A Review of Crashes at Level Crossings in Tasmania

January 2013

Department *of* Infrastructure, Energy *and* Resources

Tasmania
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Crashes at Level Crossings
in Tasmania

Traffic Engineering Branch
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1. Introduction

This Report examines crashes involving trains at level crossings in Tasmania.

The purpose of the Report is:

- to quantify the scale of the problem; and
- to improve understanding of the circumstances surrounding these crashes.

2. Traffic Control at Level Crossings

2.1 Types of traffic control

There are essentially two types of traffic control provided at level crossings – active control and passive control. Active control includes flashing lights and warning bells that are activated by approaching trains. Passive control includes Stop or Give Way signs and motorists are required to look for trains before proceeding. Trains sound their horns on the approach to level crossings.

Australian Standard AS1742, Part 7: Railway crossings specifies the layout of the signs and markings used to warn and control traffic on the approaches to level crossings.

Under the *Rail Safety National Law (Tasmania) Act 2012* responsibility for identifying, assessing and managing risks at level crossings is shared between the rail owner and the road authorities. These provisions are identical to those that previously applied under the *Rail Safety Act 2009*.

The rail owner and road owner enter into 'Interface Agreements' for this purpose. However, in general terms:

The rail owner is responsible for:
- Installation and maintenance of the traffic control immediately adjacent to the crossing, including the operation of flashing lights and warning bells.
- Maintenance of the road pavement between the tracks and out to 0.6 metres on either side of the tracks.
- Maintenance of sight lines affected by vegetation in the rail corridor.

The road owner is responsible for:
- Installation and maintenance of the warning signs on the approaches (including advance electronic warning signs).
- Maintenance of road markings on the approaches.
- Maintenance of sight lines affected by vegetation in the road corridor.

2.2 Number of level crossings in Tasmania

The following table lists the number of public road / rail level crossings on the various railway lines in Tasmania and whether they have active or passive control. Sections of railway that are not operational are not included in the table.

Railway	Number of Level Crossings on Public Roads	Number with Active Control	Number with Passive Control
Bell Bay	3	0	3
Derwent Valley	3	2	1
Fingal	13	4	9
Ida Bay	1	1	0
Melba	18	7	11
South	72	45	27
West Coast Wilderness	9	2	7
Western	90	65	25
Total	**209**	**126**	**83**

Table 2.1 – Number of level crossings in Tasmania

Tasmania has a high standard of traffic management at its level crossings. At 60%, the proportion of level crossings with active control in Tasmania is substantially higher than the national average of 28%. The maintenance and operation of these facilities represents a substantial and ongoing investment in safety.

3. Understanding Crashes at Level Crossings

3.1 Number of crashes

Details of all crashes reported to Tasmania Police are recorded on Traffic Accident Report forms that are then electronically stored on the Crash Data Manager computer system which is maintained by DIER.

The Traffic Accident Report categorises the severity of the crash based on the most severe injury that was received by any person involved in the crash. Crash categories are as follows:

- fatal – a person dies within 30 days of the crash;
- serious injury – a person is admitted to hospital for at least 24 hours;
- minor injury – a person is admitted to hospital for less than 24 hours;
- first aid – a person is treated at the scene; and
- property damage only.

The table below sets out the crash statistics for Tasmania for the ten-year period (2003-2012). The numbers are based on counting each crash once – they do not allow for the fact that more than one person could be injured in the same crash.

Severity	Total number of crashes	Number of crashes involving trains	Percentage of crashes involving trains
Fatal	394	3	0.76%
Serious	2,588	0	0%
Minor	10,918	10	0.09%
First aid	3,795	7	0.18%
Property damage	43,480	14	0.03%
Not known	6,155	2	0.03%
Total	**67,330**	**36**	**0.05%**

Table 3.1 – Crash history for ten-year period (2003-2012)

During the ten-year period (2003-2012) there were more than 67,000 reported crashes in Tasmania. Some 17,700 of these were casualty crashes (fatal, serious injury, minor injury and first aid).

During the same period there were 36 reported crashes involving vehicles colliding with trains. 20 of these crashes resulted in casualties, accounting for 0.11% of all casualty crashes.

DIER Traffic Engineers carry out on-site investigations into all reported crashes involving trains at level crossings. The investigation examines the crash from a road user perspective and includes a review of the adequacy of the traffic management arrangements.

3.2 Severity of crashes

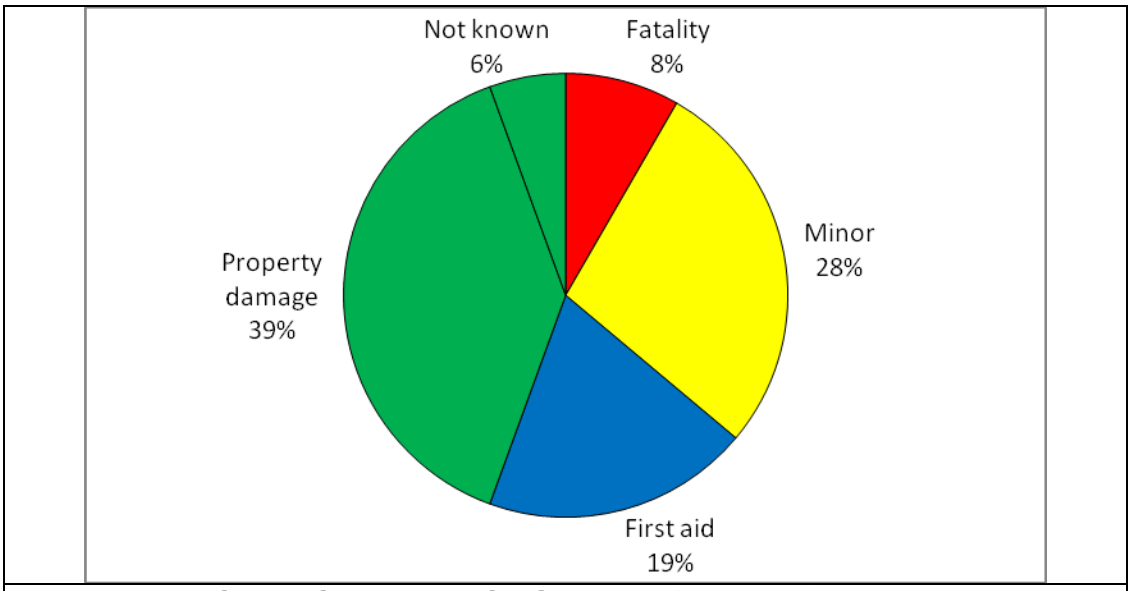

Figure 3.1 – Crashes involving trains at level crossings (2003-2012), Severity

There were three fatal crashes involving trains during this ten-year period. In September 2010 a quad bike rider was killed in a collision with a train at a level crossing on a private driveway near Spreyton. In February 2011 a pedestrian walked in front of a train at the Albert Road crossing in Moonah. In May 2012 a ute driver failed to stop on the approach to a level crossing on Wilmores Lane, west of Longford, and the front of his vehicle was hit by the front of the train.

3.3 Trends over time

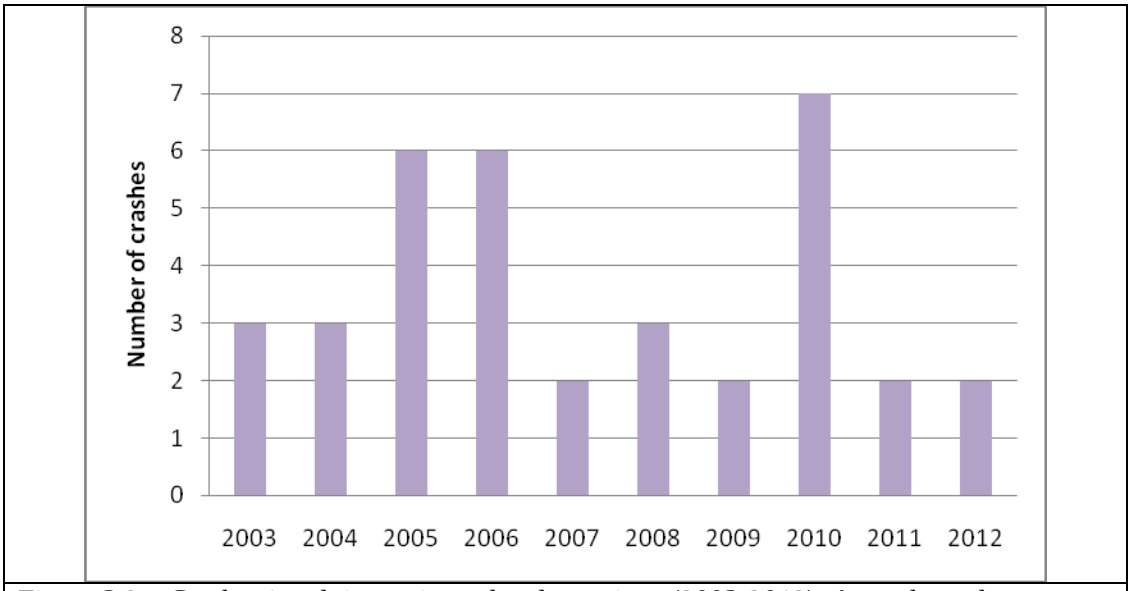

Figure 3.2 – Crashes involving trains at level crossings (2003-2012), Annual trend

Because the total number of crashes is so low there can be significant variations from year to year. The average is three or four level crossing crashes per year.

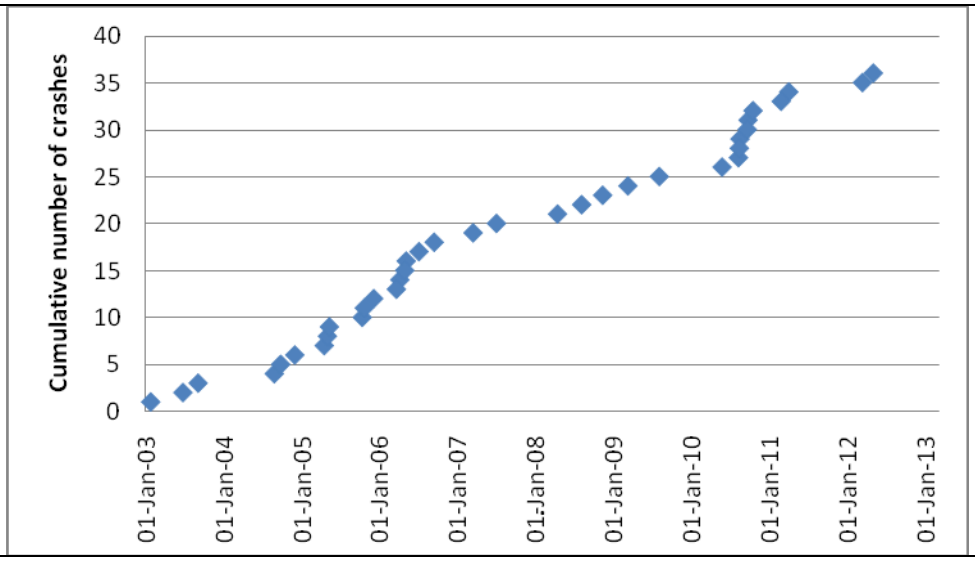

Figure 3.3 – Crashes involving trains at level crossings (2003-2012), Trend over time

The frequency of crashes has been broadly consistent over the last decade with the exception of a cluster of six crashes in the second half of 2010. There was no discernible reason for the higher number of crashes during that short period.

3.4 When crashes occur

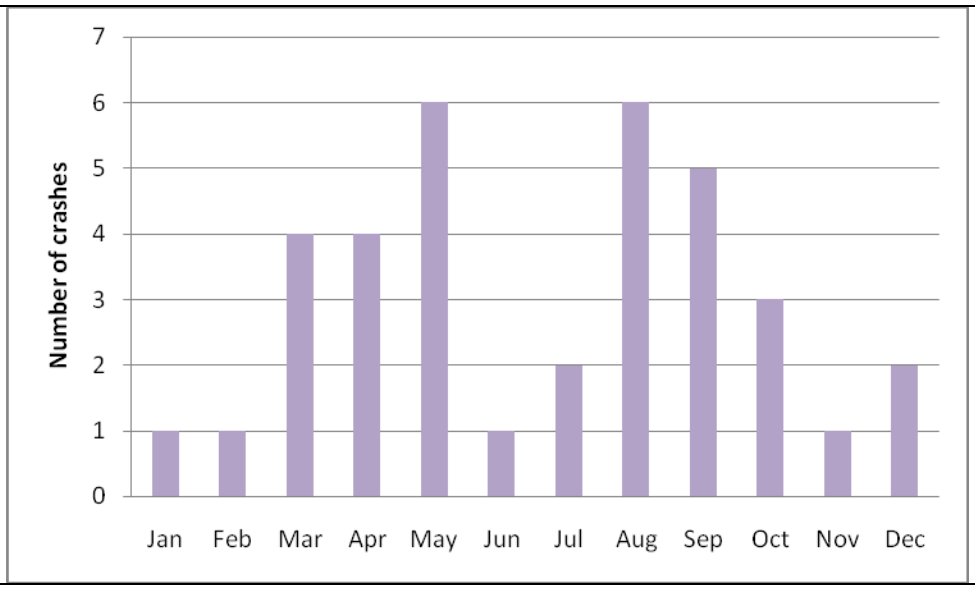

Figure 3.4 – Crashes involving trains at level crossings (2003-2012), Month of year

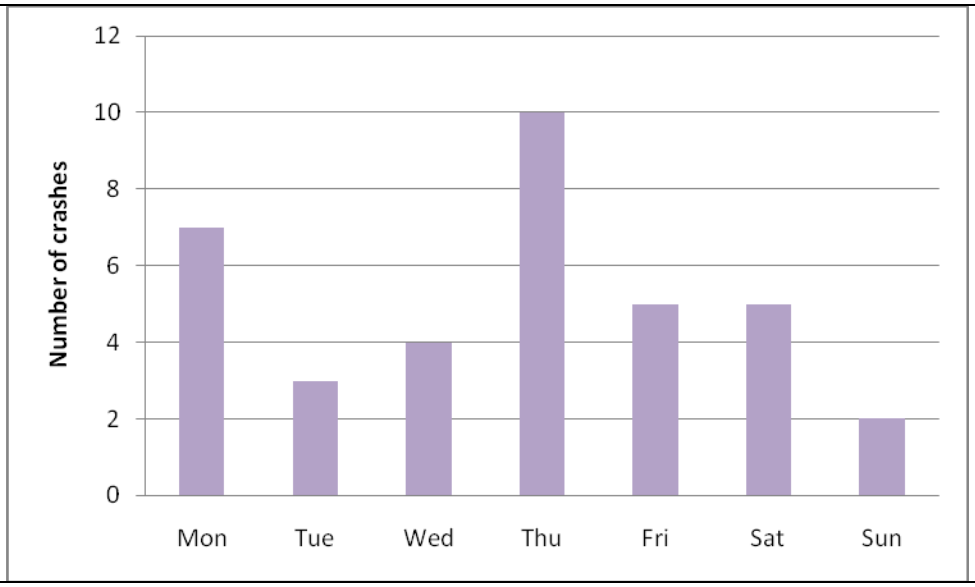

Figure 3.5 – Crashes involving trains at level crossings (2003-2012), Day of week

Because the total number of crashes is so low there can be significant variations between different months of the year and different days of the week.

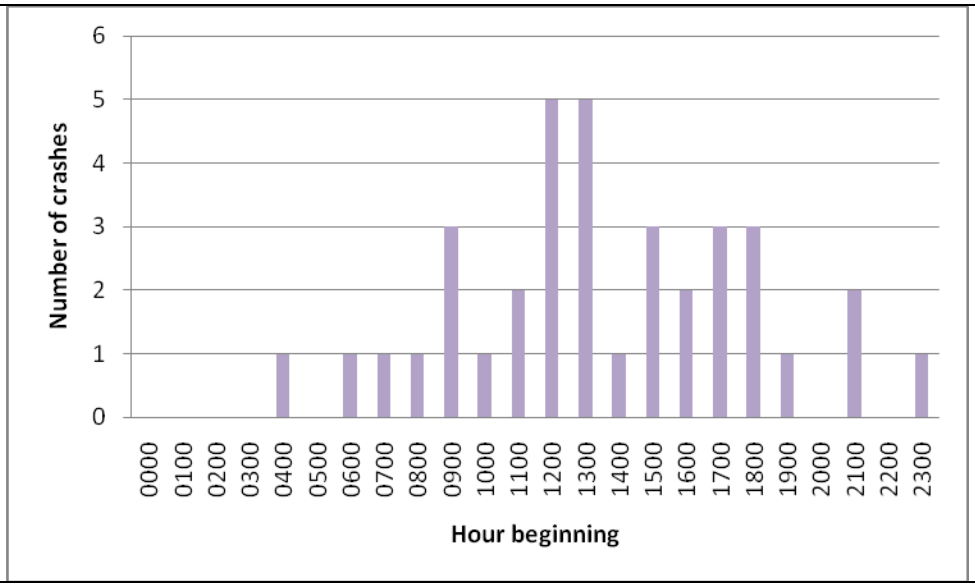

Figure 3.6 – Crashes involving trains at level crossings (2003-2012), Time of day

The time of day when the level crossing crashes occur is associated with the scheduling of the trains.

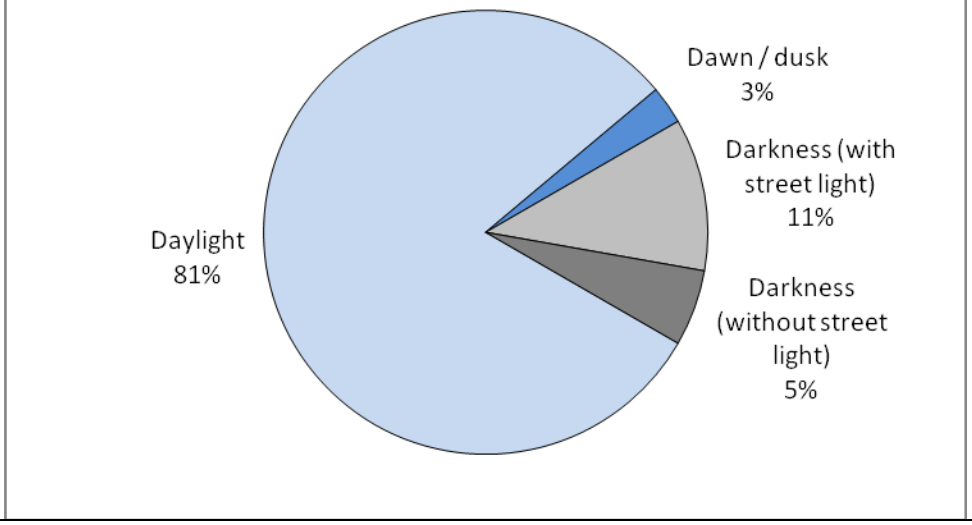

Figure 3.7 – Crashes involving trains at level crossings (2003-2012), Light condition

The proportion of level crossing crashes in the different categories of light condition is similar to the pattern for all crashes.

3.5 Where crashes occur

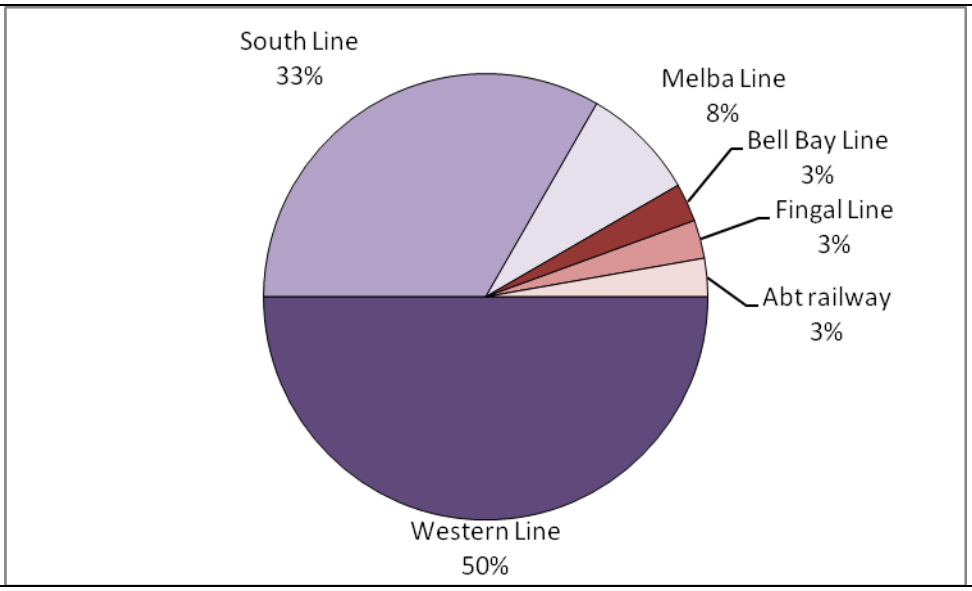

Figure 3.8 – Crashes involving trains at level crossings (2003-2012), Railway lines

The number of crashes on the different railway lines is associated with exposure in terms of the number of level crossings and the number of trains and vehicular movements through those crossings. The Western Line has the most level crossings and correspondingly has the highest number of level crossing crashes.

There were six level crossings that had two reported crashes during the ten-year period. These were:

- South Line / Bay Road, New Town
- South Line / Hopkins Street, Moonah
- South Line / Derwent Park Road, Derwent Park
- South Line / Elwick Road, Glenorchy
- Western Line / Wilmores Road, west of Longford
- Western Line / Lillico Road, west of Devonport

There were no level crossings with more than two reported crashes.

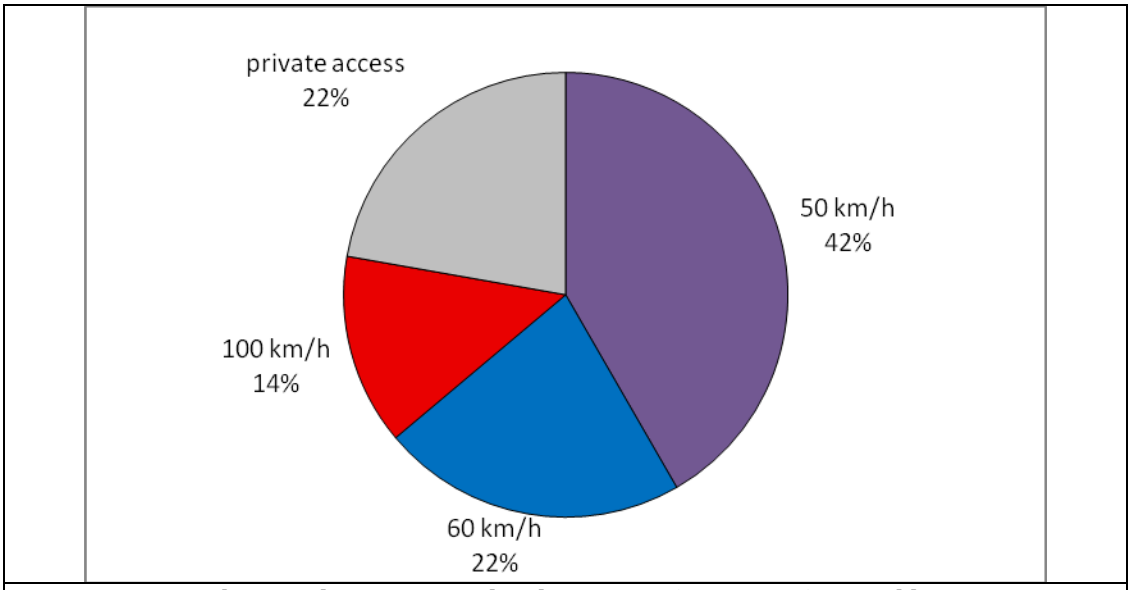

Figure 3.9 – Crashes involving trains at level crossings (2003-2012), Speed limit

Almost two-thirds of the crashes occurred within urban areas where the speed limit was 50 or 60 km/h. This is associated with exposure because the level crossings in urban areas tend to have higher traffic volumes passing over them.

3.6 Traffic control

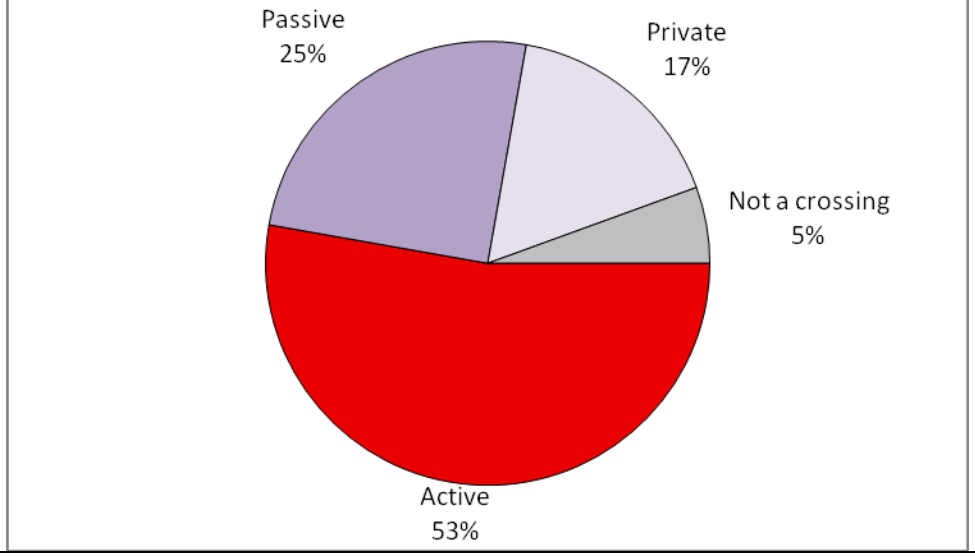

Figure 3.10 – Crashes involving trains at level crossings (2003-2012), Traffic control

Over half of the crashes occurred at level crossings that already have flashing lights and warning bells. There were two crashes where a vehicle had been parked overhanging the rail corridor and the parked vehicle was struck by a passing train while it was unattended.

3.7 Crash causes

The Traffic Accident Report which is completed by the Police includes a section where the Officer indicates the factors which contributed to the crash. The primary cause of level crossing crashes is inattentiveness and motorists failing to give way or stop as required by the traffic control.

4. Upgrading Level Crossings

4.1 Recent level crossing upgrades in Tasmania

In 2008/09 and 2009/10 the Australian Government provided $3.96 million for the installation of safety measures at rail level crossings in Tasmania. The funding was used to upgrade 6 level crossings from passive to active control (at a total cost of approximately $3 million), and to provide electronic advance warning signs at 13 other crossings that already had active control (at a total cost of approximately $1 million).

The six level crossings upgraded from passive to active control comprised:

- Two level crossings on the Abt Railway in Queenstown and one on the Lune River Railway at Ida Bay where trains carrying tourists cross Council roads.
- The Western Line / Lillico Road level crossing where there had been two property damage crashes – one in September 2004 and another in May 2006.
- The South Line / Clarendon Station Road level crossing, south of Evandale where sight distance to approaching trains was restricted.
- The Western Line / Dawson Siding Road level crossing, north of Railton where there were concerns with the time it took for heavy vehicles to clear the railway line after stopping to check for trains.

Thirteen rail level crossings were provided with advance electronic warning signs. These crossings were located on high speed roads where the potential consequence of a crash would tend to be high, or where forward sight distance to the level crossing was somewhat limited. The sites treated comprised:

- South Line / Back Tea Tree Road
- South Line / Mudwalls Road, north of Colebrook
- South Line / Evandale Main Road
- Western Line / Evandale Main Road
- Western Line / Perth Mill Road
- Western Line / Drummond Street (aka Illawarra Main Road)
- Melba Line / Brooklyn Road, Burnie
- Melba Line / two crossings on Ridgley Highway
- Fingal Line / Midland Highway, near Conara
- Fingal Line / three crossings on Esk Main Road

4.2 Relocation of the Hobart railyards

Arrangements are being made for the relocation of the railyards from Macquarie Point, Hobart to the Brighton Hub. Upon completion, this would remove regular train movements from 29 rail level crossings on the South Line railway.

These include most of the busiest crossings in the State, and during the last ten years (2003-2012) there have been 11 crashes (1 fatal, 8 minor injury / first aid and 2 property damage) at these locations.

Relocation of the Hobart railyards could be expected to reduce level crossing crashes in Tasmania by some 30%.

4.3 Further upgrades to level crossings in Tasmania

Australian Standard AS1742, Part 7: Railway crossings permits the use of two versions of the 'Railway Crossing' sign as shown below. The sign with the red background is preferred because it is more conspicuous to approaching motorists.

	
Conventional 'Railway Crossing' (R6-24) sign	Alternative 'Railway Crossing' (R6-25) sign with red background to increase conspicuity

It is considered that replacing the conventional 'Railway Crossing' signs with the new type of sign would be the most cost-effective way to improve safety at level crossings. In arranging the replacement of the signs, priority should be given to level crossings with passive control which, without flashing lights and warning bells, rely on signs and markings to capture the attention of motorists.

The very low number of crashes at level crossings means that their upgrade does not compete strongly for the limited funding available for safety improvements. Better value-for-money is available from treating other types of crashes, such as intersection, loss-of-control or head-on crashes that make up a much larger proportion of casualty crashes in Tasmania.

5. Discussion

During the ten-year period (2003-2012) there were 36 reported crashes involving vehicles colliding with trains. 20 of these crashes resulted in casualties and this accounts for 0.11% of all casualty crashes in Tasmania.

This Review analysed the circumstances surrounding these level crossing crashes but it did not identify any patterns that are readily treatable.

DIER Traffic Engineers carry out on-site investigations into all reported crashes involving trains at level crossings.

The number of casualty crashes involving trains in Tasmania is very low. This is because:

- there are only a limited number of train movements each day;
- with the exception of a few tourist railways, there are no passenger trains;
- the trains travel comparatively slowly; and
- a high standard of traffic management has been provided at rail level crossings.

These circumstances are profoundly different to those that exist in many of the mainland Australian states.

Notwithstanding, or perhaps because of, their infrequency, crashes involving trains in Tasmania do attract public interest and the attention of the media.

Relocation of the Hobart railyards from Macquarie Point to the Brighton Hub would remove regular train movements from 29 rail level crossings, including most of the busiest crossings in the State, and could be expected to reduce the number of level crossing crashes in Tasmania by 30%.

The very low number of crashes at level crossings means that their upgrade does not compete strongly for the limited funding available for safety improvements. Better value-for-money is available from treating other types of crashes, such as intersection, loss-of-control or head-on crashes that make up a much larger proportion of casualty crashes in Tasmania.

While the number of crashes at level crossings in Tasmania is comparatively low, there is no room for complacency. The rail owner and relevant road authorities need to continue to collaborate to maintain the current high standard of traffic management at level crossings. The maintenance and operation of these facilities represents a substantial and ongoing investment in safety.

TRAFFIC SAFETY

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