise of a locomotive at those crossings is secondary.¹

- 2.4 It appears that additional lighting will not lead to a significant reduction in accidents at controlled crossings. The value of additional lighting on locomotives or rolling stock to reduce the high number of accidents that occur during daylight hours is also doubtful. However it may worth considering the potential benefit to be gained from additional lighting in relation to reducing accidents at passive crossings between dusk and dawn even though the number of fatalities is low.
- 2.5 To provide warnings at night, locomotives are required to have effective headlights and horns. A recent Austroads report examined various types of lighting that can be used on locomotives to improve visibility.² These include:
- Oscillating lights - standard headlights which rotate backwards and forwards, creating a beam which sweeps too and fro across the locomotive's path, creating a constantly changing pattern of illumination against the vegetation and other features of the landscape.
 - Rotating beacons, where the rotating appearance may be achieved by a mechanically rotating reflector, or by electronic discharge of separate lighting elements. These units can be used at the front of locomotives, mounted on the roof.
 - Strobe lights which flash at a high frequency.
 - Ditch lights - high output lights mounted approximately 1.5 m above track level and aligned to shine past the edge of the rails.
 - Crossing lights – a variation on ditch lights, each light being aimed to illuminate the opposite side of the track; they can be made to flash alternately, so that the appearance is of a light alternating with a much brighter light.

1 Transcript 24 March 2004 p.5

2 Austroads, Reducing Collisions at Passive Railway Crossings, 2002, p.12

- 2.6 The Committee, after considering evidence concerning the conditions in which many fatal crossing accidents have occurred, is not convinced that generally placing additional lights on locomotives, or on the side of trains, will have any substantial effect in reducing the number of fatalities. The cost is likely to be considerable if lights are to be fitted to all rolling stock and would involve significant maintenance. We need a better understanding of why vehicles collide with trains during daylight hours and at controlled crossings before a broad policy of illuminating rolling stock could be advocated.
- 2.7 However some other options are more viable. The Committee considers that there is a case for rotating beacons to be installed on all locomotives. This could increase conspicuity during daylight hours as well as being more likely to attract attention during the night.
- 2.8 The Committee also considers that adhesive reflective strips or reflective paint should be applied to the sides of all railway rolling stock. It has been suggested that keeping reflective strips clean and effective might be a problem, but Committee members have seen routine maintenance programs in the rail industry which could easily be adapted to include simple cleaning processes for reflective strips. Washing down the strips would not be a significant additional cost to rail operations when compared to replacing and maintaining of electrical equipment.
- 2.9 Reflective strips could be yellow, red or white with contrasting bright dots to show that the rolling stock is in motion. They should be set at head-light height and must be subject to regular testing and cleaning.
- 2.10 The Committee notes that improving conspicuity of rolling stock has been included in the current draft Code of Practice promulgated by the Australasian Railway Association for the rail industry.³
- 2.11 The code requires rolling stock to have reflectors fitted to their sides to increase night time visibility for approaching road vehicles. Although Chapter 5 in the Code of Practice is currently still in draft form, the Committee understands that the proposed standards are likely to be accepted and believes that they should be. The requirement for reflector strips to be periodically cleaned has also been factored into the Code of Practice.

3 Australasian Railway Association, Draft Code of Practice for the defined interstate rail network, Volume 5, Part 3 – Freight cars- Specific requirements and recommendations, Section 1 – Design and construction, p.5

- 2.12 The option of reflector strips is attractive when compared to additional lighting. It is cost effective and no additional requirement is forced onto the rail industry to install fail-safe lighting devices and constant electricity sources.

Recommendation 1

- 2.13 **The Committee recommends that the Australian Government take steps, through the Transport Ministers Council, to require that all locomotives and rolling stock in the Australian rail industry are fitted with standard reflective strips or reflective paint and that all locomotives are fitted with rotating beacons lights.**