

NSW Rail Industry Safety Report

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1. Introduction

The *Rail Safety Act 2002* requires the Independent Transport Safety and Reliability Regulator (ITSRR) to submit an annual Rail Industry Safety Report to the NSW Minister for Transport. This is the second annual Rail Industry Safety Report produced by ITSRR since its establishment in January 2004. The principal role of this report is to summarise key issues and developments in NSW rail safety for the period July 2004 to June 2005.

The 2004-05 year was notable for significant changes in both the management and reporting of rail safety in NSW. The Final Report of the Special Commission of Inquiry into the Waterfall Rail Accident was released in early 2005 and Government and industry made considerable progress in implementing its many recommendations to improve rail safety.

NSW also made important changes to the way in which it classifies and reports rail safety incidents. These changes will, over time, improve consistency in safety reporting and allow exchange of important rail safety information between safety regulators.

This Rail Industry Safety Report summarises rail safety issues for 2004-05 under five themes:

- Rail Safety Statistics (Section 2) – summary data for important rail safety incident categories, with reference to historical records;
- Rail Safety Inquiries Investigations (Section 3) – NSW accident

investigations completed, or in progress, during the year ;

- Major Rail Incident Investigations (Section 4) – progress on recommendations from the Special Commission of Inquiry into the Waterfall Rail Accident;
- Rail Safety Standards and Guidelines (Section 5) – amendments to rail safety legislation and related guidelines; and
- Key Safety Initiatives (Section 6) – a description of important projects to improve rail safety on the NSW rail network.

Copies of this report are available from the ITSRR website at www.transportregulator.nsw.gov.au



ITSRR staff regularly inspect rail infrastructure to ensure it meets safety requirements.

2. Rail Safety Statistics

Section 64 of the *Rail Safety Act 2002* requires accredited¹ railway operators to notify ITSRR of all safety-related rail incidents on the NSW rail network. This section of the report presents summary statistics for selected types of safety incidents occurring on the network. It focuses on incidents with potential to lead to serious consequences such as injury and fatality.

The way in which rail safety incidents are classified for analysis changed in January 2005 when NSW adopted a new national rail incident classification scheme (ON-S1). The ON-S1 scheme is part of a nationally standardised reporting framework for comparison and exchange of rail safety information between state, territory and federal rail safety regulators. All state and territory regulators regularly provide ON-S1 coded data to the Australian Transport Safety Bureau for inclusion in the National Rail Occurrences Database.

Major railway operators in NSW began classifying rail safety incidents according to the ON-S1 scheme early in 2005. The statistics in this report are based on incident reports supplied by major operators. The majority of incidents involving small operators are also included as these are generally reported via the major track owners. ITSRR is developing a web-based facility to allow small operators to submit and classify incident reports electronically. It is also sourcing historic records from small operators for classification and entry into its corporate database for future reporting.

To ensure consistency in the classification of incidents over time, in 2004-05 ITSRR undertook a major

task to reclassify its entire historical incident record (over 60,000 reports) according to the new scheme. For the vast majority of incidents this was a straightforward process. However, the quality and type of information collected under the former NSW classification scheme was variable and sometimes insufficient for the purpose of reclassification to ON-S1. ITSRR is partway through a process to validate the reclassification of historical incidents on a record-by-record basis.

As a consequence of these changes, the type and number of incidents summarised below may differ to those reported elsewhere. Furthermore, patterns in the number of incidents through time may reflect, in part, changes in reporting definitions and practices. Of particular importance in this regard is variation, through time, in the amount and quality of information contained in historic incident records. In certain cases, particularly for earlier records, the final decision on the classification of a given incident is a subjective one, based on expert opinion.

2.1 Fatalities on the NSW Rail Network

Under the new national ON-S1 incident classification scheme, certain types of fatalities reported to ITSRR and summarised below will not be included in NSW rail fatality statistics reported nationally – for example, a death on railway premises due to natural causes.

Figure 1 shows total annual fatalities for the 10- year period to June 2005.

Annual passenger fatalities have decreased gradually over time following a peak in the late 1990s. This pattern

largely reflects a change in the number of health-related fatalities such as heart attack and substance abuse, which accounted for approximately 60% of all passenger fatalities over the 10- year period. The number of rail-related passenger fatalities also decreased slightly over the same period. The relatively high number of rail-related passenger fatalities in 1999-00 and 2002-03 is associated with the Glenbrook and Waterfall train accidents respectively.

Historically, more than 75% of public fatalities involved incidents at level crossings. Most of the remainder were health-related incidents, occurring in public areas around railway stations. Figure 1 shows public fatalities have stabilised at low levels in recent years. A relatively high number of public fatalities occurred in 1996-97 (10) and 2000-01 (7). All but one of these incidents occurred at level crossings.

The number of employee fatalities has also fallen in recent years. A relatively high number of employee fatalities occurred in 1998-99. All of these (5) were the result of track workers being struck and fatally injured by trains.

Historically, most fatalities on the NSW rail network are associated with trespassers². Unlike the other three categories, trespasser fatalities are generally the result of intentional acts such as suicide, or an unfortunate consequence of other activity such as vandalism or unauthorised crossing of tracks. While difficult to control, trespasser fatalities have fallen slightly in recent years.

¹ Accreditation is described further in Section 6.2

² Under the national incident classification scheme, a trespasser is defined as a person on railway property who, whether it be intentionally or negligently, is in a place they have no right or authority to be. The category of trespasser may also include suspected suicides.

Fatalities – July 2004 to June 2005

As shown in Figure 1, the number of reported passenger, public and employee fatalities in 2004-05 was at, or close to, the lowest observed over the last 10 years. A total of four fatalities were reported to ITSRR for the year, summarised in Table 1. Two of the incidents were investigated by the Office of Transport Safety Investigations, and are described further in Section 4.

A total of 23 other fatalities were recorded on the NSW Rail Network in 2004-05. As in previous years, the majority of these (21) were associated with trespassers being struck by trains. Two people received fatal injuries after jumping from infrastructure onto trains.

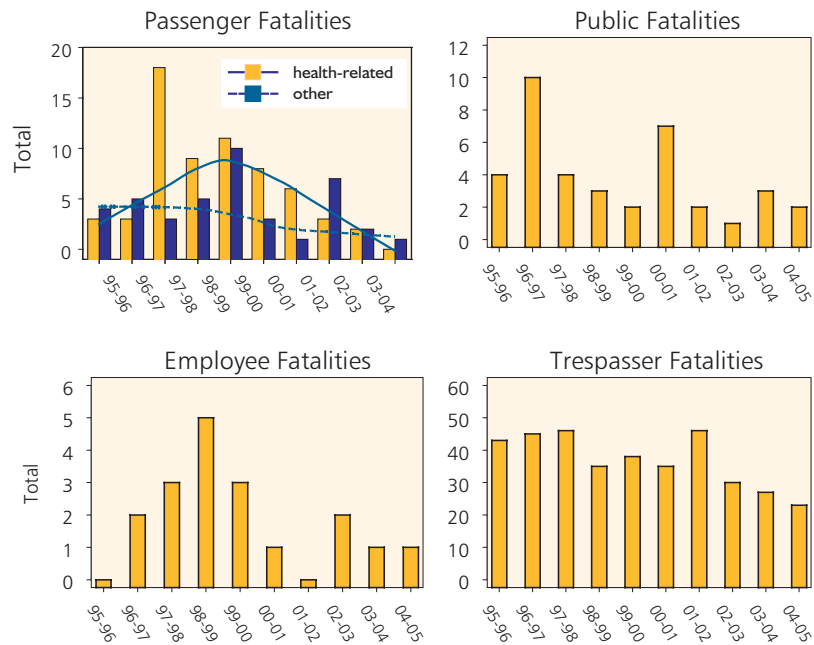


Figure 1. Fatalities on the NSW Rail Network – 1995-96 to 2004-05

Note: Employee includes contractors

Table 1. Public, Passenger and Employee Fatalities – July 2004 to June 2005

Date	Category	Location	Description
1 July 2004*	Railway Employee	Port Botany (Sydney)	During shunting operations an employee fell from a moving wagon and was run over by the train.
27 October 2004	Passenger	Toongabbie (Sydney)	A male passenger fell from the station platform and was struck by a passing passenger train.
31 March 2005	Member of the Public	Central Station (Sydney)	A member of the public was found unconscious on the concourse. Ambulance crews attended and declared the person deceased.
31 May 2005*	Member of the Public	Grawlin Plains	A train struck a road motor vehicle at a level crossing, killing the sole occupant of the vehicle.

* Further information on these incidents is provided in Section 4

2.2 Injuries on the NSW Rail Network

The new national incident classification scheme classifies injury as serious or minor, based on whether or not an injured person is admitted to hospital. This is different to the previous classification scheme for NSW, which classified injury into one of three categories based on the length of time a person was likely to be affected by an injury. There is no direct relationship between the two schemes and the information in historic incident reports is generally not suitable for grading severity according to the new scheme. For this report, serious injury statistics are based on a combination of Class 1 and Class 2 injuries of the former scheme³.

The number of serious injuries reported to ITSRR for the 10 years to June 2005 is shown in Figure 2. Historically, the greatest number of serious injuries on the NSW network is associated with passengers. Approximately 75% of these injuries were the result of slips, trips and falls on railway property, for example, on trains or station platforms. The number of serious passenger injuries has fallen in recent years and the count for 2004-05 (14) was less than half the longer-term annual average.

The number of public and trespasser serious injuries in 2004-05 was consistent with historical behaviour. However, the number of serious employee injuries in 2004-05 was more than double the longer-term the annual average.

Serious Injuries – July 2004 to June 2005

A breakdown of injuries in 2004-05 by incident type (Figure 3) shows that injuries were consistent with known risks, that is, most public injuries occurred at level crossings, most passenger injuries were associated with slips, trips and falls and trespasser injuries were largely the result of being struck by trains.

One notable feature of the 2004-05 data was the high number of employee serious injuries (13) compared to previous years. These injuries (Table 2) were suffered in various circumstances by a range of employee types including track workers, train drivers and train guards.



Figure 2. Serious Injuries on the NSW Rail Network – 1995-96 to 2004-05

Note: Employee includes contractors

³ Class 1: An injury which permanently alters the future of an individual. Class 2: An injury which for the short term alters the future of an individual (Rail Infrastructure Corporation, 2002, Safety Incident Coding Specification, Version 4.0)

Table 2. Employee Serious Injuries – July 2004 to June 2005

Date	Location	Description
14 October 2004	Beecroft (Sydney)	Train guard struck by a stone around his eye, resulting in a large gash
11 December 2004	Sydney Terminal	Train guard pulled from his compartment by a male standing on the platform
12 December 2004	Nana Glen	Collision between high-rail vehicle 1 and track machine. Two persons in high-rail transported to hospital
20 December 2004	Port Waratah	Employee severed a finger while operating a wagon door during a freight train inspection
19 January 2005	Glenfield (Sydney)	Passenger train driver suffered smoke inhalation after extinguishing carriage fire lit by vandals
14 February 2005	Liverpool (Sydney)	Passenger train driver received an electric shock from the train's vigilance control equipment
31 March 2005	Normanhurst (Sydney)	Passenger train driver sustained a severe finger injury while securing an open carriage door
6 April 2005	Campbelltown (Sydney)	Train driver assaulted by male passenger
25 May 2005	Muswellbrook	Track worker sustained 2 broken legs after being struck by length of rail during track work
26 May 2005	Drayton Junction	Track worker struck by track maintenance machine and conveyed to hospital for treatment
29 May 2005	Town Hall (Sydney)	Cherry picker lowering two employees from overhead wire repairs failed. Both conveyed to hospital

¹A vehicle capable of running on road and rail. Generally these are standard road vehicles which have been fitted with a pair of flanged rail wheels on the front and rear (Australasian Railway Association website)

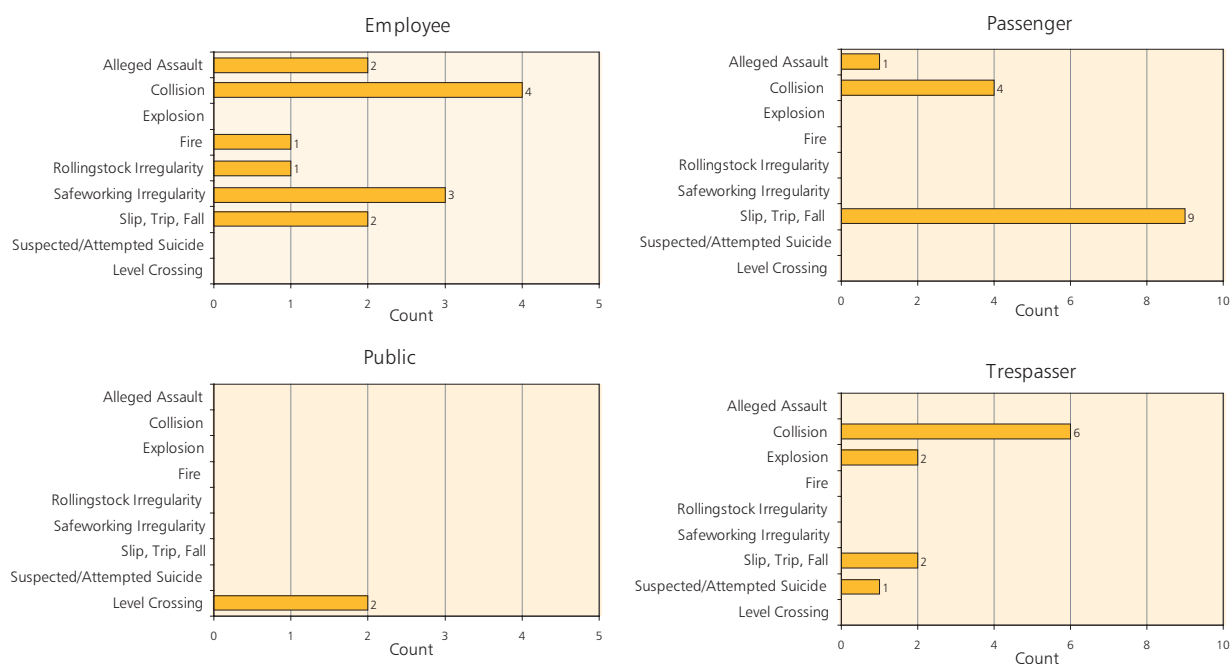


Figure 3. Serious Injuries on the NSW Rail Network – July 2004 to June 2005

Note: Most alleged assaults are reported under a separate scheme which was not available to ITSRR in time for this report

2.3 Collisions on the NSW Rail Network

A collision is an incident where a train (or rolling stock)⁴ strikes another object, such as another train, a track obstruction or a person⁵.

Collisions vary greatly in terms of their nature and consequences. There are eight specific train collision categories⁶ under the new national rail incident classification scheme. Figure 4 shows the number of reported collisions over the last ten years for four collision categories considered by ITSRR to pose a relatively high safety risk. The other four collision categories not reported here are trains colliding with animals, obstructions, missiles and road vehicles⁷.

The annual number of train to rolling stock collisions⁸ has gradually decreased over the 10-year period. There is also a suggestion of a drop in the annual number of collisions in the second half of the period for both train to train and train to person collisions. The number of train to infrastructure collisions varied over the 10 year period. These incidents comprise a range of events including trains scraping platforms, trains colliding with buffer stops and trains entangling overhead wiring.

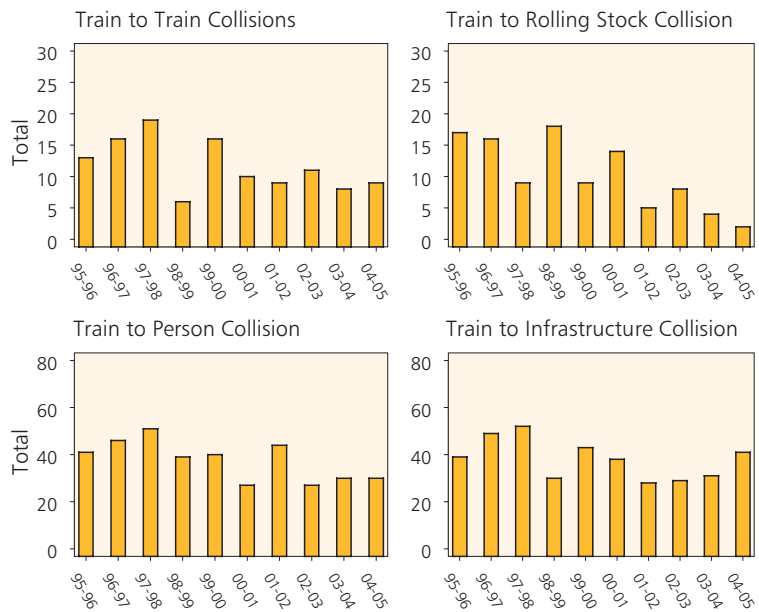


Figure 4. Train Collisions on the NSW Rail Network – 1995-96 to 2004-05

Note: Collisions at level crossings are reported separately. Train to person collisions exclude incidents classified as suspected/attempted suicide

⁴ Rolling stock refers to the individual pieces of a train, for example, a carriage or wagon. A train is one or more units of rolling stock coupled together.

⁵ Under the national incident classification scheme, people struck by trains as part of a suspected or attempted suicide are not classified as train to person collisions.

⁶ There is a generic collision category "other" which is not considered in this report.

⁷ Most collisions between trains and vehicles occur at level-crossings – these incidents are classified as level crossing incidents and reported separately in Section 2.5.

⁸ A train to rolling stock collision is an incident where a train strikes (or is struck by) a piece rolling stock or where one piece of rolling stock

Collisions – July 2004 to June 2005

In 2004-05 there were 600 collisions involving trains (Figure 5). Over 400 of these were classified as a “collision with missile”. Most collisions with missiles (95%) involved persons throwing stones at trains. In four of these incidents, people were injured as a result of being hit by a missile or by shattered glass from a broken window. Other relatively frequent, but minor low impact incidents included collisions with obstructions (mainly trees) and collisions with animals.

There were 30 reported train to person collisions in 2004-05 with 21 of these resulting in injury or fatality. In 17 of these incidents there were fatalities or injuries to trespassers. Of the other four, one employee and one passenger were killed in separate incidents. One employee was injured when struck by a track maintenance machine, and a passenger was injured after falling from a platform and subsequently being struck by a train.

A total of nine train-to-train collisions were reported in 2004-05. Three incidents involved track maintenance vehicles, one of which resulted in two employees being taken to hospital with injuries. Five incidents involved low-speed shunting collisions. One collision occurred as a result of a swinging door on a freight train striking a window on a passing passenger train.

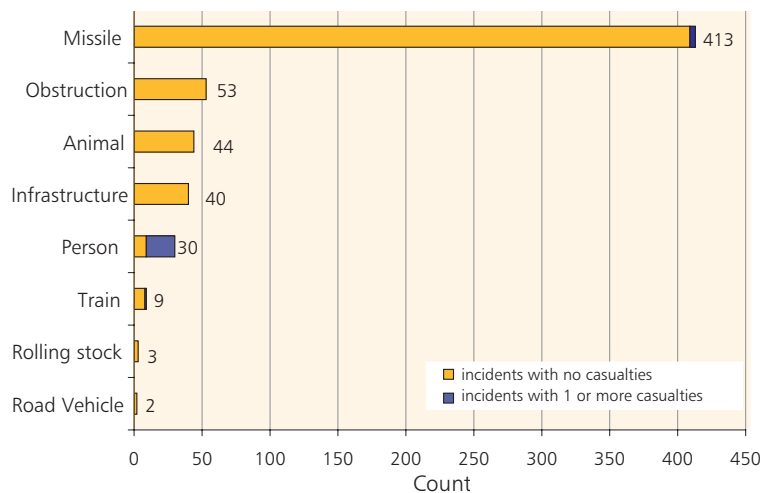


Figure 5. Train Collisions on the NSW Rail Network – July 2004 to June 2005

Note: Casualty is fatality or serious injury. Train to Person Collisions exclude incidents classified as suspected/attempted suicide

2.4 Derailments on the NSW Rail Network

A derailment is any incident where one or more rolling stock wheels leave the rail or track during railway operations. Like collisions, certain types of derailments have the potential to cause serious consequences such as injuries and fatalities.

The total number of derailments⁹ on the NSW network over the 10-year period to June 2005 is shown in Figure 6. These data include various types of derailment, including trains on running lines¹⁰, locomotives and rolling stock in yards and maintenance-related incidents. There has been a steady decline in the total number of derailments over the last 10 years.

Derailments – July 2004 to June 2005

There was a total of 136 derailments in NSW during 2004-05. This is down from 149 derailments in the previous twelve months and consistent with the longer-term decreasing trend for this type of rail incident. A breakdown of derailments for the 12 months to June 2005 is shown in Figure 7.

A total of 13 derailments involved trains on running lines. These were all freight trains and approximately half of the incidents comprised a single wagon derailment. The remainder of running line derailments had more significant consequences such as multiple wagon derailments and track damage. Four incidents were the subject of accident inves-

tigation by the Office of Transport Safety Investigations (Section 4).

A large number of derailments in 2004-05 were associated with shunting, that is, the movement of trains, locomotives and rolling stock within yards. A subset of shunting derailments have the potential to affect running lines. In 2004-05 there were 30 shunting derailments occurring at points that encroached or had immediate potential to encroach on running lines.

Twenty-five derailments in 2004-05 were associated with track maintenance activity. These generally occurred on running lines and involved a variety of train types, including track machines, ballast trains and high rail vehicles – the latter being standard road vehicles which have been fitted with flanged rail wheels to allow travel along rail tracks.

In most cases, track maintenance

derailments occurred during track possessions, when lines were closed for the purpose of track maintenance.

Half of all derailments in 2004-05 (68) were not associated with running lines. These derailments were associated with trains on various types of track away from running lines, or shunting movements in situations where direct impacts on running lines were highly unlikely.

2.5 Level Crossing Incidents on the NSW Rail Network

There are more than 3,800 level crossings in NSW and most are located in regional areas. Apart from train stations, they represent the main point of interaction between the general public and rail operations.

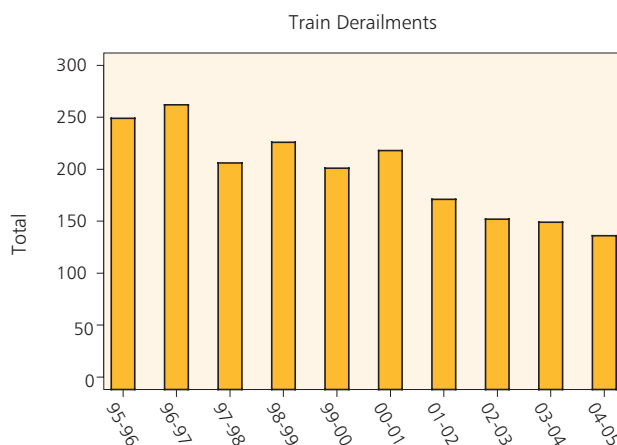


Figure 6. Derailments on the NSW Rail Network – 1995-96 to 2004-05

⁹ Under the national incident classification, any derailment that occurs as part of an incident with a more significant outcome, such as a collision, will be classified as that greater outcome.

¹⁰ Under the national incident classification scheme, a running line is defined as railway track used for the through movement of trains; a yard is defined as track other than running lines used for marshalling, shunting, loading or unloading of trains or for other purposes

Consequently, most rail-related incidents which involve the public occur at level crossings.

The new incident classification scheme has two tiers of classification for level crossing incidents. The first tier classifies incidents according to their type, namely, train-vehicle collision, train-person collision or equipment failure¹¹. The second tier separates collisions according to the type of crossing protection, namely, active, passive or unprotected¹².

Level crossing incidents over the last decade are summarised in Figure 8. The number of people struck by trains at level crossings is low compared to collisions between trains and road vehicles. Over the 10-years to June 2005 there were seven collisions between trains and people compared to 154 collisions between trains and road motor vehicles.

Historically, more collisions between trains and road vehicles occurred at passive crossings than active crossings. However, the number of collisions at passive crossings has fallen in recent years (Figure 8) and is now similar to that for active crossings. A contributing factor to this change is likely to be the removal of a number of crossings and the upgrading of others. Over 20 level crossings have been closed over the past few years and improved level crossing facilities were installed at over 90 sites

across NSW in the past two years.

Level Crossing Incidents – July 2004 to June 2005

There were 276 level crossing incidents reported to ITSRR in 2004-05. Almost half (128) did not fall within a specific category and were classified as “other”. More than three-quarters of incidents classified as “other” involved damage to level crossing equipment as a result of vandalism or road vehicles colliding with infrastructure.

A breakdown of the remaining level crossing incidents is shown in Figure 9. Most incidents (137) were related to failures and defects of level crossing equipment. The failure of equipment very rarely took place in an unsafe mode. Almost half of these incidents

involved equipment and signals operating continuously. Other types of equipment-related incidents included power failures and late activation of warning signals.

There were no incidents involving a train striking a person at a level crossing in 2004-05. However, there were eleven incidents where a train collided with a road motor vehicle and these are summarised in Table 3. One of these incidents (Quipolly) resulted in both occupants of the road motor vehicle being taken to hospital with injuries. Another incident (Grawlin Plains) resulted in the death of the driver of the road motor vehicle. This later incident is the subject of an investigation (refer Section 4). The remaining incidents did not report any casualties.

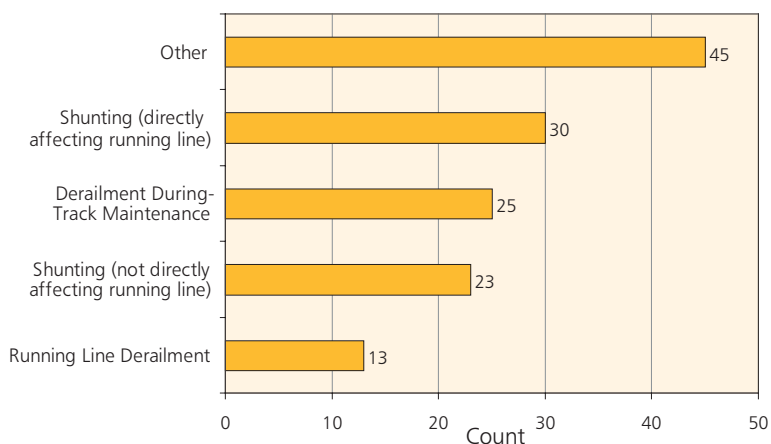


Figure 7. Derailments on the NSW Rail Network – July 2004 to June 2005

Note: no reported casualties associated with any incident during this period. The category ‘Other’ comprises various derailments which occurred well away from running lines.

¹¹ There is a fourth category of level crossing incident under the national incident classification scheme referred to as “other” – this category is not considered in the historical analysis.

¹² Active Crossing: movement of pedestrian and road vehicles actively controlled by devices such as flashing lights, bells or other audible devices, gates and barriers. Passive crossing: movement of pedestrian and vehicles controlled by signs or devices which rely on a pedestrian or driver of road vehicle to detect approach of train by direct observations. Unprotected Crossing: no active or passive control or warning devices.

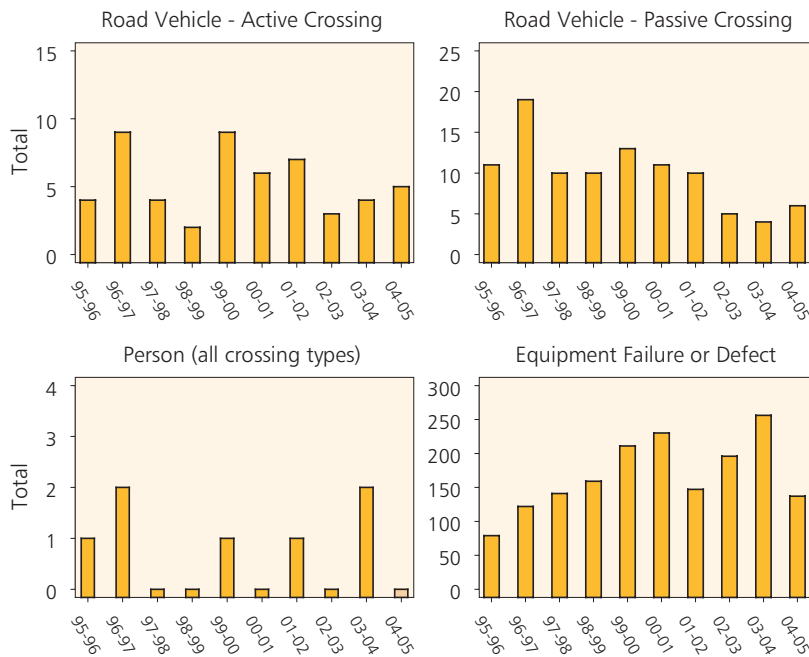


Figure 8. Level Crossing Incidents on the NSW Rail Network –1995-96 to 2004-05

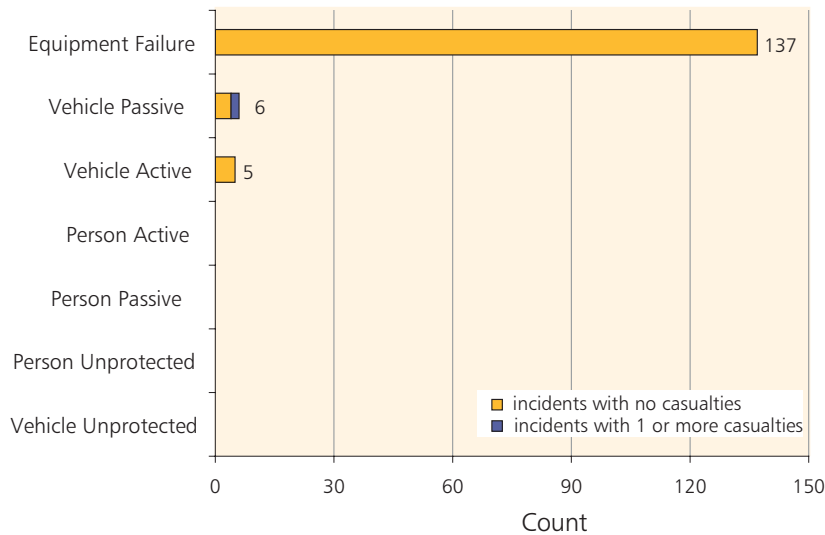


Figure 9. Level Crossing Incidents on the NSW Rail Network – July 2004 to June 2005.

Note: Casualty is fatality or serious injury.

Table 3. Level Crossing Collisions – July 2004 to June 2005

Date	Crossing Type	Location	Description
15 July 2004	Active	Eungai	Freight train collided with a road motor vehicle. No casualties reported.
23 July 2004	Passive	Mumbil	Passenger train collided with a stalled road motor vehicle at level crossing. No casualties reported.
26 July 2004	Active	Griffith	Freight train collided with a road motor vehicle at level crossing. No casualties reported.
4 October 2004	Active	Nammoona	Passenger train collided with road motor vehicle at level crossing. No casualties reported.
3 November 2004	Passive	Walgett	Freight train collided with road motor vehicle at level crossing. No casualties reported.
28 November 2004	Passive	Quipolly	Freight train collided with road motor vehicle at level crossing. Two occupants of vehicle taken to hospital with minor injuries.
7 December 2004	Active	Marinna	Passenger train collided with a tractor at level crossing. Minor injuries to the tractor driver.
24 January 2005	Passive	Wirrinya	Freight train collided with road motor vehicle at level crossing. No casualties reported.
27 April 2005	Passive	Gurley	Train collided with vehicle at level crossing. No casualties reported.
27 April 2005	Active	Wongawilli Colliery Junction	Passenger train collided with the rear of a road motor vehicle at level crossing. The driver left the scene in the vehicle.
31 May 2005*	Passive	Grawlin Plains	Single locomotive collided with a road motor vehicle at level crossing. Sole occupant of the vehicle was deceased.

* Further information on this incident is provided in Section 4

2.6 Track and Civil Irregularities on the NSW Rail Network

Track condition is an important indicator of rail safety because track-related defects can lead to more serious incidents such as train derailments. The new national rail incident classification scheme has four categories covering specific types of track-related defects¹³. However, any track-related defect associated with an incident of greater consequence, for example, a derailment, will be classified as that greater consequence.

The number of track-related defects over the last 10 years is shown in Figure 10. There were only a small number of incidents classified as “spread track” over the period. However, over 100 other incidents

in ITSRR’s database make reference to spread track. In these cases, spread track was a contributing factor to, or an associated outcome of, a more serious incident such as a derailment.

Broken rails were the most common type of reported track irregularity over the 10-year period, with an average of approximately 120 incidents reported per year. The number of broken rails varies with season because rails are more susceptible to breakage at low temperatures. Approximately half of all broken rails over the 10-year period occurred during the winter months of May, June and July.

Buckled rail incidents encompass a range of defects in the horizontal and vertical alignment of rails. Many of these incidents are also

seasonally dependent but, unlike broken rail, are associated with high temperatures. Approximately half of all buckled rails over the 10-year period occurred in summer.

Points are located at the junction of two railway lines. They have moveable rails which are used to direct a train from one track to another. Point failures cover a range of defects including misaligned or broken components and malfunctioning of point motors. The number of point failures have varied considerably over the 10-year period although there is the suggestion of an increase in the number of point failures in recent years.

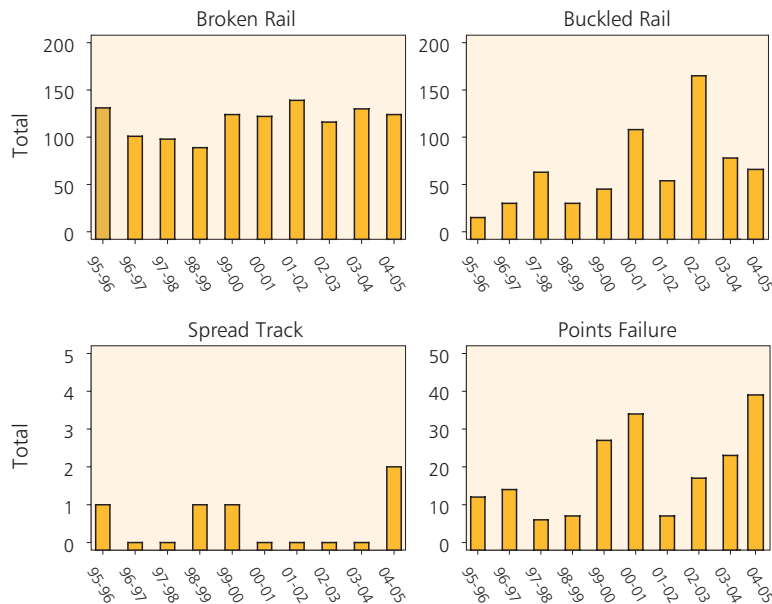


Figure 10: Track Irregularities on the NSW Rail Network –1995-96 to 2004-05.

Note: Buckled Rail includes misalignment

¹³ Broken Rail; Buckled Track; Spread Track; Points Failure. Track defects not covered by one of these four categories are reported as “other” which is not considered in this report. The “other” category also includes civil infrastructure irregularities, for example, damage to bridges and station facilities.

Track Irregularities – July 2004 to June 2005

Over 500 track and civil irregularities were reported to ITSRR during the 2004-05 year. More than half of these incidents were assigned to a generic category “other”. This covers a range of defects and circumstances, some of which have specific causes and consequences, for example, broken joints. It is expected the classification scheme will be enhanced in future years to provide for identification and analysis of such incidents.

Figure 11 summarises the number of track-related incidents in 2004-05. It includes other incidents where a track-related defect was identified as a possible contributing factor or as an associated outcome of some other, more serious, event. Most track irregularity incidents were broken rails (124) and more than half of these (68) occurred in the months of May, June and July.

2.7 Drug and Alcohol Testing

The requirement for railway operators to conduct drug and alcohol testing of employees involved in railway safety work was introduced in the *Rail Safety Act 2002* and further developed under the *Rail Safety (Drug and Alcohol Testing) Regulation 2003*¹⁴. This Regulation and an associated Guideline require all accredited operators to have formal drug and alcohol programs in place. The specific nature of a program will vary according to the size and nature of an organisation’s operation. As a minimum, programs are to include

education, testing and assistance with rehabilitation for affected employees.

Railway operators have a number of reporting requirements in relation to drug and alcohol programs. In particular, from 1 July 2004, all operators are required to notify ITSRR of positive test results as well as any instance where an employee refuses to undergo testing. Medium to large railway

operators are expected to have comprehensive testing regimes that incorporate both random and targeted testing. They are also required to submit quarterly returns summarising their testing activity.

Program Activity – July 2004 to June 2005

A summary of testing activity is shown in Figure 12. Approximately half of the 71 accredited railway

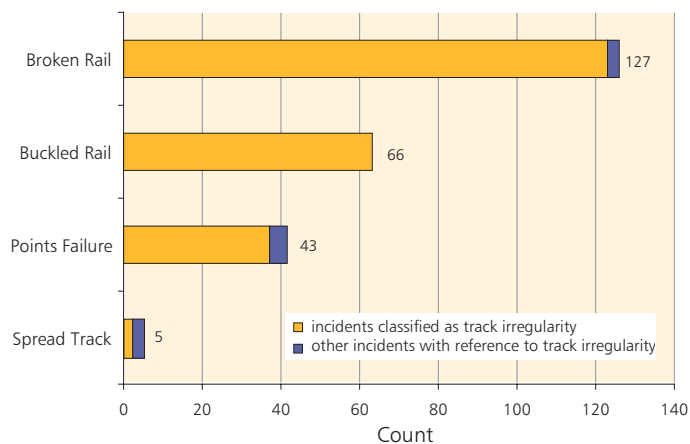


Figure 11. Track Irregularities on the NSW Rail Network – July 2004 to June 2005

Note: Buckled Rail includes misalignments.

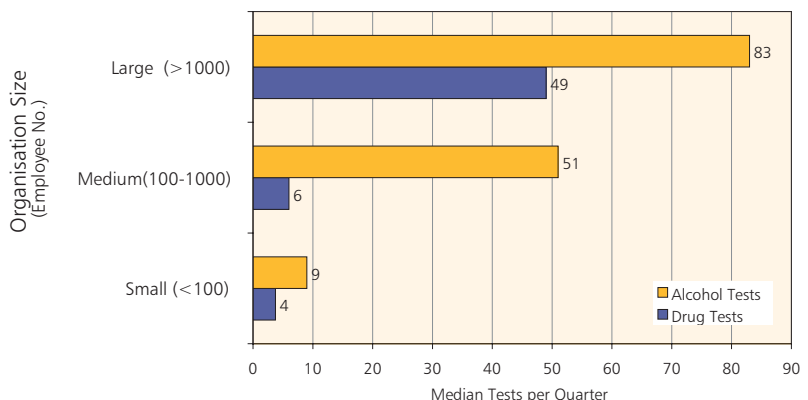


Figure 12. Drug and Alcohol Testing Activity – July 2004 to June 2005
Shows median number of tests per quarter

¹⁴ ITSRR. 2004. *Guidelines Relating to Drug and Alcohol Programs*. Reference No. 0243

operators in NSW submitted quarterly summaries of testing activity and results in 2004-05. Twenty-two heritage rail operators were not required to submit quarterly returns nor were a number of other small operators.

Based on quarterly activity statements received at the time of writing, approximately 4,000 drug and 35,000 alcohol tests were conducted in NSW during 2004-05. This number of tests is expected to increase in the following year because some railway operators adopted a staged implementation of their programs in 2004-05.

Program Results – July 2004 to June 2005

Table 4 presents summary statistics from the first year of testing. It is based on quarterly returns, which only summarise testing activity and do not provide detailed breakdowns in relation to positive testing, for example, detection rates by test type or individual.

The overall detection rate – the percentage of total tests that yielded a positive result – was higher for drugs (3.0%) than for alcohol (0.4%). These rates are not necessarily representative of operators or railway safety workers in general. Larger operators conduct many more tests than smaller ones so overall rates are heavily influenced by the testing activity and results of these larger operators¹⁵.

Examination of detection rates by operator shows that over 70% of operators testing for alcohol did not return a positive test. In contrast, only 40% of operators testing for drugs did not return a positive result. However relatively high rates of drug detection were generally associated with non-random testing, for example, “for-cause” testing. This type of testing specifically targets suspected individuals and is not representative of the rail safety or rail worker population in general. Cannabis was the most

common drug associated with positive drug tests.

In 2005-06 ITSRR will be compiling all information from quarterly returns and positive testing notifications to determine patterns of detection across operators and types of railway safety work. This information will be used for comparative assessments and to establish benchmarks for the purpose of identifying any organisations with an emerging safety risk associated with drug and/or alcohol use.

Table 4. Drug and Alcohol Testing Results – July 2004 to June 2005

Outcome	Alcohol	Drug
No. of organisations testing for drug and alcohol	30	24
Approximate random component	95%	80%
Overall detection rate ₁	0.4%	3.0%
Organisations reporting no. positive result for year	23	10
Organisations reporting exactly one positive result for year	2	5
Organisations reporting more than one positive result for year	5	9
Median organisation detection rate ₂	0.0%	1.2%

1. Total positive tests (all organisations) divided by total tests (all organisations) multiplied by 100
 2. Organisation’s total positive tests divided by organisation’s total tests multiplied by 100

¹⁵ Other factors influencing the quality of data include organisations providing results for prospective employees not subsequently employed or for all employees rather than for rail safety workers. The first year of returns also included some anomalous results associated with the introduction of new testing equipment

3. Major Rail Inquiries

Special Commission of Inquiry into the Waterfall Rail Accident

On the morning of 31 January 2003, an outer-urban passenger service travelling from Sydney to Port Kembla derailed at high speed and collided with stanchions and a rock cutting near Waterfall, south of Sydney. The train was carrying 47 passengers and two crew. As a result of the accident, the driver and six passengers were killed and many other passengers were injured.

Immediately following the accident, the NSW Government established a Special Commission of Inquiry (SCOI). The SCOI was headed by a former Supreme Court judge and conducted in two stages:

Stage 1: Inquire on the causes of the railway accident at Waterfall on 31 January 2003 and the factors which contributed to it;

Stage 2: Inquire on the adequacy of relevant systems for management of rail safety and any safety improvements to rail operations considered necessary as a result of the findings.

The Commissioner’s findings on the cause of the accident were contained in an Interim Report published on 15 January 2004. The findings and recommendations from Stage 2 of the SCOI were contained in the Final Report published on 17 January 2005. The Final Report made a total 177 recommendations¹⁶, grouped into 19 safety themes.

NSW Government Response to the Final Report

The NSW Government announced its response to the SCOI Final Report on

22 February 2005. In that response, the Government announced that it supported the majority of the 177 recommendations.

Five recommendations were not supported by Government. These did not relate to safety operations, but concerned the reporting relationships of the Regulator and the Independent Investigator, their structures and certain regulatory processes. Eight other recommendations required further consideration. These concerned Automatic Train Protection systems, RailCorp’s policy of preventing passengers from unlocking and opening carriage doors in an emergency and improving the precision in locating trains on the network.

Responsibility for implementing the recommendations of the SCOI was assigned to five separate parties (Figure 13). RailCorp, who owned and operated the passenger train involved in the accident, was responsible for the bulk of these (103) and ITSRR was responsible for 57.

Implementation of Recommendations

One of final recommendations of the SCOI into the Waterfall Rail Accident was that ITSRR be responsible for monitoring and reporting on progress in implementing the Commission’s recommendations. To achieve this, ITSRR established a system of quarterly reporting, to summarise action taken during each calendar quarter on each recommendation by the responsible agency.

To provide a formal measure of progress, ITSRR developed a system to classify the status of each recommendation when the recommendation was made through to final implementation and verification. Two quarterly reports have been submitted to the Minister since the release of the final report. Figure 14 shows the progress on the implementation of the 177 recommendations over these two quarters. In summary:

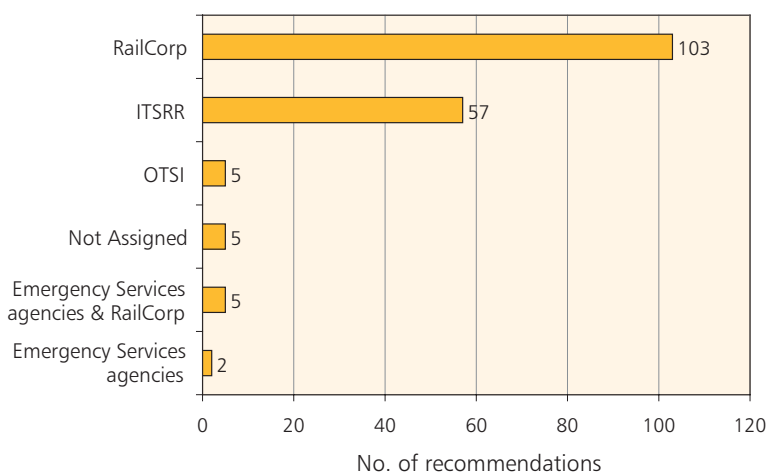


Figure 13. Responsibility for Recommendations of the Special Commission of Inquiry into the WaterfallRail Accident

Note: Total of 177 Recommendations made

¹⁶ Some recommendations had sub-elements making a total of 177 recommendations.

- By the end of the first quarter (March 2005), ITSRR had received formal responses to 141 of the 177 recommendations. Twenty-six of the recommendations had been reported as complete by the responsible agency.
- By the end of the second quarter (June 2005), the status of most of the responses had advanced significantly with 123 of the 177 responses having been reviewed and accepted by ITSRR. Importantly, 21 recommendations were verified by ITSRR as completed.

Of the 21 recommendations closed by the end of June 2005, five were the responsibility of RailCorp:

- RailCorp’s Rail Management Centre now has a touch screen dial-up facility and a dedicated phone line directly to emergency services for use in the case of an emergency (Recommendations 2 & 27).
- RailCorp has in place a random drug and alcohol testing program which includes voluntary self-identification and rehabilitation to assist workers (Recommendation 56).
- RailCorp has employed a Manager Information Systems to manage the collation of safety information within RailCorp (Recommendation 60).
- ITSRR has appropriate permanent access to RailCorp’s Intranet (Recommendation 62).

The remaining 16 recommendations closed by the end of June

2005 were the responsibility of ITSRR:

- A National Standard for Medical Health Assessments for the rail industry is in place (Recommendation 57 (6 subparts)).
- RailCorp and ITSRR co-operate with national programs for safety critical information (Recommendation 64) and NSW shares data with the Australian Transport Safety Bureau (ATSB) (Recommendation 77).
- ITSRR has confirmed that all ATSB accident investigation reports are made public (Recommendation 75).
- Legislation has been enacted to establish NSW Office of Transport Safety Investigations (OTSI) as a separate agency to ITSRR (Recommendation 78).
- Legislation was amended to provide for OTSI/ Chief Investigator to initiate rail accident/ incident investigations (Recommendation 79).
- Legislation was amended to clarify that the ITSRR Chief Executive has sole accountability for managing ITSRR and administering rail safety legislation in NSW (Recommendation 113).
- ITSRR actively participates in National Reform processes but will not accept national reform proposals which produce less safe outcomes (Recommendation 120).
- ITSRR has a process in place to provide quarterly reports to the Minister for Transport on the progress made in implementing the Government’s response to the SCOI final report (Recommendation 125 (a) (b)).
- The Minister for Transport has committed to table in Parliament, each such quarterly report by ITSRR (Recommendation 126).

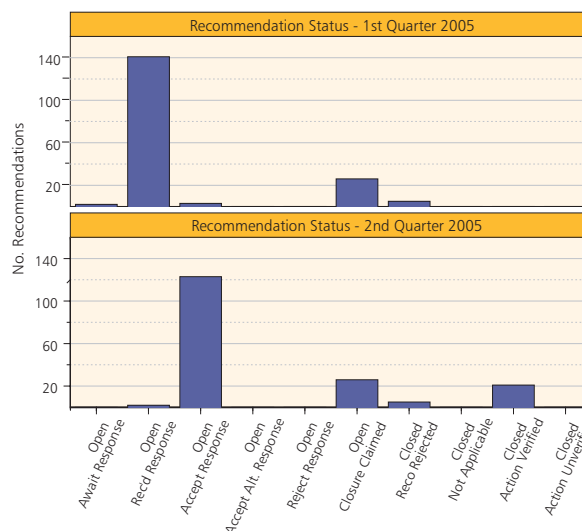


Figure 14. Status of Recommendations from Waterfall SCOI Final Report

Note: Total of 177 recommendations made

4. Major Rail Incident Investigations

Sections 67 and 68 of the *Rail Safety Act 2002* give the Chief Investigator of the Office of Transport Safety Investigation (OTSI) the authority to undertake investigations and reports of rail accidents in NSW. In the period July 2004 to June 2005, seven railway accident investigations were initiated or completed by OTSI.

4.1 Incident Investigations Completed – July 2004 to June 2005

Final Report into a Level Crossing Collision at Baan Baa in May 2004

Late in the afternoon of Tuesday 4 May 2004, a CountryLink passenger service carrying 33 passengers and three crew members collided with a motor vehicle at a level crossing at Baan Baa, in north western NSW. The leading car of the two-car train subsequently derailed and came to rest on its side. As a result of the collision, the single occupant of the car was fatally injured. Four train passengers were hospitalised and

other passengers and crew were treated on-site for shock and minor injuries.

OTSI's final report into the accident was published on 24 February 2005. The investigation determined that the collision at the level crossing was the result of the road vehicle being in a position on the level crossing where it would be hit by the train. The investigation was unable to determine whether the driver of the vehicle moved it to such a position in error or deliberate act.

The investigation found that the mechanical condition of the car and of the train did not contribute to the accident. It also determined that the train driver operated the train within specified limits and that he responded appropriately when it became apparent that a collision was going to occur.

The Final Report contained 12 primary recommendations on a number of safety issues relating to the accident including:

The Train Operator (RailCorp)

- review arrangements for exit from and access to trains in emergencies;
- provide safety briefings to inter and intrastate rail passengers prior to the start of journeys;
- review design, position and protection of fuel tanks on its diesel trains.

The Track Manager (Australian Rail Track Corporation)

- subject to the findings of the Joint Parliamentary Level Crossing Committee, ARTC and Narrabri Council upgrade the crossing to meet minimum standards required for passive level crossings.

The Regulator (ITSRR)

- consider installation of systems to allow train drivers to activate warning systems to notify the public of the approach of a train;
- monitor RailCorp's progress in response to the report's recommendations.

In response, ITSRR is considering the feasibility of the recommendations (in particular the recommendation to install warning systems on trains) and will follow up accepted recommendations.

Final Report into Shunting Fatality at Port Botany in July 2004

Early on the afternoon of 1 July 2004, an employee of Lachlan Valley Rail Freight (LVRF) was fatally injured whilst involved in shunting operations at the Port Botany rail yard in Sydney.



In May 2004, the Office of Transport Safety Investigations investigated a derailment at Baan Baa, NSW.

There were no eyewitnesses to the accident. The driver of the train involved went in search of the shunter after he failed to respond to a radio communication. The driver found the shunter lying across the track. The shunter was transported to hospital where he was pronounced deceased.

OTSI's Investigation's final report into the accident was published on 28 June 2005. It determined that the employee, while riding on a moving wagon, fell through a gap in the wagon's floor onto the tracks below. The employee was fatally injured when he was run over by the train's wheels.

The report identified two factors that directly contributed to the accident. One was the employee was riding on the wagon without any form of physical restraint. The second was the design of the wagon itself – the deck on which the employee stood comprised a series of beams with large gaps in between and there was no protection against the danger of falling through the gaps to the tracks below. Several indirect contributing factors were also identified – including deficiencies in risk assessment, staff training, supervision and wagon design (which encouraged unsafe riding).

The report contained 15 recommendations on a number of safety issues relating to the accident including:

The Train Operator (Lachlan Valley Rail Freight)

- assess the risk of activities associated with shunting;

- establish competencies necessary for shunting and the means to deliver and assess such competencies;
- ensure training for shunters in accordance with defined procedures;
- implement a system of regular worker supervision.

The Railway Owner (RailCorp)

- review safeworking rules relating to shunting;
- advise operators on the need for operator-specific safeworking procedures;
- review the condition of walkways in yards and upgrade as required.

The Regulator (ITSRR)

- amend certification requirements for competency assessors;
- audit compliance of operators in relation certification of competency;
- advise operators of the need to review operations to ensure compliance with Network Safeworking Rules;
- advise operators of the Australian Standard requirements for walkways.

with these four incidents but a significant amount of damage was incurred to rolling stock and railway infrastructure.

The most recent accident under investigation was a fatal collision between a single locomotive and a 4WD vehicle on a level crossing at Grawlin Plains in the central-west region of NSW. The driver of the vehicle was killed. The locomotive suffered minor impact damage to front and side. There were no injuries to the crew of the locomotive although both members were treated for shock.

4.2 Incident Investigations In-Progress – July 2004 to June 2005

Five other rail accident investigations initiated by OTSI in 2004-05 were in-progress at the time of writing (Table 5). Four of these involved the derailment of freight trains on mainlines. There were no injuries or fatalities associated

Table 5. Rail Accident Investigations In-Progress – July 2004 to June 2005.

Date	Location	Description	Casualties
22 December 2004	Bethungra	Mainline derailment of freight train operated by Freight Australia. Eight of 11 derailed toppled from an embankment and came to rest on either side of the track.	None
1 March 2005	Lapstone	Mainline derailment of freight train operated by Pacific National. One wagon derailed but the train travelled for almost 5 km before coming to a stop.	None
7 March 2005	Wauchope	Mainline derailment of freight train operated by Pacific National. One wagon derailed but 3.1 km of track and rail bridge damaged.	None
6 April 2005	Old Burren	Mainline derailment of a fully loaded wheat train operated by Pacific National.	None
31 May 2005	Grawlin Plains	Collision between single locomotive and road motor vehicle at level crossing.	1 fatality

5. Rail Safety Standards and Guidelines

5.1 State Legislation, Regulations and Guidelines

The Rail Safety (General) Regulation 2003 was amended during 2004-05. The amendments were made via the Rail Safety (General) Amendment (Miscellaneous) Regulation 2005 which came into effect on 14 January 2005. The amendments covered three areas of rail safety management as described below.

Safety Interface Agreements

Rail organisations are responsible for management of safety issues relating to their area of operation. However, in situations where the operations of one rail organisation interact with those of another, the responsibilities for management of safety-related issues must be clearly defined, for example, when a rail organisation contracts another organisation to undertake maintenance of rolling stock.

A Safety Interface Agreement (SIA) is an agreement between two or more operators which clearly sets



Reiner Mangulabnan, Audit and Compliance Officer (left) inspects a RailCorp Simulator in Petersham, NSW

out responsibilities at these points of interaction – the “interface”. The purpose of an SIA is to ensure that safety risks of railway operations at interface points are clearly identified and responsibility assigned. In this way the possibility of “gaps” in the coverage of appropriate risk control measures will be minimised.

Under Section 12 of the *Rail Safety Act 2002*, an applicant for accreditation is required to have a SIA with all other rail operators that interact with their railway operations. A SIA must comply with any requirements prescribed by a regulation under this section of the Act. The Rail Safety (General) Amendment (Miscellaneous) Regulation 2005 prescribes specific requirements for a SIA which must include:

- the parties to the agreement;
- a description of the safety interfaces and an assessment of associated safety risks;
- the controls to manage safety risks (called the risk controls);
- the party responsible for implementing and monitoring the performance of each risk control;
- the party responsible for modifying the operation of each risk control;
- arrangements for the exchange of information between parties and for the conduct of reciprocal inspections and audits by each party;
- the effect on the agreement of any change in ownership of the railway operations concerned or of the parties to the agreement;
- a requirement that contractors and subcontractors of the parties will comply with the

agreement; and

- provisions for auditing of the implementation of the agreement by the ITSRR, and provision of information to ITSRR for this purpose.

Passenger Security Policy and Plans

Under Section 13 of the *Rail Safety Act 2002*, operators of railways involving the carriage of passengers must develop a policy and plan to maximise the safety and security of passengers. A Passenger Security Policy is a statement of a rail operator’s commitment to maximise passenger and staff security in their railway operations. A Passenger Security Plan details how the Policy will be implemented.

Previously there were no regulations prescribing what needed to be included in a passenger security policy or plan and this was a matter for the rail operator itself to determine. The Rail Safety (General) Amendment (Miscellaneous) Regulation 2005 now provides guidance to rail operators on the contents of their policies and plans in relation to passenger security.

Clauses 49B and 49C of the regulation set out requirements for a passenger security policy and plan. A policy must include three elements, namely:

- a statement of the operator’s commitment to passenger and staff security;
- responsibilities and accountabilities of the operator and employees;
- provisions for consultation when developing relevant procedures.

A plan must include 14 elements including:

- an assessment of security risks affecting passengers and staff;
- measures to reduce risks, manage threats and deal with emergencies;
- allocation of responsibilities to appropriate persons;
- collection and sharing of information;
- evaluation, testing and periodic review of the plan and procedures.

Fatigue Management Provisions

Fatigue has been recognised as a safety hazard in the transport industry for many years. The consequences of fatigue include decreased alertness, slower reaction times, memory lapses and higher error rates.

The *Rail Safety Act 2002* outlines the requirements for rail organisations to manage employee fatigue. It includes specific provisions for various types of rail safety workers regarding maximum shift lengths, maximum number of shifts and minimum breaks between shifts. In 2003, ITSRR issued new guidelines for fatigue management¹⁷ to help organisations establish programs to reduce the incidence of fatigue in rail safety workers.

In certain circumstances, rail organisations may seek to vary the shift limits imposed by such provisions. Examples of when an application for an exemption could apply include:

- a particular site, activity or

division of the operations;

- a particular route;
- a demonstration project to trial a new fatigue management system.

The Rail Safety (General) Amendment (Miscellaneous) Regulation 2005 provides for exemptions from the fatigue management provisions of the *Rail Safety Act 2002*. However, the granting of an exemption does not release an operator from the requirement to ensure that safe working practices and fatigue management are maintained. Exemptions will therefore be issued subject to a series of conditions including:

- the organisation shall continue to manage fatigue in accordance with the requirements of the *Rail Safety Act 2002*, and the associated regulations or guidelines;
- organisation must adhere to specified standards and demonstrate regular audit and review of specified standards including employee feedback regarding fatigue management.

5.2 National Initiatives

National Model Rail Safety Legislation

NSW is a signatory to the Inter-Governmental Agreement for Regulatory and Operational Reform in Road, Rail and Intermodal Transport ('the IGA'). The IGA requires the National Transport Commission (NTC) to develop proposed reforms to improve and strengthen the

co-regulatory system for rail safety.

ITSRR has been active in the development of the national model legislation to ensure that the reform proposals lead to improved safety management, and are consistent with safety reforms adopted in recent years to strengthen the regulation of rail safety in NSW.

The Australian Transport Council (ATC) recently endorsed the NTC's policy proposals that will underpin the national model legislation. The NTC proposes to submit draft national model rail safety legislation to transport ministers in December 2005 for voting following a further period of public consultation.

Regulations – Safety Management Systems and Accreditation

The NTC is also developing national model regulations addressing safety management systems and accreditation acceptance in the rail industry. The NTC proposes to release a discussion paper for public consultation in September 2005 outlining options for the development of these regulations. The NTC proposes to submit the draft regulations to transport ministers in March 2006.

Review of institutional arrangements for regulation of rail safety

In addition, the NTC is proposing to include a review of the institutional arrangements for regulation of rail safety. Included in this review will be an examination of the relation-

¹⁷ ITSRR. 2004. *Guidelines Relating to the Management of Fatigue*. Reference No. 02438.

ship between government and the Australasian Railway Association's Code Management Company in the development of industry standards. The NTC proposes to release a discussion paper for public consultation reviewing the institutional arrangements for the regulation of rail safety in October 2005.

NTC Fitness for duty projects

The ATC has also asked the NTC to review and develop national policies relating to three key safety issues: fatigue, drugs and alcohol testing, as medical fitness for safety-critical rail workers.

Fatigue Management Review in the Rail Industry

The NTC is conducting a review of fatigue management in the rail industry. The Rail Industry Code Management Company, representatives of rail safety regulators, rail operators and the Rail Tram and Bus Union are participating in the review. The NTC proposes to submit final proposals to the ATC in December 2005.

Drugs and Alcohol Review in the Rail Industry

The NTC established a review to develop a set of national policies, standards and codes/guidelines for effectively managing the use of drugs and alcohol in the rail industry. The Rail Industry Code Management Company, representatives of rail safety regulators, rail operators and the Rail Tram and Bus Union are participating in the review. The NTC proposes to submit final proposals to the ATC in December 2005.

In relation to both the Fatigue Management review and the Drugs and Alcohol review, ITSRR is forwarding the findings of the NSW reviews on these issues to the NTC for consideration in the national reviews to ensure national uniformity or consistency.

National Standard for the Health Assessment of Rail Safety Workers

The ATC approved a National Standard for the Health Assessment of Rail Safety Workers in April 2004. This was the first time all States and Territories have adopted a common system of health assessment arrangements for rail safety workers. This national consistency will help rail organisations operate more efficiently across State and Territory boundaries.

The Standard adopts a risk management approach and reflects contemporary medical knowledge and societal values. It incorporates advances in medical knowledge and current understanding of the impact of certain health conditions on safe working and addresses the deficiencies in recent rail safety crash investigations.

The new standard was adopted by all States and Territories on or before 1 July 2004. The arrangements for phasing in the medical examinations are contained in the standard.

6. Significant Rail Industry Safety Initiatives

6.1 Rail Network Vulnerability Analysis

The current approach to management of rail safety in NSW, as for the rest of Australia, is one of co-regulation. Under this system, primary responsibility for rail safety lies with the rail industry. Rail organisations are therefore responsible for ensuring they have processes in place to identify safety risks associated with their particular operations, and apply appropriate control measures to reduce or eliminate accidents.

ITSRR's role as the safety regulator is to review the adequacy of operators' risk assessment processes and ensure they include, where relevant, measures to address known major risks applicable to the NSW rail network in general. To ensure ITSRR is suitably informed to undertake such reviews a Vulnerability Analysis Project was undertaken in 2004-05.

The purpose of the Vulnerability Analysis Project was not to analyse

all risks associated with the NSW rail network. Rather, the project focussed on a set of generic major incidents that could lead to multiple injuries or fatalities. The analysis involved developing a range of scenarios that may lead to each major incident type and then performing a detailed analysis of each scenario to assess:

- the range of hazards likely to lead to a particular major incident;
- the known defences in place to control such hazards;
- any deficiencies or gaps in the current controls;
- recovery measures available to minimise the severity of an incident.

The final report from the Vulnerability Analysis Project was completed in mid-2005. The findings from the report have given ITSRR a greater understanding of the types of hazards that pose a significant threat to safety on the NSW network. The knowledge gained

from the Vulnerability Analysis Project is being used by ITSRR in its review of accreditation applications as well as to inform decisions on the targeting of its general compliance activities, for example, audits and inspections across the network.

6.2 National Accreditation Package

The *Rail Safety Act 2002* specifies requirements for the accreditation of railway operators. Accreditation provides a means to formally attest that railway operators have established suitable systems for the ongoing identification, assessment and management of safety risks associated with their particular operation.

In November 2004, the Australian Transport Council (comprising Federal, State and Territory and New Zealand Transport Ministers) endorsed a National Accreditation Package (NAP) which was developed by ITSRR in conjunction with other State and Territory regulators.



Michael Cleary, Senior Audit and Compliance Officer, and Catherine Herriman, Director Safety Strategy conducted a safety inspection at Port Botany during 2004-05.

The Package includes:

- guidelines for railway operator risk and safety management systems;
- agreed processes for the approval and variation of operator accreditation by state and territory regulators, and for mutual recognition of accreditation approvals and variations
- guidelines for annual safety reports that accredited operators are required to submit to regulators.

The NAP applies to any new accreditations from 31 January 2005. All railway operators that hold an existing accreditation must comply with the requirements of NAP by 30 June 2006.

The NAP will be used as the basis for the development of national model legislative requirements for accreditation by the National Transport Commission (see Section 5.2).

6.3 Emergency Evacuation of Rolling Stock

In the early to mid 1990s, a number of injuries and fatalities occurred as a result of people opening doors and jumping or alighting from moving passenger trains. In response to this, the then State Rail Authority introduced a policy to keep doors closed while trains are in motion via central locking. Under this policy, train crews have sole control over the

opening and closing of doors.

The Waterfall rail accident that occurred in 2003 was an example of an accident in which the train crew became incapacitated and passengers were unable to evacuate the train due to closed doors. This accident highlighted the need for a review of the passenger containment policy.

In November 2004, ITSRR released a report on train door emergency egress¹⁸. The report summarised the results of an extensive review of existing information and experiences in Australia and overseas on the issue of train emergency evacuation and associated policies and procedures. The purpose of the report was to examine whether a standard should be created in NSW covering train emergency evacuation procedures, door egress and access and associated equipment.

The report concluded the current door security policy adopted by RailCorp should be amended so that passengers have the ability to open train doors and leave trains in an extreme emergency. The report stressed that the preferred means of train evacuation following an emergency is (as it is currently) for the driver to stop at the closest station, open doors onto the platform and for the train crew to control passenger egress from the train. Providing passengers with the ability to open doors and evacuate themselves is a last resort that should only occur in the situation where to remain on the train could pose a greater danger than that posed by exiting the train.

ITSRR is currently developing a draft standard covering train emergency egress, access and evacuation procedures in line with the findings of the report. ITSRR has also requested such a standard be developed nationally via the National Transport Commission in consultation with industry. In the interim, ITSRR is working with RailCorp to ensure that the current risk of passengers being trapped in a train in the event of an extreme emergency is minimised.

6.4 Train Driver Safety Systems and Automatic Train Protection

The Special Commission of Inquiry (SCOI) into the Waterfall Rail Accident in 2003 found that the accident occurred because of a failure of the deadman system of the train and the absence of any back-up defence to this failure. The deadman system is a foot pedal or hand-operated device designed to bring the train to a stop if a driver fails to maintain pressure on it.

The SCOI also concluded that the accident could have been avoided if another type of engineering defence – a vigilance device – had been fitted to the train to provide an additional defence against driver incapacitation and the failure of the deadman system. Recommendation 31 of the SCOI required all trains to be fitted with a minimum of two independent engineering defences to minimise risk of collision or derailment in the event of driver incapacitation.

¹⁸ ITSRR. 2004. Train Door Emergency Egress and Access and Emergency Evacuation Procedures.

Historically, all of RailCorp's metropolitan and outer-metropolitan trains were fitted with a deadman system. However, in response to the recommendations of the SCOI, RailCorp has progressively installed vigilance devices on all its passenger trains. As of December 2004, all of the suburban fleet had been fitted with vigilance control devices. One exception is the 600 class railcars that operate in the Hunter Valley. In the 600 class railcars the guard will travel with the driver as an interim measure until these cars are phased out at the end of 2005.

The fitting of two independent engineering devices is an important step in minimising the risk of passenger train collisions or derailments. The SCOI into the Waterfall Rail Accident also recommended that RailCorp should progressively implement Automatic Train Protection (ATP). ATP systems are more advanced technologies which can automatically override a driver if a train is behaving in an unauthorised way in relation to network constraints.

Prior to the release of the SCOI Report, both RailCorp and the ARTC, which manages NSW's interstate rail lines, were examining the feasibility of introducing ATP systems on their networks. ITSRR will also facilitate a detailed review of the applicability of ATP systems to the NSW network in conjunction with RailCorp and ARTC and work with the broader rail industry through the Australasian Railway Association (ARA) on the applicability of a different type of ATP on the NSW and interstate rail network.

6.5 Train Radio Communications

The Special Commission of Inquiry into the Glenbrook Accident in 1999 and the Waterfall Rail Accident in 2003 highlighted the importance of compatibility of communication equipment used on the NSW rail network. Communication deficiencies were identified as a major cause of the Glenbrook rail accident. Communication deficiencies also hindered the response of emergency services to the Waterfall accident.

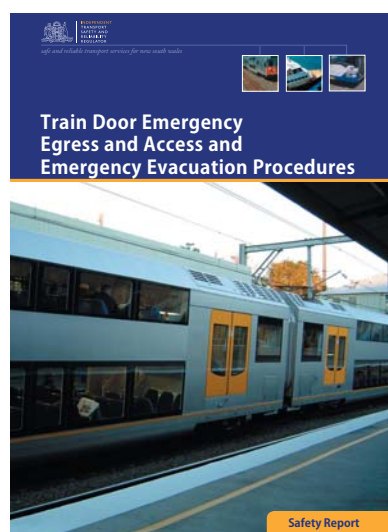
One of the key recommendations arising from the Waterfall SCOI was the need to ensure interoperability of communications equipment between trains operating on the NSW network. In 2004-05, an interim solution using existing analogue technology was developed to enable inter-operability during an emergency situation. This solution involves the integration of the MetroNet and CountryNet radio systems to expand the existing CountryNet radio system into the metropolitan area through the use of the Voice Communications System (VCS) which is installed at RailCorp's Rail Management Centre.

In the event of an emergency, the VCS will be used to manage radio calls from train drivers operating in the metropolitan area to train controllers and signallers. Therefore during an emergency situation, the train controller will be able to communicate simultaneously through a "broadcast call" with passenger and freight trains in the immediate vicinity of the train that initiated the emergency. In December 2004, the state's major freight operator (Pacific National) completed an

upgrade of software on its rolling stock to enable this link. A regulation to mandate the functionality of train radio communications in NSW is currently being drafted by ITSRR.

Over the longer term, current incompatibilities between different types of communications equipment will be addressed using digital technology as part of the development of a national functional standard. A national working group led by the Australasian Railways Association (ARA) is working towards the adoption of a single communications standard for metropolitan rail track whilst ensuring interoperability with the non-metropolitan area.

This task requires significant technical development, consultation and investment by both Government and the private sector and is not due for implementation until 2010. ITSRR, as the Regulators' representative on this working group, will continue to actively support and contribute to the development of a national communications standard.



ITSRR prepared a report recommending changes to emergency evacuation procedures in November 2004.