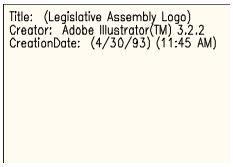


LEGISLATIVE ASSEMBLY OF QUEENSLAND

PARLIAMENTARY TRAVELSAFE COMMITTEE

BRISBANE'S CITYTRAIN NETWORK — PART ONE — SAFETY OF THE RAIL SYSTEM AND INFRASTRUCTURE

Parliamentary Travelsafe Committee Report No. 23
Released pursuant to Section 4(2)(c) of the *Parliamentary Papers Act 1995*
(December 1997)

PARLIAMENTARY TRAVELSAFE COMMITTEE

48TH PARLIAMENT

2ND SESSION

CHAIRMAN:	Mr J Goss MLA, Member for Aspley
DEPUTY CHAIRMAN:	Mr T Sullivan MLA, Member for Chermside
MEMBERS:	Mr B Dollin MLA, Member for Maryborough
	Mr J Hegarty MLA, Member for Redlands
	Mr R Mitchell MLA, Member for Charters Towers
	Mr B Nunn MLA, Member for Hervey Bay
RESEARCH DIRECTOR:	Mr R Hansen
RESEARCH OFFICER:	Mr R McBride
EXECUTIVE ASSISTANT:	Miss T Jackman

PREFACE

This is the committee's first report from its inquiry into passenger safety and security on the Citytrain rail network, which is the committee's first inquiry as part of its public transport reference.

This report examines the safety of the network's infrastructure and operating systems. Within the greater Brisbane Area, the Citytrain Rail network represents a major transport infrastructure investment by the government, and carries in excess of 40 million passenger journeys annually. The committee's work has highlighted the low level of risk to passengers on the network, which is one of the great benefits of rail travel. Queensland Rail has a long tradition of engineering excellence and, overall, has a robust safety management system.

There are, however, a number of important issues for Queensland Rail that need to be addressed. These include: the risk to passengers of being trapped in closing train doors; the high incidence of trains passing red stop signals; the lack of a fail-safe system to prevent train-train collisions in the Brisbane Suburban Area; the lack of equitable access to stations and rollingstock; problems with safety statistics; and the lack of consultation with passenger interest groups.

Issues for Queensland Transport, as railway manager, include: the need to improve safety at railway level crossings through education and enforcement; the need for a safety audit of level crossings and a strategy to prioritise safety upgrades; the need to report railway safety data periodically; and issues concerning documentation used in safety audits of Queensland Rail.

The committee thanks all the groups and individuals who assisted with this inquiry by making submissions, appearing at public hearings and otherwise providing information.

Mr John Goss MLA
Chairman

TABLE OF CONTENTS

PAGE NO.

PAGE NO.

PAGE NO.

LIST OF TABLES AND FIGURES

PAGE NO.

FIGURES

TABLES

PAGE NO.

ABBREVIATIONS

ABBREVIATIONS	DEFINITIONS
ABS	Australian Bureau of Statistics
ARA	Australasian Railways Association Inc.
ATP	Automatic Train Protection
AWS	Audible Warning System
BTCE	Bureau of Transport and Communication Economics
EMU	Electric Multiple Unit
HREOC	Human Rights and Equal Opportunities Commission
ICE	Inter-city Express
IMU	Interurban Multiple Unit
MUTCD	Manual of Uniform Traffic Control Devices
PTU	Public Transport Union
QISPP	Queensland Injury Surveillance and Prevention Project
QR	Queensland Rail
QT	Queensland Transport
SETON	Self Enforceable Traffic Offence Notice
SMU	Suburban Multiple Unit
SPAD	Signal Passed at Danger
UK	United Kingdom
VISS	Victorian Injury Surveillance System

SUMMARY OF RECOMMENDATIONS

PAGE NO.

PAGE NO.

PAGE NO.

PAGE NO.

PART 1 ~ INTRODUCTION

THE TRAVELSAFE COMMITTEE

1. The Travelsafe Committee of the 48th Parliament was appointed by a resolution of the Legislative Assembly on 15 September 1995. This resolution was amended on 18 April 1996 during the Parliament's second session.

2. Under these resolutions the committee monitors, investigates and reports on:-

   (a) issues affecting road safety including the causes of road crashes and measures aimed at reducing deaths, injuries and economic costs to the community;

   (b) the safety of passenger transport services, and measures aimed at reducing the incidence of related deaths and injuries; and

   (c) measures for the enhancement of public transport in Queensland and reducing dependence on private motor vehicles as the predominant mode of transport.

BACKGROUND AND SCOPE OF THE INQUIRY

3. This is the committee's first inquiry into railway safety. In this inquiry the committee invited submissions on:-

   - the safety of the track and signalling;
   - passenger safety and security issues at stations; and
   - safety and security issues on the rollingstock.

4. This inquiry was initiated for several reasons. The committee was keen to examine the issue of personal safety. The fear of victimisation on public transport is a key factor in falling public transport patronage around the world. Queensland Rail's customer surveys have indicated that it is the first or second most common factor in people's decisions not to travel by Citytrain.

5. The committee is committed to reducing the dependence on private motor vehicles for regular commuter trips in the greater Brisbane area. The Citytrain Rail network is the hub of the Greater Brisbane public transport system, and there are distinct environmental and economic imperatives for it to be better utilised in lieu of private cars.

6. Prior to this inquiry, passengers and other members of the public were not properly consulted about safety and security issues on the Citytrain network. Queensland Rail has implemented strategies that affect passengers with limited prior consultation with passengers or the organisations representing them. Similarly, there was no public consultation by Queensland Transport for its safety audit of Queensland Rail in 1996. Consultation is essential to identify issues that warrant attention, and to ensure that strategies that are implemented to resolve them are working.

SCOPE OF THIS REPORT

7. Because of the wide scope of the inquiry, the committee is reporting separately on: risks to passengers posed by the Citytrain network's infrastructure and train operations; and issues affecting the personal safety of passengers. This report covers risks of accidental injury posed to passengers by the elements of the rail track and signalling, stations, rollingstock, and train operations.

8. The report is divided into seven parts. Part 1 outlines the committee's terms of reference, the background and scope of the inquiry and the inquiry process. Part 2 presents a brief overview of the Citytrain network and provides key systems attributes for all Australian suburban railways. Part 3 examines passenger safety on the Citytrain network in terms of past fatalities and accidental passenger injuries that have been documented by Queensland Rail.

9. Part 4 examines the incidence of train accidents, and measures to reduce the incidence of collision. It firstly discusses train-train collisions and derailments, and contributing factors such as the incidence of Signals Passed at Danger (SPADs), and the safety value of the Audible Warning System (AWS) which warns Citytrain drivers of approaching track signals. The incidence of faulty signal warnings is also discussed, followed by the case for installing Automatic Train Protection (ATP) to prevents train-train collisions caused by driver error. Other types of collisions are discussed including collisions between trains and motor vehicle at railway level crossings, and train collisions with track obstructions within the Brisbane Suburban Area.

10. Part 5 examines the accessibility of the Citytrain network. In particular, it discusses the extent to which the network is able to be patronised by people with mobility impairment, including people who are dependent on mobility aids, and passengers with disabilities. Part 6 examines safety management issues in relation to: the quality of railway injury data and other safety performance data; compliance by drivers with safety policies; customer focus and consultation issues; and Queensland Transport's safety audit of Queensland Rail in 1996. Part 7 outlines the conclusions.

INQUIRY PROCESS

11. The inquiry into passenger safety and security on Brisbane's Citytrain network was launched in June 1996 with advertisements placed in major newspapers announcing the inquiry and calling for written submissions. A copy of the advertisement is shown in Appendix A. Forty-four submissions were received. A list of those who made submissions is at Appendix B.

12. The committee held two public hearings in Brisbane on 27 March 1997 and 28 May 1997. Witnesses were examined on their written submissions and other issues under investigation. A list of those who appeared is at Appendix C.

RESPONSIBILITY OF MINISTERS

13. This report makes recommendations for the Government to implement.

"PART 5 - MINISTERIAL RESPONSES TO REPORTS' of the *Parliamentary Committees Act 1995* requires the responsible Minister or Ministers to respond to recommendations contained in the committee's Reports.

Subsections 2 to 6 of section (24) of the Act read as follows:-

(2) The Minister who is responsible for the issue the subject of the report must provide the Legislative Assembly with a response.

(3) The response must set out-

(a) any recommendations to be adopted, and the way and time within which they will be carried out; and

(b) any recommendations not to be adopted and the reasons for not adopting them.

(4) The Minister must table the response within 3 months after the report is tabled.

(5) If a Minister cannot comply with subsection (4), the Minister must-

(a) within 3 months after the report is tabled, table an interim response and the Minister's reasons for not complying within 3 months; and

(b) within 6 months after the report is tabled, table the response.

(6) If the Legislative Assembly is not sitting, the Minister must give the response (or interim response and reasons) to the Clerk of the Parliament for tabling on the next sitting day.

PART 2 ~ THE CITYTRAIN NETWORK

14. Citytrain is a business group of Queensland Rail which is a corporation owned by the Queensland Government. It was created in July 1995 out of what was Queensland Rail's Passenger Division. The Citytrain network consists of 137 stations and over 370 route kilometres. This is comprised of a suburban network covering 118 stations and over 199.5 route kilometres, and an interurban network of 19 stations and 169.5 route kilometres. The average distance between stations is 2.8 kilometres. A stylised map showing the extent of the network is at Appendix E.

15. Tables 1 and 2 give details of the Citytrain electric train fleet and scheduled weekly services. Additional services are provided by Queensland Rail to cater for increased travel demand from key community events.

Table 1: Citytrain rollingstock by type as at 1 December 1997

ELECTRIC ROLLINGSTOCK	NUMBER IN THE FLEET
Electric multiple units (EMUs)	88 three-car sets
Suburban multiple units (SMUs)	12 three-car sets
Interurban multiple units (IMUs)	4 three-car sets

Source: Queensland Rail

16. All Citytrain's electric trains were built by Walkers Ltd in Maryborough. These are mostly Electric Multiple Units supplied between 1979, when the electrification of the Brisbane suburban network was completed, and 1985. Due to shortages of electric rollingstock, a limited number of services are still provided using SX class, diesel-electric train sets and diesel rail motors. These are due to be taken out of service with the delivery of additional electric rollingstock in 1998.

Table 2: Scheduled weekly Citytrain services by week days as at 3 March 1997

DAYS OF THE WEEK	NUMBER OF SCHEDULED SERVICES
Monday to Thursday	724
Friday	767
Saturday	583
Sunday/public holidays	475

Source: Queensland Rail

17. Citytrain currently provides 4,721 scheduled services weekly. 78 percent of these services are provided during the working week from Monday to Friday. In 1996/97, Citytrain carried 41.6 million passenger journeys, based on ticket sales, with an average of 163 paid passengers per service. Adult journeys accounted for 60 percent of these journeys, school students 18 percent, other students 10 percent, pensioners 8 percent and children other than students 4 percent.

18. Table 3 provides a comparison of the Citytrain network and other state suburban rail networks in Australia (submission No. 12).

Table 3: Suburban railway in Australia - key attributes

BROAD SYSTEM STATISTICS	QLD	NSW	VIC	SA	WA
Network length (route km)	372	1018	330	125	93
Number of stations	132	296	197	80	57
Annual patronage (1995/96 Qld; 1994/95 all others)	38.2m	249.6m	226m	8.5m	16.7m
Number of services per week	4,760	13,015	8,643	860	4,520
Average distance between stations (km)	2.8	3.4	1.7	1.6	1.6
Average patronage per service	154	369	503	190	71

Source: Queensland Rail submission

19. From the table, Queensland's Citytrain network is the second largest suburban network in Australia after Cityrail in New South Wales (Sydney) in terms of network length. It is also the third largest after Cityrail and the Met in Victoria (Melbourne) in terms of numbers of stations, weekly services and passenger journeys.

20. Citytrain passenger services share track with services operated by Queensland Rail's Traveltrain, Freight, Coal and Minerals groups, heritage trains, interstate freight services operated by the National Rail Corporation and the Sydney-Brisbane XPT express passenger service operated by State Rail of New South Wales.

PART 3 ~ HOW SAFE ARE CITYTRAIN PASSENGERS?

21. In this part, the committee examines injuries on the Citytrain network, both fatal and non-fatal, and major accidents such as train collisions and derailments.

THE RELATIVE SAFETY OF RAIL TRAVEL

22. Rail passengers enjoy a general level of safety that is superior to other forms of surface travel. According to the Bureau of Transport and Communication Economics (BTCE), rail accidents account for 1 percent of transport related accident costs in Australia (BTCE, 1995).

23. A general study of fatality risks in 1989 by the Australian Nuclear Science and Technology Organisation compares risks for different forms of travel and other activities (ANSTO 1989). It suggested that the risk of dying for train travellers (30 chances of fatality per million person years) is approximately $1/5^{th}$ the risk for travellers in motor vehicles (145 chances per million person years), though, it is higher than the risk for air travellers (10 chances per million person years).

24. A 1994 study of railroad injury and comparisons with other transport modes in the United States reports that injury costs per passenger mile by railroad (US $17.60 (1990)) are a quarter of the costs for buses (US $69.35 (1990)) and 21 percent of the costs for cars (US $84.95 (1990)). The study also notes that these figures are likely to understate the inherent safety of the rail system given that 92 percent of injury costs in the study result from impacts with vehicles and pedestrians at highway grade crossings, and that train-vehicle collisions are usually caused by car drivers ignoring warning signals (Miller *et al,* 1994).

25. A 1996 risk comparison for travellers on different transport modes in Britain suggests that rail travel is twenty times safer than any other form of surface transport (UKDOT,1996).

FATALITIES ON THE NETWORK

26. The Australian Bureau of Statistics and the Government Statistician record railway fatalities on a regional and state basis according to the usual place of residence of the person. Their data does not differentiate between different railways or user groups. The only discreet records of railway fatalities on the Citytrain network are held by Queensland Rail.

27. Queensland Rail's records categorise railway-related deaths or *'fatalities'* as either: *'Trespasser'*; *'Public'*; *'Passenger'*; or *'Employee/Worker'*. These categories are defined as:-

- **Fatalities** - A loss of life as a direct result of an accident or within 12 months if the death is directly related to the accident.
- **Passenger** - A person who is making a rail journey, who has made a rail journey, or intends making a rail journey (not necessarily in possession of a ticket).

- **Public** - Persons, other than passengers or employees, legitimately on railway property or person not on railway property but affected by railway property.
- **Trespasser** - A person unlawfully on railway property.
- **Employee/Worker** - The term *worker* is used to describe a paid member of the staff of the railway, a contractor, subcontractor or an employee of either, or a volunteer performing work.

28. The categories used by Queensland Rail are peculiar to railways. They conform with reporting guidelines prepared by Queensland Transport to meet the requirements of both the *Inter-governmental Agreement on Information Exchange*, signed by transport ministers in 1995, and the relevant Australian Standard, AS 4292.1-1995 *Railway safety management Part 1: General and interstate requirements* issued by the Council of Standards Australia. The committee notes that the category are not exclusive. 'Trespasser' fatalities, for example, may include persons who were passengers or intending passengers killed while committing acts of trespass against the railways.

29. Table 4 shows a breakdown of fatalities on the Citytrain network recorded by Queensland Rail during the nine years from 1988/89 to 1996/97. Statistics for fatalities prior to July 1988 were not available. The annual patronage, or number of passenger journeys based on ticket sales during these years, is shown at the side of the table. As a general caveat, the committee notes that the statistics provided by Queensland Rail are based on injury reports filed by Queensland Rail staff who are unlikely to be expert in statistical reporting. These reports are also unlikely to have been substantiated, and may contain errors of fact and inconsistencies in the reporting methods.

Table 4: Fatalities on the Citytrain network by year and person type for the period 1 July 1988 to 30 June 1997*

FINANCIAL YEAR	PUBLIC	PASSENGER	EMPLOYEE/ WORKER	TOTAL FOR YEAR	ANNUAL PATRONAGE
1988/89	9	**1**	0	10	N/A
1989/90	8	**0**	0	9	39,510,407
1990/91	10	**1**	0	10	41,585,630
1991/92	11	**0**	0	11	40,075,692
1992/93	18	**0**	1	19	39,403,965
1993/94	11	**1**	1	13	38,397,797
1994/95	10	**1**	0	11	37,020,706
1995/96	23	**0**	0	23	39,187,039
1996/97	6	**1**	0	7	41,558,438
TOTALS	**106**	**5**	**2**	**113**	**316,739,674**

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for fatalities on the Citytrain network prior to July 1995 are based on recorded fatalities that occurred on Queensland Rail's Passenger Division services and stations within the present Citytrain operating area.*

Source: Based on incidents recorded by Queensland Rail in its Safety Incident Database 1997 (Correspondence from K Band, dated 1 December 1997)

30. The table shows that Queensland Rail recorded a total of 113 fatalities on the network during the nine years examined.

Passenger Fatalities

31. Five fatalities were recorded as '*passenger'* fatalities. These accounted for four percent of all fatalities recorded. When the number of passenger journeys is also considered, these fatalities equate to a rate of one passenger fatality per 63.3 million passenger journeys. On this basis, the risk of passengers dying on the Citytrain network appears to be extremely low.

32. Table 5 provides the 'what happened' text from the Queensland Rail incident records for the five recorded passenger fatalities.

Table 5: Text from Queensland Rail incident records for passenger fatalities on the Citytrain network 1 July 1988 to 30 June 1997*

YEAR	DATE	TYPE	STATION	WHAT HAPPENED?
1988/89	16 June 1989	Accident	Wooloowin	Male passenger was leaning over the edge of the platform when was struck and killed by train
1990/91	23 August 1990	Accident	Booval	Female passenger was sitting with legs hanging over the edge of platform when she was struck by train 6652 and killed
1993/94	23 November 1993	Accident	Altandi	Female passenger was caught in train doors when she was detraining and as she tried to recover her handbag which she had dropped inside
1994/95	31 August 1994	Accident	Brunswick Street	Male passenger died in hospital from head injuries received from a fall on the stairs at Brunswick Street Station
1996/97	28 May 1997	Illness	Central	Elderly female passenger suffered a heart attack while standing outside the newsagency at central Station. CPR was performed by station staff.

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for fatalities on the Citytrain network prior to July 1995 are based on recorded fatalities that occurred on Queensland Rail's Passenger Division services and stations within the present Citytrain operating area.*

Source: Queensland Rail Safety Incident database 1997

33. From table 5, four of the passenger fatalities were attributed to accidental injuries and one to illness. Of the four accidental injury deaths, two resulted from collisions with moving trains at stations. The third fatality involved a woman passenger who sustained head injuries in a fall onto a platform. She was killed while attempting to retrieve her handbag from inside a train after she was caught in its doors while exiting. The fourth accident fatality died from head injuries sustained in a fall on station stairs. Hazards to passenger posed by train doors and falls are discussed later in the section.

34. The illness fatality occurred on 28 May 1997. An elderly passenger died from a suspected heart attack while on the concourse at Central Station.

Public Fatalities

35. There were 106 '*public'* fatalities which account for 94 percent of all fatalities recorded during the nine years. Table 6 provides a breakdown of the public fatalities recorded.

Table 6: Public fatalities on the Citytrain network by person type and financial year for the period 1 July 1988 to 30 June 1997*

FINANCIAL YEAR	LEVEL CROSSING	SUICIDE OR SUSPECT	TRESPASS TRACK	TRESPASS STATION	UNKNOWN/OTHER	YEARLY TOTAL
1988/89	1	3	0	1	4	**9**
1989/90	2	4	0	1	1	**8**
1990/91	0	4	3	0	3	**10**
1991/92	2	5	2	2	0	**11**
1992/93	1	7	6	3	1	**18**
1993/94	2	3	2	1	3	**11**
1994/95	4	2	2	1	1	**9**
1995/96	1	8	6	3	5	**23**
1996/97	0	3	2	0	1	**6**
TOTAL	**13**	**39**	**23**	**12**	**19**	**106**

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for fatalities on the Citytrain network prior to July 1995 are based on recorded fatalities that occurred on Queensland Rail's Passenger Division services and stations and station precincts within the present Citytrain operating area.*

Source: Based on incidents recorded by Queensland Rail in its Safety Incident Database 1997 (Correspondence from K Band dated 1 December 1997)

36. From table 6, there were 39 public fatalities recorded as suicides or suspected suicides. These accounted for 37 percent of all fatalities during the period, with a yearly average of 4.3 fatalities. Fatalities are categorised as suicides after a coronial inquiry has determined that suicide was the cause of death. Suspected suicides are fatalities where self-harm is suspected,

based on the circumstances and available evidence, but has not been determined by the coroner to be the cause of death.

37. There were 35 public fatalities recorded as 'trespasser' fatalities. These accounted for 33 percent of all fatalities. 23 were recorded as occurring on open track, while 12 were recorded as having occurred at stations.

38. 13 public fatalities were recorded as level crossing fatalities. These accounted for 12 percent of all fatalities, and consisted of pedestrians and occupants of road vehicles involved in collisions with trains. 19 fatalities were recorded as 'unknown/other'. Queensland Rail's records do not provide sufficient information to include these in other categories.

39. Clearly, public fatalities represent the majority of recorded fatalities on the network. The committee has not been able to examine the circumstances detail within the scope of this inquiry, but suggests that they warrant attention in the future.

Fatality Rates Compared With Other Australian Railways

40. The committee was unable to obtain data to compare fatality rates for Citytrain with rates for other Australian urban passenger railways, and there have been no published studies of mortality on urban rail systems in Australia.

41. An unpublished 1995 study by Queensland Transport provides a general indication of comparative per capita rail fatality rates for all railways in Queensland and other states for the period 1 July 1984 to 30 June 93. It reports that Queensland's annual per capita rate (all causes) is less than the Australian average of 32.2 railway fatalities per 10 million people, though, higher for some types of fatalities (QT, 1995;4). It also states that Queensland's rates of fatalities involving trains colliding with people, motor vehicles and other objects are higher than the Australian averages (QT, 1995;6).

NON-FATAL PASSENGER INJURIES

42. Queensland Rail has also documented non-fatal passenger injuries on the Citytrain network. The following section examines Queensland Rail's data for accidental injuries for the period 1 January 1995 to 30 June 1997. It excludes injuries from causes other than accidents, such as assaults, which are recorded in a separate security incident database.

43. The poor quality and incomplete nature of Queensland Rail's injury records prevents the committee from accurately determining the extent and significance of passenger injuries, and they only support the drawing of general conclusions. For this reason, the committee's commentary in this report is limited to the two major categories of passenger injuries; falls injuries; and injuries in train doors

44. The extent of injury reporting to Queensland Rail by passengers is also unknown, and the records that have been collected are incomplete and may contain errors. Queensland Rail is unable to provide useable statistics for injuries reported to it prior to 1995, as these were recorded manually. In the absence of other sources of comprehensive data, the committee is

reporting Queensland Rail's this data, despite its shortcomings, in the absence of other data. This is because much of this data has not previously been reported. Problems with the reporting of railway injuries are discussed later in this report under management issues.

45. Queensland Rail recorded 508 non-fatal accidental injuries to passengers during the period 1 January 1995 to 30 June 1997. Table 7 presents a monthly breakdown of the recorded accidental injuries.

Table 7: Passenger injuries for the period 1 January 1995 to 30 June 1997*

YEAR	MONTHS												TOTALS
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1995	9	12	19	11	19	12	19	23	16	13	11	16	180
1996	12	8	23	13	16	19	24	20	20	19	18	15	207
1997	16	32	17	18	15	23							121
Sub-totals	37	52	59	42	50	54	43	43	36	32	29	31	508

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for injuries on the Citytrain network prior to July 1995 are based on recorded injuries that occurred on Queensland Rail's Passenger Division services and stations within the present Citytrain operating area.*

Source: Queensland Rail Safety Incident Database 1997

46. From the table, an average of 17 passenger injuries on the Citytrain network were recorded by Queensland Rail.

47. As a general indication of non-fatal accidental passenger injuries, Queensland Rail's records suggest that: most occur between 7.00 am and 7.00 pm; injuries to women (61 percent of cases) are more prevalent than injuries to men (39 percent); passengers aged 60 years and over are likely to be the group most commonly injured (the victim's age or estimated age was recorded for only 41 percent of cases); injuries on platforms and station concourses are the most common (42 percent) followed by injuries recorded as '*in/on/from*' trains (34 percent); and hospital treatment was sought in 36 percent of cases with approximately one in seven of these being admitted.

48. It has not been possible to thoroughly examine exposure risks for different age groups and types of passengers. Queensland Rail has no comprehensive data on the age of Citytrain passengers. The data it collects to show patronage levels is based on ticket type, and provides a breakdown for full-fare passenger journeys and trips by concession holders such as school children, other students and pensioners. However, these groupings do not correlate with age groupings or other data fields used in Queensland Rail's data for passenger injuries.

Common Injuries to Passengers

49. The most frequently recorded injuries to passengers were injuries from falls and injuries involving train doors. Together, these groups of injuries accounted for 86 percent of recorded

passenger injuries. There were 355 passenger falls injuries which accounted for 70 percent of all passenger injuries recorded. After falls injuries, injuries involving train doors were the most common injuries to passengers. There were 79 door injuries, accounting for 16 percent of all recorded passenger injuries. For 44 of these cases, the records clearly state that the victim was caught in/between closing doors while entering or leaving trains. These accounted for nine percent of all passenger injuries.

50. The remaining 14 percent of injuries other than falls injuries or injuries in train doors were split across a wide range of other injury factors in statistically insignificant groupings.

FALLS INJURIES TO PASSENGERS

51. Falls injuries to passengers are the most prevalent injury grouping and accounted for 355 (70 percent) of the 508 passenger injuries on the network recorded by Queensland Rail between 1 January 1995 and 30 June 1997. Two of the five recorded passenger deaths on the network over the past nine years were also from falls.

52. The falls injuries consisted of 158 injuries from falls on the same level, 155 from low level falls of less than 1 metre, 24 from falls greater than 1 metre, and 18 from falls down the gaps between the edges of platforms and the sides of trains. From the data, there were 64 recorded falls injuries involving passengers while they were entering or exiting trains. Seven of these were falls injuries sustained by passengers in wheelchairs while exiting trains using moveable ramps. In four of these cases, the victims fell out of their wheelchairs in the process. Access problems faced by passengers with disabilities are discussed later in the report in terms of the accessibility of the Citytrain network.

53. The two passenger deaths from falls on the Citytrain network occurred in 1993 and 1994. In November 1993, a female passenger died from head injuries sustained in a fall from a train as it was moving off from the Altandi Station. She had been caught in the train's closing doors, but freed herself. At the time of the fall, she was attempting to retrieve her handbag which had fallen back inside the carriage. A male passenger died from head injuries sustained in a fall on stairs at the Brunswick Street Station in August 1994.

Types of Falls Injuries

54. Around half (52 percent) of reported falls injuries to passengers occurred on station platforms and concourses. Other common locations include '*in/on/from train'* (19 percent), '*steps/stairs* (17 percent), '*escalators'* (7 percent) and '*ramp'* (4 percent). For the injuries recorded by Queensland Rail, women out-numbered men by five to one. The age or approximate age of victims was only recorded for a third of cases. Of these, over half (52 percent) were thought to be elderly (over 60 years of age). Falls injuries involving the elderly are a major public health problem in Australia and cause a high incidence of bone fractures with protracted recovery periods. The prevalence of mobility impairment among the elderly is also high, making this group particularly susceptible to falls.

55. Queensland Rail's records for falls injuries to passengers do not support thorough analysis, and this prevents the committee from commenting on the specific contribution made by features of

stations and rollingstock. It is also not possible to determine the contribution of wet and uneven surfaces to falls injuries which are likely to be significant factors.

56. The vertical and horizontal gaps between platforms and train doorways, ramps, steps and stairs are mentioned as factors in recorded falls injuries. It follows that overcoming these falls hazards should reduce the incidence of falls. This is discussed in the following section, and later in relation to the accessibility of the network.

PASSENGER INJURIES IN EXTERNAL TRAIN DOORS

57. Reports of passengers being caught in train doors have been highlighted in the media in recent years, and in submissions to this inquiry.

58. EMUs, SMUs and IMUs have two-piece, parting external doors. These are closed by the driver using controls in the train's cab after receiving clearance from the guard. The doors are driven shut using compressed air. At platforms which are heavily congested and/or built on curved sections of track, drivers and guards are unable to view all doors simultaneously as they close. In these circumstances, train doors may be closed while passengers are still entering or exiting through them.

Issues Raised in the Media and Submissions

59. A number of submissions express concerns about passengers being caught in train doors, and the risk of injury.

60. Mrs Mareon Mason describes an incident that occurred in 1996 when she was aged 80. She became trapped in the doors of a train at Roma Street Station while being assisted onto the platform (submission 15). The doors closed onto her shoulders and upper arms. Two other passengers managed to force the doors open to free her as the train started to move off from the platform. She stated that this occurred in front of a ticket collector on the platform who did nothing. The submission from the National Seniors Association Chief Executive, Mr David Deans, states that entrapment in automatic (train) doors was feared by the association's members (submission 25).

61. In addition to injuries that may be caused by the doors themselves, passengers trapped in doors with parts of their bodies outside of trains after they move off from stations risk being struck by track-side structures and other trains.

62. Submissions from Mrs Judy Rutch (submission 29) and the Director of the Nambour Community Preschool and Kindergarten Assoc Inc (submission 16) describe an incident on 12 June 1996 on platform No. 3 at Roma Street Station. The incident occurred during a class excursion that had been pre-arranged with Queensland Rail. Mrs Rutch and two pre-school aged boys became trapped in the doors of a train as it was departing. The doors closed on Mrs Rutch's shoulder and chest. One boy was trapped with his whole body outside of the doors and the other with half his body outside. No-one was injured, though, Mrs Rutch states the incident left her in shock.

63. A similar incident involving an excursion by a pre-school class from Samford occurred in August 1994 and was reported in the media. A group of 44 pre-schoolers, six infants and 23 adults travelled by Citytrain to the South Brisbane Station for a function at the Southbank Parklands. While the group was exiting the train, the doors closed onto a stroller carrying an eleven month old baby. Members of the group were unable to free the stroller from the doors. The train moved off with the child in the stroller still outside the train, and travelled to the next station at Vulture Street. No injuries were reported.

64. A woman was reported in the Courier Mail on 6 August 1994 as having been dragged along the platform at Central Station after her thigh became caught in the closing doors of a train. A further incident occurred on 30 August 1994. A four year old girl became separated from her family after being caught in the doors of a train while exiting at the Zillmere Station. The train started to move off with the child still trapped in the doors, however, her mother standing on the platform managed to push the child's body back inside the train. The child travelled alone in a distressed state to the next manned station at Strathpine where Queensland Rail station staff took her off the train and placed her on an in-bound train back to her mother at Zillmere Station.

Recorded Injuries

65. The BTCE reported in 1995 that boarding or alighting from trains was the most frequently documented cause of injuries to train passengers in Australia (BTCE 1995).

66. Queensland Rail has documented one related fatality since July 1988 involving a person being caught in external train doors. In November 1993, a woman was caught in the doors of a train while exiting it at Altandi Station. She managed to free herself from the doors but dropped her handbag inside the train in the process. She then struggled with the doors to retrieve the bag as the train moved off, but fell onto the platform and sustained a fatal head injury.

67. Seventy-nine non-fatal injuries involving passengers caught in/between train doors were reported to Queensland Rail between January 1995 and 30 June 1997. These accounted for sixteen percent of all recorded injuries to Citytrain passengers since January 1995. The victim's age or approximate age was recorded for only nine of the cases (11 percent). Of these: one was a small child (aged six to twelve years); one was a toddler (aged twelve months to five years); and five were elderly (over sixty years of age). The committee notes the likelihood that other door injuries may not have been reported.

68. To give some context for these recorded injuries, the committee considered the number of passenger exposures to the risk of injury. There were approximately 80 million passenger journeys during the thirty months over which these injuries were recorded. Given that every passenger used the doors twice for each passenger journey, to enter and exit the train, there were approximately 160 million movements by passengers through external train doors over the 30 months. In this context, recorded door injuries are rare and the majority of passengers enter and exit trains through external doors without problems.

Response by Queensland Rail

69. In response to public criticism, Queensland Rail introduced a recorded warning system on its electric suburban trains in September 1994. The system continues to be used and provides a double bell chime and a recorded message "*Doors closing—please stand clear!*" It is broadcast over the Personal Address (PA) system on trains prior to each door closure and in all carriages. As a warning system, there are some fundamental problems with the announcements.

70. The speakers for these PA systems are located above passenger seating areas and not in the door areas. The warning is broadcast regardless of whether doors are being closed, and varies in loudness from train to train. Because there are no speakers near doors and on the outside of carriages, passengers leaving or entering trains may not hear the warnings over other noise. Arguably, passengers about to use the doors are the least likely to receive the warnings and may not associate them with the doors. No supplementary visual warning is provided for passengers with impaired hearing.

71. In 1996, Queensland Rail installed help buttons adjacent to doors in electric trains. By pressing these buttons, passengers may talk to the driver in an emergency. However the buttons are only provided on the inside of trains, and are located out of reach of small children. The buttons' flush surface design is suited to finger operation which is difficult for people with arthritic hands. The committee also questions whether passengers caught in the doors would think to use the buttons and whether they would necessarily be able to reach them in an emergency.

72. Submissions to the inquiry from unions representing railway workers are critical of the door warnings. The Railway Services Union in its submission highlight the lack of coverage of passengers outside trains, and submits that a further warning should be issued over the PA system on station platforms. It also suggests that all train doors should have a decal on the outside to warn passengers not to board the train when doors are closing (submission 33). These decals have since been provided by Queensland Rail. The Public Transport Union (PTU) in its submission also raises the problem of passengers not receiving the warnings (submission 27).

73. The committee questions the effectiveness of the warning announcements given the location of the speakers, and the lack of coverage of passengers at stations. It notes that all door injuries that have been documented by Queensland Rail occurred after the warnings were introduced in September 1994. It also questions whether passengers would come to ignore the warnings after repeated exposure, and notes that there has been no controlled evaluation since they were introduced. The committee also questions the value of the help buttons in alerting the driver of a door closing incident in an emergency. The continuing incidence of door injuries suggests to the committee that additional measures are warranted.

Door Sensors and Traction Interlocks

74. The committee inspected door sensor and traction interlock systems on trains in Melbourne, Sydney, Adelaide and Perth. The sensors trigger the doors to open if they detect an obstruction while closing, like an elevator door. Traction interlocks block power to the trains' drive motors until all doors have fully closed preventing trains from moving with doors open or obstructed.

These safety features are fitted to Citytrain's twelve SMUs and ten IMUs, and were installed during their fabrication. However the 88 three car EMU sets were not supplied with these features.

75. Queensland Rail told the committee that door sensors and traction interlocks are currently being retro-fitted to the EMU fleet with 34 units already fitted at an approximate cost of $35,000 per three car. This work is part of a retrofit program scheduled for completion in September 2000. On this basis, the cost to equip the remaining 54 EMUs is $1.89 million.

CONCLUSIONS

76. The average risk of injury to passengers from closing train doors is extremely low based on the level of recorded injuries and exposure. These incidents, however, may pose greater risk to vulnerable passengers such as small children, older passengers, passengers using strollers and passengers with disabilities. Entrapment in train doors is feared by some elderly passengers.

77. Queensland Rail has introduced warnings for passengers and help buttons in the door vestibules on trains to reduce the likelihood of these incidents occurring. The committee suggests that these measures are not enough, and that door sensors and traction interlocks offer the level of safety that is expected by passengers. The committee suggests that passengers may have grown to expect the level of safety that these systems offer from their exposure to similar features on elevator doors, and behave accordingly. Queensland Rail plans to fit door sensors and traction interlocks to just under half of the Citytrain fleet. The committee recommends that these systems should be progressively fitted to all Citytrain electric rollingstock as a priority.

78. The committee is of the opinion that installing door sensors and traction interlocks will lead to fewer door injuries and the elimination of a hazard that may be discouraging passengers. These benefits will out-weigh their costs based on current estimates. The committee questions the effectiveness of the current warning system to alert passengers inside and outside of trains to door closing hazards, and urges that the system be reviewed with a view to upgrading it.

RECOMMENDATION 1

That the fitment of obstruction detection devices and traction interlocks be adopted as standard for all Citytrain electric rollingstock and retro-fitted to Electric Multiple Units not already equipped as a matter of priority.

MINISTERIAL RESPONSIBILITY

- **Minister for Transport and Main Roads**

RECOMMENDATION 2

That Queensland Rail reviews the safety value of door-closing warning system in alerting passengers inside and outside trains to door closing hazards on Citytrain rollingstock.

MINISTERIAL RESPONSIBILITY

- **Minister for Transport and Main Roads**

PART 4 ~ TRAIN ACCIDENTS

79. Table 8 presents statistics compiled by Queensland Rail for collision and derailment incidents for the Citytrain Group, and annualised train kilometres travelled for the period 1 July 1991 to 30 June 1997.

Table 8: Citytrain train collisions by type, train distances travelled and financial year 1 July 1991 to 30 June 1997*

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97
Train-rain collisions	0	0	0	0	1	0
Derailments	2	1	0	1	1	1
Train-vehicle collisions	7	6	3	3	5	1
Train-person collisions	13	21	16	17	24	15
Trespass (potential train-person collisions)	47	74	98	120	181	246
Buffer stop collisions	0	0	0	1	0	1
Train kilometres travelled	N/A	7,130,486	6,646,456	6,692,735	7,914,724	9,623,431

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for collisions on the Citytrain network prior to July 1995 are based on recorded collisions that involved Queensland Rail's Passenger Division services within the present Citytrain operating area.*

Source: *Queensland Rail 1997 (personal correspondence from V O'Rourke dated 17 November 1997 and G Dawe dated 28 November 1997)*

80. From table 8, there has been one train-train collision and six derailments involving Citytrain rollingstock during the six years examined.

81. A Citytrain EMU collided with a freight train on 25 March 1996 at Bowen Hills. A subsequent board of inquiry into the collision found that it was caused by driver error. The driver of the passenger train failed to stop at a red signal, and the passenger train collided with the freight train as it crossed the track beyond the signal. The collision injured eight passengers and one employee, and caused extensive damage to both trains. The direct cost of the collision was estimated to be $2.72 million (QT, 1996).

82. Of the eight injuries to passengers mentioned in the inquiry report, injuries sustained by two males and three females were recorded by Queensland Rail. All five injured passengers were reportedly sitting at the time of the collision. Injuries to three passengers were described as contusion, laceration and wrist injury from impact with seating. The other two cases were described as *'suffered head injuries'* and *'suffered bruising to her wrist, ribs, hip, leg, head'*. No injury outcomes for these cases were recorded.

Passenger Train Collisions and Derailments in the Brisbane Suburban Area

83. The committee examined the risk of collisions and derailments in the Brisbane Suburban Area. This area is bounded by Ipswich, Caboolture and Beenleigh, and is the largest and most heavily congested region of the network. Table 9 presents a summary of passenger train collisions and derailments in the Brisbane Suburban Area based on incident reports compiled by Queensland Rail's Safety Division. The reasons listed in the table were determined by Queensland Rail.

Table 9: Reported passenger train collisions and derailments in the Brisbane Suburban Area by reason and year 1 July 1991 to 30 June 1997*

MODE	REASONS	91/92	92/93	93/94	94/95	95/96	96/97	TOTAL
Collision	RMV carelessness	7	6	3	3	5	1	25
Collision	Equipment fault	-	-	-	-	-	1	1
Collision	Tree on line	1	-	-	-	-	1	2
Collision	Vandals/outside agent/plant or equipment foul	16	6	10	7	16	-	55
Collision	Livestock	5	9	3	4	13	9	43
Collision	Brakes	-	-	2	-	-	-	2
Collision	Foul of gauge	1	1	-	1	-	-	3
Collision	Pass signal at stop	-	-	-	-	1	-	1
Collision	Other	7	-	4	4	1	-	16
Collision	Swinging doors	-	-	-	2	-	-	2
Collision	Switch collapse	-	-	-	1	-	-	1
Collision	Track centres	1	-	-	-	1	-	2
	Total Collisions	**38**	**22**	**22**	**22**	**37**	**12**	**153**
Derailment	Screwed journal	1	-	-	-	-	-	1
Derailment	Vandals	1	1	-	1	-	1	4
Derailment	Train/track dynamics	-	-	1	-	-	-	1
Derailment	Unlocked facing points open	1	-	-	-	-	-	1
Derailment	Points or crossing irregularity	-	-	-	-	2	-	2
	Total Derailment	**3**	**1**	**1**	**1**	**2**	**1**	**9**
	TOTAL COLLISIONS/DERAILMENTS	**41**	**23**	**23**	**23**	**39**	**13**	**162**

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for collisions on the Citytrain network prior to July 1995 are based on recorded collisions that involved Queensland Rail's Passenger Division services within the present Citytrain operating area. The terms used in the reason column of this table are "in-house" railway terms for which Queensland Rail has no definitions.*

Source: *Queensland Rail Automatic Train Protection Evaluation Report (1997) and Safety Incident Database.*

84. The table shows there were a total of 153 collisions and nine derailments within the Brisbane Suburban Area during the six years examined. Twelve collisions and one derailment were recorded during 1996/97. Compared to the preceding five year average of thirty collisions per year, the number of collisions fell by more than half during 1996/97 — an excellent result.

85. There were twenty-five 'RMV carelessness' collisions during the period. These are train/motor vehicle collisions at level crossings. On average, there were five collisions per year between 1991/92 and 1995/96. Only one train-motor vehicle collision occurred during 1996/97, a significant reduction over previous years.

86. There were fifty-five collisions categorised by Queensland Rail as 'vandals/outside agents/plant or equipment foul' during the six years examined, making this the largest grouping. These collisions made up 36 percent of all recorded collisions. None were recorded during 1996/97. The category with the next highest number of incidents was 'livestock' collisions with forty-three recorded during the six years. From the incident reports, the committee notes that the majority of the livestock involved were, in fact, dogs.

87. Seven percent of collisions and derailments during the period were attributed to operational faults or errors (equipment fault, brakes, pass signal at stop, swinging doors, switch collapse, screwed journals, train/track dynamics, unlocked facing points open, points or crossing irregularity). The 'pass signal at stop' collision was a collision between a passenger train and a freight train at Bowen Hills on 26 March 1996. The driver of the passenger train failed to stop at a red stop signal which, in railways, is known as a 'Signal Passed at Danger (SPAD).' In conclusion, the table shows that significant reductions in the numbers of collisions and derailments were achieved during the 1996/97 financial year.

88. Table 10 provides a breakdown of main-line collision types, their annual rate of occurrence and the estimated proportion of total accident and collision costs for all train groups during the five years from 1991/92 to 1995/96. This data was taken from a risk assessment by Queensland Rail in March 1997 and does not reflect occurrences during 1996/97.

Table 10: Train accidents in the Brisbane Suburban Area by type, number, annual occurrence and proportionate cost for the period 1991/92 to 1995/96*

ACCIDENT TYPE	NUMBER OF OCCURRENCES (5 YEARS)	OCCURRENCES PER YEAR	PROPORTION OF ACCIDENT COST %
Train-Train Collisions**	3	0.6	15.3
Train-Vehicle Collisions	25	5.0	42.3
Train-Obstacle Collisions	104	20.8	16.0
Train-Person Collisions***	106	21.2	14.1
Train Derailment	8	1.6	12.2
Buffer Stop Collisions	1	0.2	0.1

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for the Citytrain network prior to July 1995 are based on statistics for Queensland Rail's Passenger Division services within the present Citytrain operating area.*

***Includes 2 events in 1994 not in Queensland Rail Incident Log. These events in Safety Report by Queensland Transport dated May 31, 1996.*

****Includes 38 suicides*

Source: Queensland Rail 1997 ATP Evaluation Report

89. From table 10, train/vehicle collisions impose the greatest accident costs to Queensland Rail in the Brisbane Suburban Area at 42.3 percent. Train-train collisions accounted for 15.3 percent of total accident costs and had an annual occurrence rate of 0.6. This translates to an average interval between train-train collision of 1.7 years for all train groups in the Brisbane Suburban Area. During the six years examined, only one train-train collision involved Citytrain.

90. The infrequency of train-train collision and derailments makes it difficult to draw conclusions with confidence about trends in their likelihood. The committee also examined trends in SPADs as a secondary indicator of crash risk to Citytrain. These are discussed in the following sections together with issues concerning the Audible Warning System (AWS) which is the driver surveillance system operating in the Brisbane Suburban Area, and the benefits and costs of introducing a system to prevent train-train collisions called Automatic Train Protection (ATP).

FACTORS IMPACTING ON THE RISK OF TRAIN-TRAIN COLLISIONS

Signal Passed at Danger (SPADs)

91. SPADs are precursors to train collisions (QT 1996; 1). A SPAD caused the collision between a Citytrain service and a freight train at Bowen Hills on 26 March 1996. They are of particular concern on the Brisbane suburban network which has no back up or fail-safe system to prevent train-train collisions caused by driver error. Queensland Rail categorises SPADs as: "*completely missed*" where the driver failed to notice or react to the signal; "*driver misjudged*" where the driver saw the signal and reacted to it, but still permitted the train to

pass the signal; or "*restored in face"* where the signal aspect changed to red without allowing sufficient time for the driver to react.

92. SPAD reports compiled by Queensland Rail's Safety Division document the location, driver, train, signal site, date and time for each SPAD, and a brief description of what happened and the suspected causes. The distance travelled past the red signal may also be reported. SPADs are reported to have been caused by: driver errors such as the pre-emption of signals, loss of concentration, personal problems, fatigue, inattention, distractions such as the noise of the train radio in the drivers' cabs, passengers, workers and trespassers on the track; track and signal faults such as loss of power and poor signal locations; environmental conditions such as glare, fog and rain; and defective train brakes. The committee notes that the records of suspected causes of SPADs have not been confirmed.

93. Queensland Transport's inquiry into the 1996 Bowen Hills collision highlighted Queensland Rail's high rates of SPADs, 14.02 SPADs per million train kilometres for 1995 — seven times higher than the '*overall UK rate*' and nearly four times higher than the '*worst UK passenger business*' (QT, 1996;14). The inquiry also noted that Queensland Rail had little data to identify signals which present a high risk of being missed by drivers.

94. Of all Queensland Rail's business groups, Citytrain has the highest rate of SPADs per train kilometre travelled. The safety audit by Queensland Transport found the annual rate of SPADs in the Citytrain area during 1995 to be 14.02 SPADs per million train kilometres. The SPAD rate for Citytrain reduced to 13.66 in 1996, and to 7.83 SPADs per million train kilometres by the end of July 1997 (personal correspondence from D Smith dated 2 October 1997).

95. SPADs categorised as *'completely missed'* are the most serious. These are where the driver completely missed the signal. The numbers of totally missed SPADs for Citytrain during the period examined were as follows: 1992 (12); 1993 (63); 1994 (30); 1995 (18); 1996 (37); and January - July 1997 (11).

96. In 1996, Queensland Rail implemented a strategy to reduce the incidence of SPADs by 20 percent across all business groups within five years. Other objectives of the strategy include the establishment of databases to identify high risk drivers and signals. Queensland Rail reports that Citytrain has reduced its SPADs by 30 percent during 1996/97, and proposes to use the Citytrain strategy as the model for SPAD reduction strategies across all its business groups. Notwithstanding the reductions achieved in 1996/97 the rate of SPADs for Citytrain services, particularly where stop signals are completely missed by drivers, remains high.

97. Because of the way Queensland Rail records SPAD rates, its aggregate rate for all its business groups include SPADs and distances travel by rollingstock that is protected by automatic train protection (ATP). The committee was told that ATP effectively prevents SPADs and collisions from occurring, and is fitted to 89 freight locomotives and the lines from Rockhampton to Townsville and Ipswich to Toowoomba. The inclusion of SPAD rates for trains that are ATP-protected effectively understates the rate per train kilometres for services without ATP for which a SPAD may still occur and cause a collision. For this reason, the committee recommends that SPAD rates be reported only for non-ATP protected services.

98. Citytrain's exceedence in one year of the five year reduction target Queensland Rail set for itself suggests that the reduction target is too small and ineffectual. The committee recommends that separate target SPAD levels be set for each business group rather than an

overall reduction target. These levels should be less than current SPAD levels for trains without ATP.

99. Of greatest concern to the committee are SPADs where drivers completely miss red, stop signals. The committee concludes that, for drivers of trains without ATP protection, the only acceptable target level for these completely missed SPADs is zero, and that this should be the level that Queensland Rail aspires to achieve for all its business groups.

RECOMMENDATION 3

That Queensland Rail reviews its monitoring of Signals Passed at Danger rates per train kilometres travelled and excludes distances travelled by trains that are protected by Automatic Train Protection.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

RECOMMENDATION 4

That Queensland Rail strives to reduce the rates of Signals Passed at Danger, where the signals are completely missed by train drivers, for its business groups to zero as soon as possible.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

RECOMMENDATION 5

That Queensland Rail establishes separate target SPAD levels to be achieved by each business group rather than an aggregate reduction target for all its business groups.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

The Audible Warning System (AWS)

100. Passenger trains operating within the Brisbane Suburban Area are protected by a driver surveillance system called the Audible Warning System (AWS).

101. AWS provides train drivers with audible and visual warnings as trains approach signals. It is configured to provide two types of warnings: one for green (clear signals) and one for restrictive signals that are either yellow (caution signals) or red (stop signals).

102. The driver must acknowledge the warning provided for a restrictive signal within three seconds of its receipt. This is done by pressing a button on trains' control panels. If the approaching signal is green, no acknowledgment by the driver is required. Should a train proceed past a restrictive signal without the driver having first acknowledged the warning, the train's emergency brakes are automatically applied to stop the train. For AWS to operate, both track and rollingstock must be equipped. Citytrain's EMUs, IMUs and SMUs and all main line track in the Brisbane Suburban Area are equipped with AWS. Other trains including freight and coal trains running in the Brisbane Suburban Area are not fitted with the system.

Limitations of AWS as a Safety System

103. The committee notes the inherent limitations of AWS as a safety system. AWS does not prevent trains passing stop signals. Because AWS does not account for the initial speed of the train, there is no guarantee that the train will stop before the next signal. Once the AWS warning of a restrictive signal has been acknowledged by the driver, the automatic braking facility is disengaged and the train can continue past the signal.

104. The AWS system is vulnerable in that it is an advisory system that can be over-ridden by drivers in circumstances of "auto reaction". That is, acknowledgment of the warnings by drivers can become automatic. Trains in the Citytrain area during peak periods commonly run on caution signals. As a result, drivers receive a constant barrage of signal warnings. It is estimated that a train driver would typically have to respond approximately twenty times per trip (QR, 1997). In time, this may undermine the safety value of the system by reducing the readiness of drivers to stop in the event of an unexpected red signal. A warning which is given often, lessens its attention grabbing effect, and thereby reduces the likelihood that the appropriate response is made (QR, 1997).

105. AWS does not prevent train collisions caused by trains that proceed past stop signals or that travel at excessive speed. The ultimate control of trains depends upon the driver being alert, aware of the environment, in total control of the train and observing and complying with signal indications (QT, 1996; 12). Controllers have no direct control over trains and cannot remotely apply their brakes or control their speed. In fact, there is no active enforcement of speed limits on the network. Should train controllers detect that a train has passed a stop signal or suspect that a train is travelling at excessive speed they can, at best, attempt to alert the driver using the train radio.

AWS Faults

106. The tendency of the AWS system to give false warnings to drivers is a further factor impinging on its effectiveness.

107. Table 11 presents information on AWS faults detected by Queensland Rail within the Brisbane Suburban area between July 1991 and June 1997. AWS faults are recorded as either:-

- **Category A**: - Failure: Clear indication when signal aspect restrictive or red;
- **Category B**: - Failure: Nil audio or visual or nil both when signal aspect restrictive or red;
- **Category C**: - Failure: Nil audio or visual or nil both when signal aspect green; or

- **Category D**: - Failure: Audio and visual when signal aspect green (QR, 1997).

108. The committee notes that *Category A* and *Category B* faults pose the greatest inherent danger.

Table 11: AWS faults on the Citytrain Network by failure category and year for the period 1 July 1991 to 30 June 1997*

FINANCIAL YEAR	CATEGORY A	CATEGORY B	CATEGORY C	CATEGORY D	TOTALS
1/7/1991 - 30/6/1992	8	25	42	95	**170**
1/7/1992 - 30/6/1993	6	29	25	110	**170**
1/7/1993 - 30/6/1994	1	10	25	115	**151**
1/7/1994 - 30/6/1995	26	25	31	101	**183**
1/7/1995 - 30/6/1996**	18	73	76	209	**376**
1/7/1996 - 30/6/1997	14	115	131	220	**480**
TOTALS	**73**	**277**	**330**	**850**	**1,530**

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for the Citytrain network prior to July 1995 are based on statistics for Queensland Rail's Passenger Division services within the present Citytrain operating area.*

***Automatic detection of faults was progressively introduced during 1995/96.*

Source: Queensland Rail, 1997

109. Table 11 shows a breakdown of the 1,530 AWS faults recorded within the Brisbane Suburban Area during the six years examined. More than half (850 faults) were *Category D* faults where the system falsely gave drivers a restrictive signal warning when the approaching signal was green.

110. Five percent (73) of the recorded faults during the six years were *Category A* faults where the system gave drivers a clear signal warning when the approaching signal was restrictive (yellow or red). The number of faults in this category decreased during 1996/97. However, the extent that the AWS system continues to give drivers incorrect warnings was found by the committee to be unacceptable.

111. The committee is concerned about AWS faults undermining confidence in the system. It was told by the PTU that drivers will always express a lack of faith in the AWS system while it remains in its present state (submission no 27). The PTU suggests other surveillance systems could be installed to automatically stop trains before they pass a red, stop signal and to regulate their speeds around curves. Alternatively, the PTU proposed that the AWS system be modified to provide a different audible alarm for the various signal aspects, and for controllers to use train radio more effectively to advise drivers of crossings at junctions or stations on single track sections (submission 27). The committee understands that Queensland Rail has considered reconfiguring the AWS system to provide warnings only for restrictive signals. This, however, would not prevent trains passing red signals.

112. In many parts of the world, and selectively within Queensland Rail, additional, automatic train protection is provided which over-rides the driver's actions and brings the train to a halt where signals are passed at danger (QT, 1996; 12). The following section discusses Queensland Rail's evaluation of the case for providing automatic train protection (ATP) for the Citytrain network.

The Case for Automatic Train Protection (ATP)

113. Following the collision at Bowen Hills in March 1996, Queensland Rail evaluated options to reduce the risk of driver error collisions. In particular, Queensland Rail's evaluation considered the case for installing ATP.

114. The Bowen Hills collision resulted in injury to eight passengers and one employee and extensive damage to both trains. The direct cost of the collision was estimated to be $2.72 million (QT, 1996;). A subsequent board of inquiry into the collision concluded that it was caused by the failure of the driver of the passenger train to stop at a red signal, and could have been prevented if a form of ATP was in use (QT, 1996;1). A previous study commissioned by Queensland Rail in 1993 calculated that, under the current AWS system, a train collision would occur every five years, and that this was unacceptable from a societal viewpoint (TMG, 1993).

115. Queensland Rail's evaluation confirmed that, of the options considered, ATP offered the greatest safety benefit. Apart from reducing accidents, the benefits of ATP, discussed in the evaluation report, might also include: reductions in headways; less wear and tear of infrastructure; improved train handling (eg more cautious speed and brake application); a safer work environment for drivers and track infrastructure personnel; and improved government/Queensland Rail image (QR, 1997; Appendix D page 4). The evaluation reported, however, that the system could not be justified because of its cost.

116. In the evaluation report, the cost to equip Citytrain rollingstock and infrastructure in the Brisbane Suburban Area is estimated by Queensland Rail to be $39 million, though no working was provided to show how this figure was arrived at. The committee understands that it is an estimate of the cost to fit track in the Brisbane Suburban Area and Citytrain rollingstock with the Westech ATP system, developed by Queensland Rail in conjunction with Westinghouse Brake and Signal Company (Australia) Limited. Freight locomotives are already fitted with ATP for use outside the Brisbane Suburban Area.

117. The evaluation reconciled the $39 million cost of ATP against estimated savings in infrastructure damage and the injury costs that the system would likely prevent over a twenty year period, estimated to be 5.4 equivalent lives (1 fatality = 10 serious injuries = 200 minor injuries). This estimate was based on the levels of injury caused by past collisions. To date, Queensland Rail has been fortunate in that train-train collisions involving Citytrain have resulted in few injuries. In the most recent collision at Bowen Hills in March 1996, one employee and eight passengers were reported to have been injured (QT, 1996. No passengers were riding in the leading car of the passenger train at the time of the collision. The short time period (five years) used to gauge collision frequencies also creates uncertainty.

118. Factors which may increase the economic viability of installing ATP include: increases in rail traffic, patronage of Citytrain services, train-train collisions; SPADs and AWS faults; the

adoption of higher social cost and willingness to pay values for lives saved; and the emergence of technologies to provide ATP protection at reduced cost.

119. The evaluation was limited to the single option of installing ATP or other systems within the entire Brisbane Suburban Area, and excluded services on the inter-urban network past Ipswich, Beenleigh and Caboolture. The partial installation of ATP to areas or lines within the network has not been considered.

120. Whilst other train services operate within the Citytrain area, these were excluded from the cost benefit evaluation other than in the hazards these services impact on Citytrain (QR, 1997; Appendix D page 4). The evaluation has not accounted for the value of benefits to other train services that would be gained from ATP.

121. The evaluation makes provisions for increased rail traffic on the network as a result of the purchase of additional Citytrain rollingstock, however, it does not appear to have accounted for other increases in rail traffic. Additional rail traffic in the Brisbane Suburban Area is likely following the commissioning of the dual gauge rail line to the Port of Brisbane and the quadruplication of the inner-city lines. Increasing the frequency of passenger services could have a further significant impact on rail traffic and collision risks.

122. Queensland Rail's evaluation concluded that a value of life of $7.2 million would be required for the safety investment in ATP to break even. A social cost value of life of $712,000 and a willingness to pay value of life of $2 million were used in the study to assess the economic value of injuries that ATP would prevent. $712,000 is the value used by Queensland Transport for evaluating road infrastructure investment (QR, 1997). The human capital approach based on social costs undervalues life since it takes no account of the value of life to the victims over and above the value of their lost earnings. To avoid death or sickness, most people would be willing to pay more than simply their lost future earnings. The basis for assuming a willingness to pay value of life of $2 million is not stated in the evaluation report.

123. Notwithstanding the limitations of the human capital approach to valuing life, the value used may be low. The evaluation report noted that the value of life used in the United Kingdom for rail transport is equivalent to A$4.6 million. This was approximately three times the value of life used for road transport in the United Kingdom and more than six times the value used by Queensland Transport (QR, 1997; 2).

124. Finally, the evaluation did not consider the secondary effects of a collision. A collision could impact on patronage, revenue and other transport accidents by discouraging passengers from using the Citytrain network in favour of buses and private cars. A catastrophic collision may have other impacts on Queensland Rail These costs may be significant, yet were not considered in the evaluation.

Conclusions

125. Queensland Rail, and Citytrain, in particular, has experienced high rates of SPADs. SPADs are precursors to train-train collisions.

126. In the Brisbane Suburban Area, the AWS driver surveillance provides a signal warning system to assist drivers. As a safety system, however, AWS has fundamental limitations, and does not prevent trains proceeding past stop signals. The committee also notes that AWS is further weakened by its tendency to give drivers faulty warnings, and does not have the confidence of those who use it.

127. Of the alternatives to AWS considered by Queensland Rail, ATP was found to offer the greatest safety benefit and would significantly ameliorate the train-train collision risk in the Brisbane Suburban Area. Queensland Rail's evaluation of the system, however, found that its benefits did not justify its costs. The committee has identified a number of issues with the evaluation that may substantially influence the outcome. It recommends, therefore, that a further independent evaluation of ATP be undertaken, and that this be in consultation with the committee.

RECOMMENDATION 6

That Queensland Rail, in consultation with the Travelsafe Committee, engages an independent consultant, with expertise in cost benefit analysis of railway safety investments, to evaluate the benefits and costs of installing Automatic Train Protection systems within the Citytrain area.

MINISTERIAL RESPONSIBILITY

- **Minister for Transport and Main Roads**

COLLISIONS AT RAILWAY LEVEL CROSSINGS

128. Level crossing accidents are thought to expose Queensland Rail to the greatest accident costs within the Brisbane Suburban Area.

129. A risk assessment by Queensland Rail suggests that train-vehicle collisions at level crossings account for 42 percent of its accident costs (QR, 1997). There are 114 railway level crossings throughout the Citytrain operating area. Of these, sixty-six carry motor vehicle and pedestrian traffic, and 14 are pedestrian only crossings.

130. Level crossings pose dramatically higher risks of serious injury and fatality to road users compared to other road intersections. Trucks and pedestrians are particularly over represented in level crossing fatalities.

131. Queensland Transport examined the safety of the state's railway and sugar tramway level crossings in 1996. It found that there were 187 level crossing accidents in Queensland in the five years from 1991 to 1995. These accidents resulted in 24 fatalities, 44 cases of hospitalisation, 43 cases requiring medical attention, seven minor injuries and 69 cases of property damage only (QT, 1996; 2). Railway level crossings accounted for 73 percent of level crossing accidents in Queensland with the remainder of accidents occurring at sugar tramway crossings. Queensland Transport also found that the rate of road user fatalities in level crossings accidents is 12.2 times higher than for other road intersection accidents, and the rate of hospitalisation for accident victims is also significantly higher.

132. The average social costs of level crossing crashes ($127,369) is reported in the study to be three and a half times higher than the average cost for all road intersection crashes ($37,329) during the five years (1991 to 1995). In addition, the ratio of heavy road vehicles to other vehicles involved in level crossing accidents (7.3:3.5) is more than twice the involvement ratio for all intersection accidents (QT, 1996; 4).

133. Pedestrian involvement in level crossing accidents was found to be 53 percent higher than for other intersection types (QT, 1996). Flashing warning lights and boom gates designed to protect road vehicles at level crossings, provide no barrier to entry by pedestrians while trains are at the crossing. Queensland Rail has installed pedestrian crossing mazes at fourteen level crossings. These provide a barrier to entry to the track by pedestrians when it is not safe to cross. Their cost reported by Leschinski *et al* as $145,000, however, prevents their widespread implementation in the short term (Leschinski *et al*, 1997).

134. Queensland Rail recorded 26 train-motor vehicle collisions in the Brisbane Suburban Area during the six years from 1 July 1991 to 30 June 1997. Table 12 shows a breakdown of the collisions during the past six financial years. These collisions are recorded as "RMV carelessness" by Queensland Rail given that trains have right of way.

Table 12: Citytrain train/vehicle collisions at level crossings in the Brisbane Suburban Area by financial year 1 July 1991 to 30 June 1997*

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	TOTAL
Collisions	7	6	3	3	5	1	26

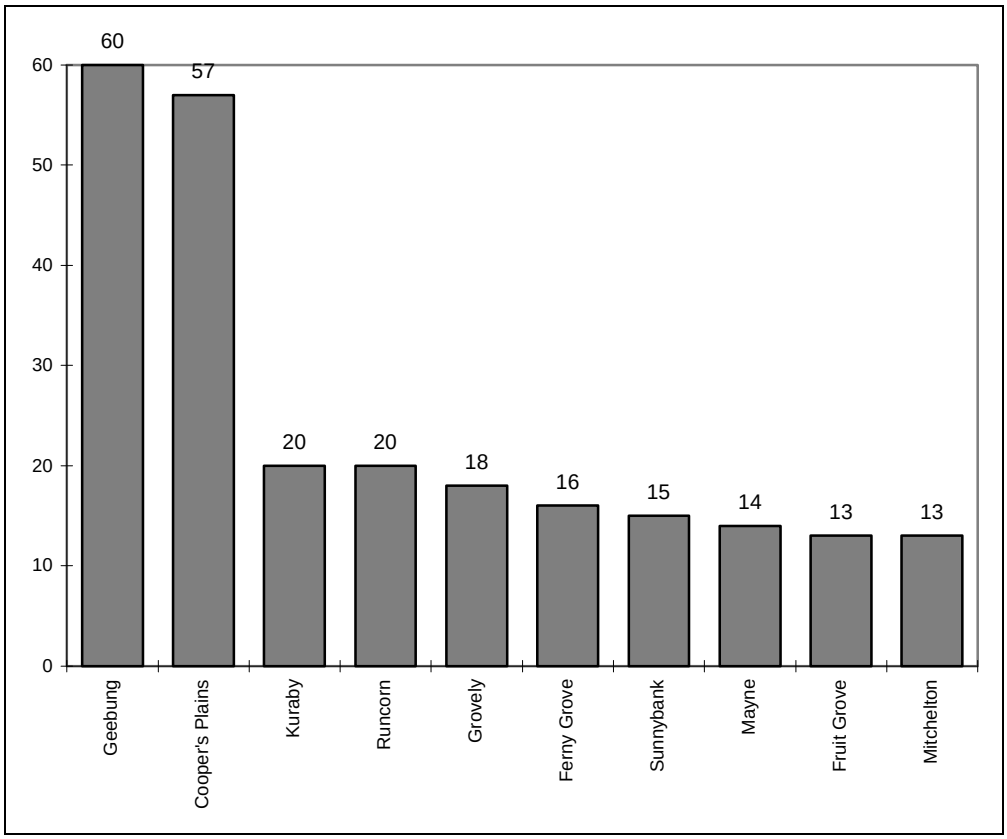
Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for the Citytrain network prior to July 1995 are based on statistics for Queensland Rail's Passenger Division services within the present Citytrain operating area.*

Source: *(personal correspondence from V O'Rourke dated 17 November 1997)*

Incidents Involving Motor Vehicles at Level Crossings Recorded by Queensland Rail

135. In addition to level crossing collisions, Queensland Rail staff record potential collisions where motor vehicles enter protected crossings after flashing lights and boom gates have activated in response to approaching trains. There were 506 of these incidents at crossings in the Brisbane Suburban Area over the same period. Figure 1 shows the ten protected crossings in the Brisbane Suburban Area that experienced the highest numbers of potential collisions. Between them, they recorded 246 incidents during the period. The remaining 260 incidents were spread across the other 177 crossings during the period.

Figure 1: Railway Level Crossings in the Brisbane Suburban Area recording the highest incidence of collisions and potential collisions between trains and motor vehicles for the period 1 July 1991 to 30 June 1997*



Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for the Citytrain network prior to July 1995 are based on statistics for Queensland Rail's Passenger Division services within the present Citytrain operating area.*

Source: *Queensland Rail Safety Incident Data Base*

136. The frequency of these incidents, despite the presence of warning lights and boom gates designed to separate train and road traffic and prevent collisions, concerns the committee.

137. The reports filed by Queensland Rail staff for these incidents suggest that "errant" drivers of road vehicles, particularly drivers of heavy vehicles who fail to give way to trains, are the principal cause of these incidents. Common scenarios described in the incident reports are vehicles driven onto crossings after warning lights have been activated and boom gates are closing, and vehicles driven around or through closed boom gates. These incidents place occupants of road vehicles and trains at risk, and cause substantial damage to crossing protection equipment.

138. The committee concludes that the safety at railway level crossings needs to be improved. Given that there is a spread of accidents at crossing, and the numbers of crossings, the committee concludes that countermeasures are needed that provide wide coverage and effectiveness at minimal cost if they are to be effective and viable.

Measures to Improve Level Crossing Safety

139. Queensland Transport has convened a Level Crossing Steering Group to examine methods of improving safety at level crossings. The group consists of representatives from Queensland Transport, the Department of Main Roads, Queensland Rail, the Local Government Association of Queensland and local authorities. Research for the group by Queensland Transport indicates that very little work has been done throughout the world on evaluating the effectiveness of different forms of level crossing protection (QT, 1997).

140. To date, there has been a reliance on engineering solutions. A report by Ogden *et al.*, contains the following table of engineering countermeasures and their likely accident reduction potential.

Table 13: Countermeasures at railway level crossings

TREATMENT	ACCIDENTS AFFECTED	REDUCTION (%)
Overpass or underpass	hit train hit crossing furniture	100 40 - 60
Barriers, gates	hit train hit crossing furniture	70 - 90 (-10) - (-40)
Flashing lights	hit train hit crossing furniture	50 - 80 (-10) - (-40)
Improve horizontal alignment	hit train hit crossing furniture	30 - 40 30 - 40
Improve vertical alignment	hit train hit crossing furniture	40 - 50 30 - 40
Improve horizontal and vertical alignment	hit train hit crossing furniture	50 - 70 60 - 80
Improve delineation	hit train hit crossing furniture	20 - 30 20 - 30
Lighting	hit train hit crossing furniture	10 - 20 20 - 30
Warning signs	hit train hit crossing furniture	10 - 20 10 - 20

Source: (Ogden et al. 1973)

141. From table 13, the construction of an underpass or overpass to achieve grade separation offers a potential 100 percent reduction in crashes. A New South Wales study confirms this, though, notes that the significant costs (up to $2 million per crossing with associated road works) severely limits the number of crossings that are able to be treated (LCSC[1], 1994). The construction of underpasses and overpasses is also disruptive to road and train traffic and the local community.

[1] LCSC = Level Crossing Steering Committee (NSW)

142. The next most effective engineering measures are: barriers and gates, providing a 70-90 percent reduction in accidents; flashing lights, providing a 50-80 percent reduction; and improved vertical and horizontal alignment, providing 50-70 and 60-80 percent reductions respectively. Ogden *et al*. conclude that grade separations may not be the answer when automatic protection (such as barriers and warning lights) provides a 90 percent reduction in accidents, and that grade separation would, therefore, usually be justified on the grounds of road capacity and delay, rather than safety (Ogden *et al*., 1973).

143. Research for the Level Crossing steering Group also examines work on the benefits of installing conventional traffic signals in lieu of red flashing lights (RSARC[2], 1994) (Cairney *et al*, 1991). Cairney *et al* report that the use of traffic signal equipment seems to offer considerable cost savings, improved optical performance, the option of a continuous green signal to indicate safe passage, a yellow period to give advance warning of the onset of the red signal, and a clear difference between an inactivated signal and a non-functioning one (Cairney *et al*, 1991).

144. Other work highlights the need to address road user behaviour. The Road Traffic Authority of New South Wales (RTA) report that the minimisation of road user error at railway level crossings revolves around influencing expectations concerning appropriate behaviour (RTA, 1994). While education and awareness campaigns are used on a large scale generally in terms of enhancing road safety, there have only been ad-hoc campaigns in relation to railway level crossings (RTA, 1994). Investment in public education to improve level crossing safety is also advocated in other work (Westrail, 1995) (USDOT, 1994).

145. In conclusion, Queensland Transport's research for the Level Crossing Steering Group found that protection needs to be selected for individual crossings on the basis of costs, benefit and risk. Public education supported by enforcement, and the use of standard road traffic lights to improve level crossing safety warrant further investigation. The research also cited the benefits of linking education with enforcement, based on experience in road safety.

Road Traffic Legislation and Enforcement at Railway Level Crossings in Queensland

146. Under section 143(1) of the *Transport Infrastructure Act 1994*, trains (railway operator's rollingstock and railway manager's vehicles) have right of way over road vehicles at level crossings. Section 48 of the *Traffic Regulations 1962* prescribes offences for drivers of road vehicles who fail to obey warnings at crossings or enter crossings when the protection is activated.

147. The penalties for driving offences at level crossings in Queensland are low compared to red light offences at other road intersections ($130 fine and 3 demerit points). Section 48 of the *Traffic Regulations 1962* prescribes laws applicable to road users at railway level crossings. Table 14 lists the offences prescribed in section 48 and the penalties that apply.

[2] RSARC = Railway Safety Act Review Committee 1994 (Canada)

Table 14: Level crossing offence provisions and penalties under the *Traffic Regulations 1962*

PROVISIONS	MAGISTRATE IMPOSED FINES	DEMERIT POINTS	FINES FOR SETONS*
48(1)(a) *if a driver is directed or instructed to stop by a railway employee and shall not proceed except in accordance with the railway employee's direction.*	Max $1,200	-	$40
48(1)(c) *if a stop sign facing the driver is erected at or near the level crossing and shall proceed only when it is safe to do so.*	Max $1,200	3 points	$40
48(1)(d) *if twin alternating red lights are flashing or a wigwag signal is moving or a warning bell is ringing at or near the level crossing and shall not proceed until the lights, signals or bell have creased to flash, move or ring unless otherwise directed or instructed by a railway employee.*	Max $1,200	3 points	$40
48(2) *A person shall not drive a vehicle through, around or under any gate, boom or barrier at a railway level crossing or enter upon the crossing while such gate, boom or barrier is closed or is being opened or closed to road traffic.*	Max $1,200	-	$40
48(3) *A driver of a vehicle shall not enter upon or attempt to cross a level crossing if the carriageway beyond such level crossing is blocked by vehicles*.	Max $1,200	-	$40
48(4) *If a give way sign is at or near a railway level crossing, the driver of a vehicle must give way to a train approaching the crossing.*	Max $1,200	-	$40

Note: ** SETONS = Self Enforceable Traffic Offence Notice*

Source: *Derived from the Traffic Regulations 1962*

148. Under the *Traffic Regulations 1962*, the maximum fine magistrates may award for all section 48 offences is $1,200 (20 penalty units). However, where police issue a Self Enforceable Traffic Offence Notice (SETON), a flat fine of $40 applies.

149. In addition to the financial penalty, drivers who commit section 48(1)(c), 48(1)(d), or 48(4) offences attract three licence demerit points — arguably a more effective deterrent than a $40 fine. However, no demerits points penalties currently apply to contraventions of section 48(2) (driving a vehicle through, around or under any gate, boom or barrier), or 48(3) (driving a vehicle onto a crossing where the carriageway across the crossing is blocked by vehicles). Irrespective of the level of penalty prescribed, all section 48 contraventions are potential train/vehicle collisions and compromise road and rail safety.

Offences Detected by the Queensland Police Service

150. Table 15 presents information available from Queensland Transport for level crossing offences detected by police.

Table 15: Offences under Section 48 of the *Traffic Regulation 1962* and contraventions detected by the Queensland Police Service by year for the period 1 July 1990 to 28 February 1996

CODE	DESCRIPTION	SECTION	90/91	91/92	92/93	93/94	+94/95	JUL 95/ FEB 96
142	Disobey rail crossing sign/signal	R.48(1)	148	79	123	133	1	0
494	Fail stop level crossing-emp*	48(1)(A)					0	0
495	Fail stop level crossing-col **	48(1)(B)					8	2
496	Disobey stop sign - rail	48(1)(C)					120	58
497	Disobey red lights - railway	48(1)(D)					33	13
498	Drive around/under rail boom	48(2)					2	3
499	Enter blocked level crossing	48(3)					0	1
500	Fail give way train/give way sign	48(4)					0	3
944	Fail stop railway crossing cycle	48					-	2
	TOTALS		**148**	**79**	**123**	**133**	**164**	**82**

Note: *+ Section 48(1) of the Traffic Regulations 1962 was amended in 1994 to establish the current range of offences applicable to level crossings. Prior to this amendment, all offences were recorded as section 48(1).*

emp - failure to stop on approach to a railway level crossing when directed by a railway employee.*

*col** - failure to stop on approach to a railway level crossings on approach of train when danger of collision.*

Source: Queensland Transport 1997

151. The table shows that relatively few contraventions of section 48 provisions have been recorded in Queensland. The committee understands that a significant proportion of these contraventions is also likely to have been detected by police while attending road accidents at level crossings.

152. Traffic enforcement methods that maximise coverage, visibility and impact, at the lowest cost, are required given the number and geographic spread of crossings.

Camera-Based Enforcement

153. The use of red light cameras to police motorists' compliance with traffic signalling at other signalised road intersections has proven to be effective. Queensland Rail's Automatic Train Protection Evaluation report also raised it as an option (QR, 1997).

154. Camera-based enforcement is being trialed at protected level crossings in the United States to improve safety and reduce collisions. This is in lieu of closing crossings or building grade separations, both of which are expensive and disruptive. At least two US cities (Jonesboro, Arkansas and Los Angeles, California have implemented automated enforcement systems at level crossings, and further systems are planned for Ames (Iowa) and Miami (Okalahoma) (Bartoskewitz *et al*, 1997). The Los Angeles project began with three camera-protected crossings, and has expanded to twenty crossings based on the success of the initial sites. The committee understands that preliminary evaluations of the program at these sites shows a 92 percent reduction in grade crossing violations, and a 70 percent reduction in accidents along high speed areas.

CONCLUSIONS

155. Level crossings are grossly over-represented in intersection accidents resulting in fatalities and significant injuries. The most effective engineering countermeasures, such as grade separation (underpass or overpass), barriers and gates are expensive and limit the number of crossings that are able to be upgraded. Experience in the Brisbane Suburban Area suggests level crossings fitted with boom gates and flashing warning lights continue to experience potential collision incidents which place the occupants of rail and road vehicles at risk. Compliance by road users with existing section 48 provisions of the *Traffic Regulations 1962* would prevent most train-vehicle collisions at level crossings.

156. The education of road users to improve their behaviour at level crossings is advocated in other work, and experience in road transport suggests that linked public education and enforcement is the most effective strategy to influence road user behaviour.

157. Traffic offences at railway level crossings attract comparatively low penalties where a SETON is issued by police. There are also inconsistencies in that some offences at crossings attract demerits points penalties while others posing a similar safety risk attract none. Heavy vehicles account for the majority of vehicles that cause damage to crossing boom gates and signals by failing to obey warning lights. Penalties for contraventions of section 48 of the *Traffic Regulations 1962* should be substantially increased to better reflect the seriousness of the hazards to road and rail users at level crossings. The penalties associated with red light infringements at other road intersections would be a logical equivalent. In relation to section 48(2) and (3) contraventions, the committee recommends the introduction of additional penalties of three demerits points, as levied for other section 48 contraventions.

158. Camera-based enforcement of road laws at level crossings is being used in cities in the United States to prevent train-vehicle collisions and improve safety. The committee is encouraged by the results of preliminary evaluations of these programs and concludes that there are reasonable grounds to trial camera-based enforcement at high risk crossings in the Brisbane Suburban Area. The use of camera-based enforcement in conjunction with flashing lights and boom gates has the potential to provide similar protection to that offered by grade separation, yet at a fraction of the cost.

159. Police should be deployed randomly at crossings on a random basis at high risk times. The Queensland Transport Random Roadwatch Program is already being used to deploy police traffic patrols across the road network to maximise general deterrence, and the committee suggests that level crossings should be included in their roadwatch itineraries.

RECOMMENDATION 7

That Queensland Transport conducts an education campaign to increase public awareness of the risks of train collisions with road vehicles and pedestrians at railway level crossings and of the offences under the Traffic Regulations 1962.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

RECOMMENDATION 8

That the Queensland Police Service, in conjunction with the Queensland Transport education program, randomly and systematically deploys police at railway level crossings according to risk to enforce the Traffic Regulations 1962 as part of the Random Roadwatch Program.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**
- **Minister for Police and Corrective Services and Minister for Racing**

RECOMMENDATION 9

That Queensland Transport and the Queensland Police Service trial camera-based enforcement of section 48 offences under the Traffic Regulations 1962 at level crossings in the Brisbane Suburban Area equipped with flashing lights and boom gates and which experience frequent potential train-motor vehicle collisions.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**
- **Minister for Police and Corrective Services and Minister for Racing**

RECOMMENDATION 10

That fines and demerit points penalties for contraventions of Section 48 of the Traffic Regulation 1962 be increased to a level commensurate with penalties imposed for red light offences at other signalised road intersections.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**
- **Minister for Police and Corrective Services and Minister for Racing**

Responsibility for Level Crossing Safety

160. As part of its charter, Queensland Transport's Level Crossing Steering Group is examining measures to coordinate the activities of agencies involved in improving level crossing safety. Responsibility for safety, construction, operation and maintenance of level crossings in

Queensland is shared by Queensland Rail, Queensland Transport, the Department of Main Roads and local authorities. These responsibilities also involve significant financial obligations.

161. The *Transport Infrastructure Act 1994* defines responsibilities of the railway manager (Queensland Rail) and other bodies for maintaining roads crossing railways (section 140) and new road works across, under or above railways (section 142). These sections are reproduced at Appendix D. Section 140(1) requires that the railway manager (Queensland Rail) must maintain the segment of road at crossings, and the road under a rail overpass that is constructed in lieu of a level crossing where it was previously responsible. Section 142 makes road authorities (the Department of Main Roads and local governments) responsible for the maintenance of any level crossings they construct, and absolves the railway manager (Queensland Rail) from duty or liability for these roads, their use or operation. Responsibility for the provision of crossing protection is not specifically mentioned though it follows that it is apportioned with responsibility for crossing operation and maintenance.

162. Signage at level crossings is addressed in the *Traffic Act 1949*. Under sections 12B and 12BA, official traffic signs may only be installed with the authority of the Director-General (Department of Main Roads) or a local government in accordance with the methods, standards and procedures prescribed in the Manual of Uniform Traffic Control Devices (MUTCD) (QT, 1995). Part 7 of the MUTCD is dedicated to railway crossings and provides explicit instructions on the correct location of signage, road markings and crossing protection equipment.

163. The level crossing responsibilities established in the *Transport Infrastructure Act 1994* reflect Queensland Rail's transition from a government department to a government-owned corporation in July 1995. For 130 years prior to this, Queensland Rail managed level crossings and paid for upgrades (transcript page 97). The committee is concerned that the fragmentation of responsibilities since 1995 may hamper the systematic improvement of their safety based on relative risk. The various players now involved have vastly different interests, priorities and levels of resources available to them. It is possible, for example, that high risk crossings are located within the jurisdictions of small local authorities which have limited resources to provide protection upgrades to ensure a reasonable level of safety.

164. To date, there has been no comprehensive audit of level crossing safety in Queensland. This would involve the linkage of information on the level of protection, and the key hazard factors such as road vehicle speeds (types of traffic) and traffic levels, train speeds and traffic levels, alignments and general condition of the road surfaces and proximity to pedestrian generators such as schools and shops to gauge risk levels. This information is compiled by various stakeholders. The committee urges that it be pooled.

Conclusions

165. Level crossings are critical road intersections which provide essential amenity to road users and rail travellers. The government has no strategies in place to determine risks at crossings and therefore to address level crossing safety in a planned and systematic way. A system to fund level crossings across the state according to risk is required. This will also require a comprehensive audit to determine the current risks at individual sites. This demands a cooperative effort by Queensland Transport, Queensland Rail, the Department of Main Roads

and local authorities. The committee concludes that a state-wide level crossing safety strategy is required. Criteria for gauging risks and prioritising sites for protection upgrades is needed to guide future investments in level crossing protection to maximise safety dividends.

RECOMMENDATION 11

That Queensland Transport undertakes a comprehensive safety audit of railway level crossings in Queensland. This audit should compile information about their road vehicle and train speed limits; types and volumes of road vehicle and train traffic carried; road and environment conditions; types of protection installed; accident history; alignments; and other risk factors.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

RECOMMENDATION 12

That Queensland Transport devises a methodology to quantify risks at railway level crossings and allocate priority for investment in safety upgrades.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

RECOMMENDATION 13

That Queensland Transport devises a state-wide strategy for railway level crossing safety upgrades.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

TRAIN COLLISIONS WITH TRACK OBSTRUCTIONS

166. The incident reports filed by Queensland Rail staff describe a plethora of debris and materials placed maliciously by vandals in the path of trains, including Citytrain passenger trains. In recent years, this has included quantities of rocks (ballast), bullets, bicycles, shopping trolleys, rail sleepers, rail maintenance trolleys, steel dog spikes, lengths of rail track, concrete troughing covers and a steel barricade. These incidents are recorded by Queensland Rail as vandalism.

167. There were 683 potential train-obstruction collisions recorded by Queensland Rail for the Citytrain group between 1991/92 and 1996/97. Tables 16 provides a yearly breakdown of these incidents.

Table 16: Potential train-obstruction collisions (vandalism) on the Citytrain Network by financial year for the period 1 July 1991 to 30 June 1997*

1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	TOTALS
64	102	128	120	102	167	683

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for the Citytrain network prior to July 1995 are based on statistics for Queensland Rail's Passenger Division services within the present Citytrain operating area.*

Source: *Personal correspondence from V O'Rourke dated 17 November 1997.*

168. From the table, there has been a dramatic increase in potential train-obstruction collisions over the six years examined. The total for 1996/97 of 167 potential obstruction collisions is 62 percent above the previous five year average of 103. Table 17 provides yearly totals for the train-obstruction collisions for the Citytrain Group that did occur, and were recorded by Queensland Rail.

Table 17: Train-obstruction collisions on the Citytrain Network by financial year for the period 1 July 1991 to 30 June 1997*

1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	TOTALS
15	14	11	8	16	1	65

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for collisions on the Citytrain network prior to July 1995 are based on recorded collisions that involved Queensland Rail's Passenger Division services within the present Citytrain operating area.*

Source: *Queensland Rail (personal correspondence from V O'Rourke dated 17 November 1997)*

169. A total of sixty-five train-obstruction collisions were recorded during the six years, with only one recorded collision during 1996/97. This was an excellent result given the previous five year average of 13 collisions. The number of actual train-obstruction collisions declined dramatically over the period in contrast to the increasing number of potential collisions. Evidently, the majority of potential train-obstruction collisions are averted. The committee examined records of 562 potential and actual train-obstruction collisions that occurred in the Brisbane Suburban Area. From table 9, there were four train derailments during the same period caused by vandals. From the incident reports, the committee notes that railway materials figure prominently in track obstructions. These include troughing covers, railway sleepers, dog spikes, brake blocks and maintenance equipment. It follows that removing or securing these materials within the railway corridor would reduce opportunities for vandals to obstruct the railway.

170. The committee examined train-obstruction collisions where visible damage to rollingstock was recorded. These are described in table 18.

Table 18: Train-obstruction collisions resulting in visible damage to rollingstock for the Citytrain group in the Brisbane Suburban Area by cause and financial year 1 July 1991 to 30 June 1997*

DATE	TRACK OBSTRUCTION	VISIBLE DAMAGE TO TRAIN REPORTED
1993/1994		
3 June 1993	Bicycle	Air pipe
2 July 1993	Rocks and concrete	Collapsed air bag
17 December 1993	Steel barricade	Substantial damage to two units (not specified)
27 December 1993	Shopping trolley	Brake pipe on unit broken
18 January 1994	Concrete troughing covers	Damage to auto power cut-off on pantograph
28 January 1994	Pile of sleepers	Damage to AWS driver surveillance system
12 February 1994	Star picket driven into track footing	Lodged 125 mm in carriage false floor
6 March 1994	Bricks	Loss of power to unit
31 March 1994	Sleepers	Damage to AWS driver surveillance system
4 April 1994	Shopping trolley	Damage to main reservoir pipe on unit
29 April 1994	Shopping trolley	Damage to air line
8 May 1994	Piece of metal approximately 500 mm long	Damage to air line
1994/1995		
11 September 1994	Light post (removed by vandals)	Damage to air scoop
13 November 1994	Shopping trolley	Damage to air pipe
7 December 1994	Shopping trolley	Emergency reservoir pipe broken
16 December 1994	Shopping trolley	Steps broken off and brake pipe damaged
14 March 1995	Shopping trolley	Loss of power
29 May 1995	Sleepers	Sleepers wedged under train, driver unable to remove
1 June 1995	Truck tyre	Damage to wiring
1995/1996		
11 August 1995	Shopping trolley	Trolley wedged under train
9 November 1995	Sleepers	Sand pipe broken and leaky fuel gauge
12 November 1995	Shopping trolley	Damage to AWS driver surveillance system and traction-motor cover
9 March 1996	Shopping trolley	Emergency cock brake-pipe hose broken
1996/1997		
12 February 1997	Shopping trolley	Damage to AWS driver surveillance system
27 March 1997	Bicycle	Damage to lights
6 April 1997	Shopping trolley	Damage to air box cover
7 April 1997	Block of concrete	Flashing brake fault and air blow
2 May 1997	Shopping trolley	Hose bag torn off
23 June 1997	Bicycle	Reactor hose split

Note: **The Citytrain business group was established in July 1995 out of what was Queensland Rail's Passenger Division. The statistics shown for collisions on the Citytrain network prior to July 1995 are based on recorded collisions that involved Queensland Rail's Passenger Division services within the present Citytrain operating area*

.

Source: Taken from Queensland Rail incident reports

171. From the table, twenty-nine train-obstruction collisions over the six years resulted in visible damage to rollingstock. Shopping trolleys were involved in thirteen of these collisions and were the most commonly reported obstructions. These incidents highlight the vulnerability of key systems on Citytrain rollingstock, such as traction motors, the AWS driver surveillance system and brakes, to damage from these collisions.

172. The security of the rail corridor and its exposure to vandalism in the Brisbane Suburban Area is a problem for Queensland Rail. Under the *Criminal Code*, it is a crime to intentionally endanger the safety of persons travelling by railways (section 319) or to obstruct and injure the railways with intent to obstruct the use of a railway, or to injure any property on a railway (section 467). Under the Code, persons found guilty of these crimes are liable to life imprisonment with hard labour. In reality, however, the committee understands that the likelihood of offenders being apprehended by police, with the current level of resources, and prosecuted is remote. Arguably, the vastness of the network (372 route kilometres) precludes effective pro-active policing. Issues concerning the policing of the network are discussed in a separate report from this inquiry.

173. In addition to policing, the committee considers that other countermeasures should be examined. In particular, the committee suggests that engineering solutions to make trains less susceptible to the effects of track obstructions and the risk of derailment should be considered. In the past, trains were fitted with "cow catchers" to clear large animals/objects out of the path of trains. SMUs, IMUs and ICEs were supplied with rigid steel skirts that protect the wheels and undercarriage equipment. These skirts extend to within approximately 50 mm of the rails, and provide a measure of protection from damage caused by collisions with obstructions at track level. EMUs have no such protection.

174. The committee recommends that Queensland Rail explores the feasibility of equipping Citytrain EMUs with protective guarding that is designed to clear obstructions from the rails, reduce the risk of track-level damage caused by collisions with obstructions and reduce the likelihood of derailments.

RECOMMENDATION 14

That Queensland Rail, where feasible, removes or secures loose railway materials within the rail corridor that are capable of causing a train derailment.

MINISTERIAL RESPONSIBILITY

- **Minister for Transport and Main Roads**

RECOMMENDATION 15

That Queensland Rail evaluates the benefit of fitting protective guarding to Citytrain Electric Multiple Units to clear track obstructions from the rails in order to reduce damage and derailment risks.

MINISTERIAL RESPONSIBILITY

- **Minister for Transport and Main Roads**

PART 5 ~ ACCESSIBILITY OF THE CITYTRAIN NETWORK

175. For many groups, access issues are safety issues. With the exception of new stations on the Gold Coast line and refurbished platforms at Central and Roma Street stations, Citytrain stations are inaccessible to passengers who are reliant upon mobility devices. This is because of the presence of extensive stairs and excessively long inclined ramps. A further proportion of passengers with mobility impairments or other disabilities is severely challenged by these forms of access. Equitable access issues encompass: physical access to and from vehicles; physical access to infrastructure, communication barriers and attitudinal barriers.

176. The following section examines access problems on the network, the impact of anti-discrimination legislation and access standards, and Queensland Rail's response.

Differences Between Carriage Floor and Platform Heights

177. A common feature of rail systems is the difference between the height of platforms and carriage floors above the rails. This is due to the location of stations on curved sections of track, and creates a fundamental access problem for passengers with impaired mobility.

178. Queensland Rail advises that, of approximately 270 kilometres of platforms at stations across the network, 20 kilometres are located on curved sections of track. The committee was told by Queensland Rail that approximately four kilometres of platforms are curved to a radius less than 400 metres, and one kilometre is curved to a radius of less than 200 metres. Stations with curved platforms of radius less than 400 metres are:-

> Roma Street; Central Station; Eagle Junction; Northgate; Zillmere; Petrie; Windsor; Newmarket; Alderley; Gaythorne; Mitchelton; Oxford Park; Auchenflower; Indooroopilly; Oxley; Darra; Goodna; Riverview; Ipswich; Park Road; Dutton Park; Salisbury; Coopers Plains; Sunnybank; Coorparoo; Norman Park; Morningside; Murarrie; Wynnum; Wynnum North; Wynnum Central; Manly; Exhibition; and Tennyson.

179. The committee understands that stations were built on curved sections of track to minimise the amount of land they occupied and, hence, the construction costs of the railway. The curvature of the platforms at these stations imposes constraints on the design of all Queensland Rail rollingstock that travel through them. Depending on the span between wheel bogies, the clearance between the sides of rollingstock and the edge of platforms can vary dramatically. At concave curved platforms, the clearance is narrowed and on smaller radius curves, the sides of rollingstock actually pass over the platform. To cater for this, Queensland Rail specifies rollingstock designs such that the outer extremities of rollingstock are higher above the rails than platforms. This resulting height difference between platforms and carriage floors creates a step up to enter carriages, and a step down to exit.

180. Passengers entering and exiting trains at convex curved platforms must negotiate an additional hazard caused by a horizontal gap between platforms and the sides of trains. That is, passengers entering and leaving trains must step up or down and out at the same time. This

poses difficulties for passengers with limited mobility, and affects small children, older people, people with luggage, people using walking aids and people with strollers. In particular, the difficulties for older people are well documented in the literature (Lord *et al*, 1994).

181. Queensland Rail recorded 18 injuries sustained by passengers in falls down the horizontal gap between trains and platforms during the 30 months from 1 January 1995 to 30 June 1997. These include knee injuries, ankle injuries and a traumatic foot amputation. The outcome was recorded for twelve cases. Seven were taken to hospital for treatment, and two were admitted. Ten of the injuries occurred while the victim was entering or leaving a train. In one case documented by Queensland Rail, a three week old baby fell down the gap and onto the ballast while being wheeled off a train in a stroller.

182. In practice, the differences between platform heights and carriage floor heights varies from station to station, platform to platform, and from individual carriage to carriage due to a range of factors. These factors were highlighted in a study by Queensland Rail in 1994 (Stephensen, 1994). They include the effects of wheel and rail wear, track camber, the state of the rollingstock suspension, movement of the track during maintenance, tolerances during platform construction and the settlement of footings.

183. The height differences between platforms and rollingstock can vary enormously. The committee understands that at one concave platform at Ipswich Station where the cambered track causes the trains to lean away from the platform, height differences in the order of 400 mm have been observed. This is considerably greater than the 150 mm to 215 mm stair height normally encountered in the built environment, as specified in Australian Standard 1657-1992. There has been no comprehensive audit of height differences between platforms and rollingstock across the network. The committee urges that this be done, and that strategies to reduce the height differences be explored.

184. Stations on the Gold Coast line are built on straight or nominally straight sections of track. This has enabled Queensland Rail to use a different platform design that is virtually level with carriage floors with a horizontal gap of approximately 100 mm. Similarly, some platforms at Central and Roma Street have been rebuilt to this new design to improve access to and from carriages.

185. Passengers with impaired mobility, sight, hearing or other disabilities, are not well catered for by Citytrain, and experience problems using the network safely. The committee was told that more than 10 percent of the population, excluding children under four, have at least a mild mobility impairment. Mild impairment is defined as having difficulty using steps and stairs and walking 200 metres. Children under four are classified as having a handicap within the existing built environment (Transcript page 33). An estimated 307,500 Queenslanders have a disability (ABS 1993). The committee suspects that the predominance of falls injuries to passengers may be symptomatic of Citytrain's current access problems.

186. Access impediments prevent Citytrain from providing a truly "public" public transport service. The ageing of the population and the pressure to increase travel by public transport in South East Queensland warrant that the accessibility of the network be improved. There are also legal imperatives.

Anti Discrimination Legislation

187. Federal and state legislation specifically prohibits discrimination against segments of the population on the basis of disability. The *Disability Discrimination Act (Commonwealth) 1993* is concerned with the equitable and dignified use of services and facilities within premises. The Act provides comprehensive and uniform protection from discrimination throughout Australia for people with a disability.

188. The identified objects of the Act are:-

- *"(a)to eliminate, as far as possible, discrimination against persons in the areas of*
  - *work accommodation, education, access to premises, clubs and sport; and*
  - *the provision of goods, facilities, services and land; and*
  - *the administration of Commonwealth laws and programs; and*
- *(b)to ensure, as far as practicable, that persons with disabilities have the same rights to equality before the law as the rest of the community; and*
- *(c)to promote recognition and acceptance within the community of the principle that persons with disabilities have the same fundamental rights as the rest of the community".*

189. These objects seek to affirm the rights of people with disabilities to live normal lives - to live and work, to learn and play - as fully integrated and empowered members of the general community (Vintler 1996;15).

190. Section 5 of the Act expresses the general principle that discrimination occurs when a person with a disability is treated less favourably than a person without a disability when the circumstances are the same or not materially different (DAG, 1996;2). Where equitable and dignified access to, and use of, premises and services has not been provided, people with disabilities are entitled to complain to the Human Rights and Equal Opportunities Commission (HREOC). The Commission has the power to determine whether there is discrimination. Enforcement is through the Federal Court.

191. Section 23 of the Act provides a defence of "unjustifiable hardship". A person or organisation may claim that providing a particular level of access would be technically impossible, impose major difficulties or involve unreasonable costs (DAG, 1996). The Act was designed to operate concurrently with state and territory anti-discrimination legislation.

192. The *Anti-Discrimination Act (Queensland) 1993* provides similar protection for people with disabilities against discrimination and offers the identical "unjustifiable hardship" defence for discriminators.

Draft Accessible Transport Standards

193. While the Commonwealth Act is based on outcomes rather than specifications, it provides for the release of access standards as an aid to compliance. Draft Accessible Public Transport Standards were issued by the Commonwealth Attorney General's Department in 1996, and remain in draft form. The draft standards call up various Australian Standards such as

AS1428.1 (Design for access and mobility. Part 1 General Requirements for Access — Buildings, 1993) and AS1428.2 (Enhanced and additional requirements — Buildings and facilities 1993). Issues covered by the standards include: access paths; ramps; tactile ground surface indicators; lighting; furniture and fitments; hearing augmentation; and controls. The draft standard provides a sound basis for designing public transport systems that are safe and accessible for all users, and have been endorsed by transport ministers through the Transport Advisory Council.

Responses by Railways

194. Providing equitable access in the short term is a problem for all railways because of the extent of their infrastructure, the long service life of rollingstock compared to other modes of public transport (the service life of EMUs is thought to be in excess of forty years), and the costs. One rough estimate by Queensland Rail of the costs of raising all platforms on Citytrain stations to carriage-floor level is $350 million, though there have been no studies to substantiate this.

195. The adoption of a long term action plan for accessible public transport provides the best management solution to the difficulties railways are faced with. The Public Transport Board in Adelaide, and Transperth (the Western Australian Government's Transport Department) and Westrail have implemented long term strategies in accordance with the *Disability Discrimination Act (Commonwealth) 1993*. As a model, the committee notes the approach adopted by Westrail.

196. Westrail's *Disability Service Plan* commits it to ensuring that people with disabilities, their families and carers are able to access the range of products and services which it provides. The plan was developed in consultation with customers and Westrail staff, and documents initiatives to be undertaken and methods for consultation with users.

Queensland Rail's Response

197. Queensland Rail has no formal plans or strategies in place to address equitable access problems. In the absence of such a commitment, Queensland Rail's intentions and priorities concerning the provision of equitable access are unclear. Without clear direction, decisions about access matters and infrastructure appear to have been made on an ad hoc basis without cognisance of laws that establish equitable access requirements.

198. Queensland Rail faces an increasing likelihood of court actions by aggrieved parties over its failure to address equitable access issues. Two such complaints regarding access to Citytrain stations have already been lodged under the *Anti-Discrimination Act (Queensland) 1991*. Contrary to Citytrain's public information, the committee was told that many stations on the network are not accessible by passengers who are dependent on mobility aids(transcript page 38). Morningside Station is one example.

199. The committee inspected the Morningside Station complex during this inquiry. It is overshadowed by a series of concrete and steel access stairs, ramps and walkways linking station platforms and surrounding areas. Queensland Rail told the committee that these were constructed in 1994 at an approximate cost of $1 million. The ramps are inclined at a slope of

1:15 which was recognised as the maximum safe gradient for providing equitable access at the time. Their length, however, makes them inaccessible. At its public hearing, the committee was told the ramps are approximately 160 metres in total length with few breaks, and that Queensland Rail's own designers view this station as a good example of how not to provide access (transcript page 34).

200. The committee believes that Queensland Rail should improve access to the network incrementally through a range of strategies in the short, medium and longer term, and that these should be coordinated through an access plan endorsed by senior management, and in accordance with the *Disability Discrimination Act 1992*. Such a plan should set long term targets for the completion of upgrades to stations and rollingstock, and outline processes to be used for consultation with passengers, staff and other stakeholders. Queensland Rail told the committee that Citytrain has developed a draft twenty year action plan for the systematic improvement of station accessibility. The committee welcomes this initiative and urges that a long term access plan, modelled on the Westrail approach, be adopted.

201. In the interim, the committee urges Queensland Rail to provide improved access to stations, platforms and trains that benefit all passengers. Queensland Rail has adopted a core station concept whereby thirty key Citytrain stations are targeted for improved access. These stations are targeted for other improvements such as extended staffing to reflect strong passenger demand. The committee was also told that greater access will also be achieved through Queensland Rail's $8 million "Disabled Access Program" to implement improvements at stations.

202. The committee notes that the installation of lifts to elevated walkways at railway stations appears to offer the most viable solution to the provision of equitable access to stations on the Citytrain network. Queensland Rail has commenced installing public lifts at stations, and this has greatly enhanced their accessibility.

RECOMMENDATION 16

That Queensland Rail implements an equitable access strategy for Citytrain to satisfy the requirements of the draft Accessible Public Transport Standards issued by the Commonwealth Government in accordance with the Disability Discrimination Act (Commonwealth) 1992.

MINISTERIAL RESPONSIBILITY

- **Minister for Transport and Main Roads**
- **Minister for Families, Youth and Community Care**

PART 6 ~ SAFETY MANAGEMENT BY QUEENSLAND RAIL AND QUEENSLAND TRANSPORT

PROBLEMS WITH INCIDENT AND INJURY DATA

203. A fundamental problem encountered by the committee during this inquiry has been the lack and poor quality of data on Citytrain's safety performance. Injury and incident data is compiled by Queensland Rail's Safety Division from internal reports provided by train, track and station staff. Accurate injury data is essential to the management of risk. However, there is no compulsion on passengers to notify Queensland Rail of any injuries they sustain, and staff reporting of injuries has not been thorough. There has also been little training provided to staff on injury reporting, and no standards for reporting has been set by Queensland Rail. Consequently, it is likely that many injuries on the Citytrain network are not notified and recorded.

204. The committee compared Queensland Rail's passenger injury records with records of railway injuries compiled by hospitals in the Brisbane area. The Queensland Injury Surveillance and Prevention Project (QISPP) collects injury data from presentations to the casualty departments of five hospitals within the area served by the Citytrain network: the Mater Adult and Mater Private Hospitals at South Brisbane; the Logan Hospital in Logan City; the Redland Hospital in the Redland Shire; and the QEII Hospital at Nathan. Queensland Rail recorded 121 Citytrain passenger injuries for the period 1 January 1997 to 30 June 1997. During this period, QISPP recorded 18 railway injuries to passengers, none of which appear on Queensland Rail's records.

205. For the passenger injuries that are recorded by Queensland Rail, key facts such as the age of the injured person and the severity of the injuries are often missing. Little if any data is recorded for the nature and type of hospital treatment administered. The absence of this data prevents the true costs of rail injuries from being determined. Few injury reports are checked, followed up or updated after being recorded. Because of this, Queensland Rail's data may not record delayed rail deaths that occur up to a year after injuries on the railway.

Problems with Data for Other Railways

206. The poor quality of railway data compared to data for other transport areas is not peculiar to Queensland Rail but a problem for all railways in Australia and the governments that regulate them. This is partly attributable to the fact that railways have traditionally been inwardly focussed and self-regulated, and partly a product of competition. Before the reforms during the early 1990s to allow third party access, Queensland Rail and other state railways in Australia were monopolies within their respective jurisdictions. Railways were self-regulated and exposed to minimal external scrutiny. Little information on the performance of railways, particularly safety performance, was made available to outsiders. Because of this legacy, there is little historical data now available.

207. All Australian railways keep records of reported injuries to satisfy workplace health and safety requirements and for management reporting, yet there is no standard reporting format that would permit meaningful comparisons. This was discussed by the Bureau of Transport Economics in its 1992 report *Social Costs of Transport Accidents in Australia* (BTCE 1992, 51). The BTCE noted that rail organisations generally compile data for their own purposes and have different reporting requirements and practices. There continues to be little exchange of data amongst railways and their railway regulators, and there is no authoritative source of national railway safety data in Australia.

208. The availability of quality injury and accident data has been fundamental to research and safety improvements in other areas — particularly aviation and road safety. In these areas, quality data is fundamental to developing good policy and safety strategies. Australian expertise in these areas is world renown. Good data provides the raw materials for proper evaluation, and is an asset to good governance. The committee is concerned that, without good safety performance data, railway safety cannot be properly managed.

Initiatives by the Transport Advisory Council to Improve Railway Data

209. A current initiative for the exchange of data on railway safety performance among transport departments from different states appears to be faltering. The inter-governmental agreement signed by transport ministers on the Australian Transport Council in July 1996 included provisions for railway regulators to exchange data on railway accidents. Regulators agreed that the Australasian Railways Association Inc (ARA), a signatory to the agreement and peak body representing rail operators, will act as the clearing house for this data. Regulators were due to start providing data to the ARA from July 1997, but this has not occurred. The committee urges that the Minister for Transport and Main Roads pursues this issue with his colleagues on the Australian Transport Council so that it can be resolved.

Initiatives by Queensland Rail

210. Queensland Rail has taken significant steps to rectify problems with its safety data. To improve the standard of what is recorded, Queensland Rail is developing a comprehensive computerised database for railway injuries and incidents. Queensland Rail told the committee that this injury database will meet requirements of the National Data Standard for Injury Surveillance. This standard was prepared by the National Injury Surveillance Unit in Adelaide, and is recognised nationally as a reference standard in the National Health Directory. It is the standard used for comprehensive injury surveillance systems operating in Queensland (QISPP) and Victoria (Victorian Injury Surveillance System). In conforming to this standard, Queensland Rail's database will be unique amongst Australian railway injury databases.

211. In addition to improving the standard of its data, Queensland Rail is working to improve the level of reporting by staff through a standard under its Safety Management Policy (transcript; 59). This standard was implemented on 3 November 1997. The committee commends these initiatives by Queensland Rail.

212. As a goal, Queensland Rail and Queensland Transport should pursue standards for railway safety performance data and its verification such that it can be publicly reported with confidence. The committee also recommends that Queensland Transport reports safety performance data for railways in Queensland on a monthly basis, as it currently does for road safety data.

RECOMMENDATION 17

That the Minister for Transport and Main Roads requests the Australian Transport Council to ensure that their transport departments commence supplying railway safety data as agreed by the Council in 1996.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

RECOMMENDATION 18

That Queensland Rail and Queensland Transport pursues standards for railway safety performance data such that it can be publicly reported with confidence.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

RECOMMENDATION 19

That Queensland Transport reports safety performance data for railways in Queensland on a monthly basis. This should include fatalities and injuries to employees, passengers and other members of the public by causes, collisions, potential collisions, derailments, level crossing accidents and Signals Passed at Danger.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

COMPLIANCE

Testing for Impairment by Alcohol and Other Drugs

213. As discussed earlier in relation to the AWS driver surveillance system, the safe movement of trains is heavily dependant on train drivers. The linkage of SPADs, which are precursors to train/train collisions, to the vigilance of drivers was also discussed.

214. Train drivers, guards and other operational staff are subject to requirements concerning impairment caused by alcohol and other drugs. Queensland Rail has an alcohol and drugs policy as part of its Safety Management System. The policy requires employees not to be affected by alcohol and drugs when they:-

- sign on for work;
- are on duty;
- are on call or are required to provide professional safety related advice and give safety related instructions when not on duty; and
- are acting on behalf of Queensland Rail but executing functions or duties at the request of a principle contractor or third party operator.

215. Shift supervisors are obliged to ensure employees' compliance with their requirements is confirmed at the commencement of each shift, though no special training for this task is provided. The committee questions the adequacy of this method of ensuring compliance, and urges that drug and alcohol impairment recognition training be introduced for supervisors and a system of random workplace testing be implemented in conjunction with relevant railway unions and police.

RECOMMENDATION 20

That Queensland Rail, in consultation with Queensland Police Service and unions representing railway employees, implements a system for the random testing of train drivers, guards and other operational staff for impairment by alcohol and other drugs while on duty.

MINISTERIAL RESPONSIBILITY

- **Minister for Police and Corrective Services and Minister for Racing**
- **Minister for Transport and Main Roads**

Enforcement of Track Speed Restrictions

216. The committee is similarly concerned at the lack of enforcement of train speed restrictions. Speeds are limited for safety reasons at track crossings, curved sections of track, and track that has been weakened through failure of the formation structure, maintenance or construction activity. Excessive train speeds compromise the safety of passengers, staff and members of the public.

217. Citytrain advises all train crews of both permanent and temporary speed restrictions via a number of processes. These include: publishing details of corporate-wide changes to infrastructure and speed board changes in the *Weekly Notice* which is issued to all Queensland Rail staff; publishing details of changes specific to Citytrain in the Citytrain *Train Notice* that is issued to all Citytrain drivers; and posting details of emergency changes to speed boards on staff notice boards.

218. Queensland Rail states that conformance with speed requirements is enforced through: auditing driver compliance through random monitoring by operations inspectors; analysing data from data loggers fitted to IMUs which record train speeds; investigating alleged speeding that is reported by field staff; and monitoring the travel times for trains between signals (personal correspondence from V O'Rourke dated 17 November 1997). While positive, these methods of enforcement do not provide consistent coverage of all trains, and have limited value as a general deterrent.

219. The committee recommends that Queensland Rail implements a program to pro-actively monitor compliance by Citytrain drivers with speed restrictions throughout the network.

RECOMMENDATION 21

That Queensland Rail establishes a speed compliance program to randomly monitor Citytrain drivers' compliance with train speed limits.

MINISTERIAL RESPONSIBILITY

- **Minister for Transport and Main Roads**

CONSULTATION AND CUSTOMER FOCUS

220. Consultation is integral to public policy processes. It is intended to give stakeholders a structured way to have input into decision making about the things in which they have an interest. Given that Citytrain is a service business, consultation with customers should be a normal part of its operations. From evidence presented to the committee, Queensland Rail, and Citytrain in particular, does not consult adequately with groups representing passengers on significant issues, and this is affecting the quality of its services.

221. The committee was told, for example, that Citytrain only consulted with passenger interest groups about the introduction of ticket vending machines after the machines had been delivered. Ticket vending machines were installed throughout the network in 1996 at a cost of $5.3 million. The machines are poorly designed for use by people in wheelchairs, older people, children, short people and people with impaired vision (transcript page 37).

222. Citytrain is a transport service provider that competes with other public transport modes and road transport in its service areas. The beneficial effects of this competition are largely offset by its funding arrangements with the government and the lack of other rail competitors. Citytrain is funded on the basis of community service obligations regardless of the level of patronage and the quality of its service. The government is seeking to address this by making funding conditional on the achievement of service quality objectives. The committee welcomes this initiative. The committee concludes however that the central lack of customer focus will remain. Other government utilities are addressing this management problem by establishing formal consultation links with customer groups. Westrail in Perth has established a Customer Service Council.

Westrail Customer Service Council

223. Westrail's Customer Service Council is an advisory body through which customers are able to inform its Urban Passenger Division of the types of services that people actually want. The council holds regular meetings, and its role is to provide advice to Westrail to assist with strategy and policy development and business operations in relation to passenger rail services. This includes advising on: improving existing products and services, especially for people with special needs; reviewing service standards and performance targets and the degree of community involvement; and the content of its community education programs.

224. The council also provides input into the development of Westrail's Customer Service Charter. This document outlines Westrail's commitment to twenty-nine service objectives concerning: safe and secure travel; customer service; cleanliness and reliability of trains; cleanliness and convenience of stations; ticketing; timetables; and information.

225. The council is chaired by the manager of Westrail's Urban Passenger Division. The council's seven members reflect the broad range of customers who use Westrail's urban services, and represent: people with disabilities; schools, parents and citizens; senior citizens; commuters; shoppers and tourists. A representative from Transperth also sits on the council. Membership is honorary and members receive no remuneration for their services other than the reimbursement of out of pocket expenses to attend meetings. The existence of the council has been well publicised, and the council invites and considers suggestions and feedback from members of the public.

226. The committee was encouraged by Westrail's emphasis on customer service, and the contribution of its Customer Service Council. It advocates the establishment of an equivalent customer service council by Queensland Rail to enhance consultation by Citytrain's management and the organisation's customer service focus.

RECOMMENDATION 22

That Queensland Rail establishes a customer service council to advise the Citytrain Group General Manager.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

Queensland Transport's 1996 Safety Audit of Queensland Rail

227. An in-depth safety audit of Queensland Rail was ordered in 1996 by the Minister for Transport and Main Roads to ascertain current safety levels and areas warranting improvements. The audit had three parts:-

- a generic safety audit of management, policies, safety competence and standards;
- a specific audit of track maintenance; and
- a specific audit of public/passenger security.

228. The committee was provided with a copy of the audit report as part of the Queensland Transport submission. The audit was undertaken over a six week period by the then manager of Queensland Transport's Rail Safety Accreditation Unit, Mr Kevin Band. Mr Band left Queensland Transport shortly after the audit to head Queensland Rail's Safety Division.

229. This was the first substantial safety audit of Queensland Rail ever undertaken, and the audit report contains significant statements relevant to this inquiry, namely:-

> *"...safety performance within Queensland Rail is generally of an exceptional high nature, of which the travelling public should justifiably feel proud...*
>
> *There are areas where improvements can be made but even here Queensland Rail's performance compares well against other Australian railways. When compared against worldwide performance we find that the State's passenger safety record is second to none. Improvements can be made to Queensland's employee, public safety and derailment record.*
>
> *...Queensland Rail has the ability, the will, resources competence and commitment to effectively control its risks and manage safety in a professional way, and to adequate standards." (Band, 1996;1)*

230. Queensland Rail was subsequently accredited by Queensland Transport as a railway manager.

231. The report made forty-eight recommendations for improvements. All have been accepted by Queensland Rail (Transcript page 41). Two recommendations requiring action by Queensland Transport have not been pursued. These relate to legislation governing the fencing that separates rail corridors from adjoining land, or 'line-side' fencing (recommendation 2.5.10), and the issue of increased powers for Queensland Rail staff to act against offending members of the public (recommendation 3.5.7). Issues concerning the powers of Queensland Rail staff to deal with offenders are discussed by the committee in a separate report from this inquiry.

232. Line-side fencing was described in the audit report as "*...an area of vulnerability with huge repair and replacement costs*." (Band, 1996;40). The legislation regarding fencing was described as "*...at best confusing and at worst inappropriate*." (Band, 1996;40). The committee was told that Queensland Rail has written to the Director-General of Queensland Transport on the issue of line-side fencing and general corridor protection. The letter sought the establishment of a committee to look specifically at the issues (transcript page 89). The committee was also told of the impact of developments such as shopping centres adjacent to rail corridors, and that pedestrian access should be a part of the design considerations (transcript page 89). The committee is of the view that this aspect of the line-side fencing issue warrants further examination.

RECOMMENDATION 23

That Queensland Transport, in conjunction with Queensland Rail, examines the impact of pedestrian traffic generated by land developments adjacent to rail corridors in the Citytrain area and the impact on line-side fencing.

MINISTERIAL RESPONSIBILITY
- **Minister for Transport and Main Roads**

Safety Comparisons With Other Railways in the Audit Report

233. The Queensland Transport report on its 1996 safety audit of Queensland Rail draws conclusions about Queensland Rail's safety performance based on comparisons with other railways. Its conclusions alluded to "*worldwide*" comparisons, however the only railway other than Queensland Rail specifically mentioned by name in the Audit Report is "*British Rail*". No evidence to demonstrate the safety performance of other railways is provided.

234. Comparative safety performance figures are provided for "UK" railways in the report, though the source for these is not stated. The audit report states that "UK data" was used as a comparison because of its availability, and because much of the Queensland Rail network is based upon United Kingdom (railway) systems and standards (Band, 1996;4). While there may be similarities between the railways, other differences may invalidate direct comparison of their safety performance. The differences between Queensland Rail and UK railways, and their impacts of these differences on safety, are not discussed in the report and do not appear to have been considered.

235. The committee sought to examine the data used for the audit during this inquiry, however, it was not retained by either Queensland Transport or the report's author, Mr Band. Queensland Transport subsequently provided the committee with other material to substantiate the statistics used in the report. A matrix explaining the relevance of the supplementary materials provided by Queensland Transport is in tables 19 and 20 at Appendix G. Of particular note, the new material provided by Queensland Transport has not demonstrates that Queensland Rail's safety record is '*second to none'*.

236. Queensland Rail is due to be audited again by Queensland Transport in March 1998. The committee urges that greater emphasis be placed during this and subsequent audits of Queensland Rail on substantiating conclusions and archiving any documents and statistics that are used. As a general principal, the committee concludes that these documents should be archived and retained for public scrutiny.

237. Documents pertaining to independent inquiries conducted pursuant to section 103(2) of the *Transport Infrastructure Act 1994* should be similarly retained and made available for public scrutiny. The committee believes this is essential to ensure propriety and accountability, and should be enshrined in the department's policies and procedures. The committee also recommends that reports from all safety audits of Queensland Rail be published.

RECOMMENDATION 24

That records from safety audits conducted by the Rail Safety Accreditation Unit and inquiries conducted pursuant to Section 103(2) of the Transport Infrastructure Act 1994 be archived by Queensland Transport for reference.

MINISTERIAL RESPONSIBILITY

- **Minister for Transport and Main Roads**

RECOMMENDATION 25

That reports of all safety audits of Queensland Rail conducted by Queensland Transport be published.

MINISTERIAL RESPONSIBILITY

- **Minister for Transport and Main Roads**

PART 7 ~ CONCLUSIONS

238. Rail passengers enjoy a general level of safety that is superior to other forms of surface travel, and rail accidents account for 1 percent of transport related accident costs in Australia.

239. Queensland Rail recorded a total of 113 fatalities on the Citytrain network during the nine years from 1 July 1988 to 30 June 1997. Five fatalities or four percent were passenger fatalities. This equates to 1 passenger fatality per 63.3 million passenger journeys. On this basis, the risk of passenger fatalities on the network is extremely low. The five recorded passenger fatalities were made up of four accidental deaths (two from falls and two from being struck by trains at stations), and one death from a suspected heart attack.

240. The bulk of fatalities (94 percent) on the Citytrain network were public fatalities, with 106 recorded during the nine years examined. There were also two employee fatalities. The public fatalities were made up of 39 suicides or suspected suicides, 35 trespasser fatalities, 13 level crossing fatalities and 19 fatalities recorded by Queensland Rail as unknown/other. The committee has not examined these fatalities in detail within the scope of this inquiry, but suggests that further work is required in the future.

241. The committee was unable to determine the true extent and significance of non-fatal passenger injuries because of the poor quality of Queensland Rail's injury records. Based on the records compiled since 1995, however, the most frequently recorded injuries to passengers were injuries from falls (70 percent) and injuries involving train doors (16 percent).

242. The poor quality and lack of data has prevented the committee from commenting in detail on the contribution to falls made by specific elements of station and rollingstock design. It was also not possible to determine the contribution of wet and uneven surfaces which are likely to be contributing factors. Overcoming falls hazards such as the vertical and horizontal gaps between platforms and train doorways, ramps, steps and stairs should reduce the incidence of falls.

243. Seventy-nine non-fatal injuries involving passengers caught in train doors were reported to Queensland Rail during the thirty months from 1 January 1995 to 30 June 1997. These injuries occurred despite door warning announcements to passengers that were introduced by Queensland Rail in September 1994. Over the same period, there were approximately 160 million passenger movements through external train doors, suggesting that the risk of injury, on average, is extremely low. These incidents however may pose greater risks to vulnerable passengers such as small children, older passengers, passengers using strollers and passengers with disabilities. The committee was told that entrapment in train doors was feared by the elderly.

244. Reports of passengers being caught in train doors have been highlighted in the media in recent years and in submissions to this inquiry. These include submissions from unions representing railway workers that were critical of the door warnings. The committee concludes that mechanisms to prevent passengers being caught in doors, and the subsequent departure of trains from stations with doors obstructed, are required. Queensland Rail plans to fit door

sensors and traction interlocks to just under half of the Citytrain fleet by September 2000. These systems should be progressively fitted to all Citytrain rollingstock as a priority, and the present system of door warnings for passengers reviewed.

245. There were 153 train collisions and derailments within the Brisbane Suburban Area during the six years from 1 July 1991 to 30 June 1997. The only train-train collision involving Citytrain during the period occurred in 1995. This collision was caused by a driver passing a red, stop signal without authorisation. In railways, these incidents are known as Signals Passed at Danger (SPAD). In 1995, the rate of SPADs involving Citytrain was 14.02 SPADs per million train kilometres - seven times higher than the rate of SPADs for railways in the United Kingdom (UK), and four times higher than the rate for the worst UK railway. The incidence of SPADs involving Citytrain remains high despite significant reductions being achieved by Queensland Rail during 1996/97.

246. SPADs are a particular problem for Citytrain in the Brisbane Suburban Area. The Audible Warning System (AWS) driver surveillance system for drivers in this area has fundamental limitations. It is weakened by its tendency to give drivers faulty warnings, and there is no back-up or fail-safe system to prevent train-train collisions caused by driver error. The only acceptable target levels for SPADs, where the driver completely missed the signal, is zero, and this should be the target for these SPAD for all Queensland Rail business groups.

247. Queensland Rail has considered installing a system called Automatic Train Protection (ATP) to prevent train-train collisions caused by driver error. An evaluation by Queensland Rail found that ATP offered the greatest safety benefit and would significantly ameliorate the train-train collision risk in the Brisbane Suburban Area. However, it found that the expected safety benefits did not justify the costs of installing the system, estimated at $39 million. The committee has identified a number issues which may impact on the evaluation outcome, and recommends that a further independent evaluation be undertaken.

248. Train collisions with motor vehicles at level crossings are thought to account for Queensland Rail's greatest exposure to accident costs in the Brisbane Suburban Area. Queensland Rail recorded 26 train-vehicle collisions and 506 potential train-vehicle collisions at level crossings in the Brisbane Suburban Area during the six years from 1 July 1991 to 30 June 1997. Over a nine year period from 1 July 1988 to 30 June 1997, it recorded 13 level crossing fatalities. Public education is warranted to improve level crossing safety for all users, in combination with enhanced enforcement of traffic regulations at crossings.

249. There are reasonable grounds for the government to trial the use of camera-based enforcement to improve safety at high risk crossings equipped with flashing lights and boom gates within the Brisbane Suburban Area. Penalties under the *Traffic Regulations 1962* applicable to level crossing offences committed by vehicle drivers should be substantially increased to better reflect the hazards to road and rail users at level crossings. The government has no plan in place to determine risks at level crossings and implement level crossing safety upgrades in a planned and systematic way. A level crossing safety strategy and system to fund safety upgrades across the state is required.

250. Incident reports filed by Queensland Rail staff describe a plethora of debris and materials placed maliciously by vandals in the path of trains. There were 683 potential train-obstruction collisions recorded by Queensland Rail for the Citytrain group between 1 July 1991 and 30 June 1997. Most potential collisions are averted, with 65 actual collisions and four derailments

being reported during the period. Twenty-nine train-obstruction collisions resulted in visible damage to rollingstock. The security of the rail corridor and its exposure to vandalism in the Brisbane Suburban Area is a problem for Queensland Rail. Railway materials figure prominently in reported track obstructions. Removing or securing these materials within the railway corridor, where feasible, would reduce opportunities for vandals to injure the railway. Engineering solutions to make trains less susceptible to the effects of track obstructions and the risk of derailment should also be considered.

251. Passengers with impaired mobility, sight, hearing or other disabilities are not well catered for by Citytrain, and experience problems using the network safely. Older passengers, small children, people using walking aids, people with strollers and people with disabilities experience access problems. With the exception of new stations on the Gold Coast line, Toowong and the refurbished Central and Roma Street stations, Citytrain stations are virtually inaccessible to passengers who are dependent on mobility aids. The predominance of falls injuries to passengers may be symptomatic of Citytrain's current access problems. Access impediments prevent Citytrain from providing a truly "public" public transport service. The ageing of the population and the pressure to increase travel by public transport in South East Queensland warrant that the accessibility of the network be improved. Federal and state legislation also prohibits discrimination against segments of the population on the basis of disability.

252. Queensland Rail has no formal plans or strategies in place to provide equitable access to the Citytrain network, and faces an increasing likelihood of court actions by aggrieved parties. Access to the network should be improved incrementally through a range of short, medium and long term strategies coordinated through an access plan that is endorsed by senior management and complies with the Commonwealth's *Disability Discrimination Act 1992*.

253. A fundamental problem encountered by the committee during this inquiry has been the poor quality and lack of data on Citytrain's safety performance. Accurate injury data is essential to safety management. The poor quality of railway data compared to data for other transport areas is not peculiar to Queensland Rail, but a problem for all railways in Australia and the governments that regulate them. A current initiative of the Transport Advisory Council to improve data reporting and exchange appears to be faltering and requires the council's intervention. As a goal, Queensland Rail and Queensland Transport should pursue standards for railway safety performance data and its verification such that it can be publicly reported with confidence. Queensland Transport should publish railway safety data on a monthly basis.

254. The safe movement of trains is heavily dependent on train drivers. Train drivers, guards and other operational staff are subject to restrictions concerning impairment caused by alcohol and other drugs. A system of random workplace testing should be implemented in consultation with relevant railway unions and police to ensure compliance. Drug and alcohol impairment recognition training should be introduced for supervisors.

255. Track speeds at locations throughout the network are limited for a range of safety reasons, yet there is no pro-active enforcement of the restrictions. A program to pro-actively monitor compliance by Citytrain drivers should be implemented.

256. Queensland Rail, and Citytrain in particular, does not consult adequately with groups representing passengers on significant issues, and this is affecting the quality of its services. Other government utilities are addressing this management problem by establishing formal

consultation links with customer groups. A customer service council should be established to consider customer service issues and advise the Citytrain Group General Manager.

257. An in-depth safety audit of Queensland Rail was conducted by Queensland Transport in 1996. This was the first substantial safety audit of Queensland Rail ever undertaken. Of the issues raised, all recommendations for safety improvements within its scope have been adopted by Queensland Rail. One outstanding issue concerns the impact of pedestrian traffic generated by developments adjacent to rail corridors. This issue needs to be examined by Queensland Transport.

258. The audit report by Queensland Transport draws conclusions about Queensland Rail's safety performance relative to other railways in Australia and internationally, however it was poorly documented and does not identify or source the reference used. In particular, the statement that "*...Queensland Rail has a safety record second to none*" is not supported by hard evidence.

259. The audit compared Queensland Rail's safety performance with that of railways in the United Kingdom. However, the differences between Queensland Rail and UK railways and the impacts of these differences on safety are not discussed in the report, and do not appear to have been considered. Queensland Transport subsequently provided the committee with material to substantiate the statistics used in the audit report, however, the claim that Queensland Rail's safety record is "second to none" in the world remains unsubstantiated.

260. As a general principal, documents used during rail safety audits should be properly archived and retained for public scrutiny. Reports from all rail safety audits of Queensland Rail should be published.

REFERENCES

ABS (1993) Survey of Disability, Ageing and Carers, (Canberra: AGPS)

ANSTO (1989) Risks to Individuals in NSW and Australia as a Whole (ANSTO: Sydney)

Band, K. (1996) Safety Audit of Queensland Rail (Queensland Transport: Brisbane).

Bartowskewitz, R., Fitzpatrick K. and Carlson P. (1996) 'The Texas Enforcement Demonstration Project', presented at the Fourth International Symposium on Railroad-Highway Grade Crossing Research and Safety, 8-10 October 1996, Knoxville, Tennessee, USA, pp 157-171.

Benninghoff, R (1993) 'Interior Impact Protection for Bus and Rail', Mass Transit, Sept./Oct. 1993, pp98-100.

British Railways Board (1995) British Rail Safety Plan 1995 (British Railways Board: London).

BTCE (1992) Social Costs of Transport Accidents in Australia (BTCE: Canberra)

BTCE (1995) Information Sheet 7: Costs of Rail Accidents in Australia-1993 (BTCE: Canberra)

Cairney, P. T. et al. (1991) Improving safety at Railway Level Crossings (Australian Road Research Board: Melbourne)

Callinan R., 'Safety fears as trains run red lights', Courier Mail, 14 July 1997, p 3.

Collings, Howard, 'Comparative Accident Rates for Passengers by Mode of Transport - A Re-visit' in (UK) Department of Transport, Scottish Office Industry Department, Welsh Office (1994) Transport Statistics in Great Britain 1994 (HMSO: London) pp12-16.

Cook, T (1997) 'Coroner advocates adoption of two red lights after fatal WA crash', Network Magazine, February 1997, pp8-9.

Courier Mail (1997) 'Bus driver faces court', Courier Mail, 13 October 1997, p3.

Department of the Attorney-General, (1996) Disability Standards for Accessible Public Transport with Guidelines (draft) (DAG: Canberra)

Economic Research Centre (1987) 'Report of the seventy-fifth round table on transport economics: Delinquency and Vandalism in Public Transport', European Conference of Ministers of Transport , Paris 1987.

Edelman, J and McInerney F, (1982) Accessibility for Level - Entry Urban Rail Systems, (US National Technical Information Service: Springfield, Virginia).

Evans, Andrew W. , ' Multiple-Fatality Transport Accidents: 1946-1992', in (UK)Department of Transport, Scottish Office Industry, Welsh Office, (1994) Transport Statistics in Great Britain 1994 (HMSO: London) p17.

Glover, J (1992) 'In Search of Objectives', Modern Railways, September 1992.

Haga, Shigeru (1984)'An experimental study of signal vigilance errors in train driving', Ergonomics, Vol.27, No.7.

Hodge, D C and Orrell, J D (1995) 'Measuring Levels of Service and Performance in Public Transportation', (Washington State Department of Transportation: Washington)

Hood, Christopher, Peters, Guy, and Wollmann, Hellmut, (1996) 'Sixteen Ways to Consumerize Public Services: Pick 'n Mix or Painful Trade-Offs?', Public Money and Management, Vol.16 No.4 Oct-Dec 1996, pp 43-50.

Hope, R (1992) 'Rational Spending on Safety Brings Results', Railway Gazette International, May 1992.

Kaper, H. P., 'Accessibility of the international quality train system: Eurocity, Intercity and High Speed Trains, The present situation and future developments', presented at Transport for People with a Mobility Handicap, PRTC Transport, Highways and Planning 21st Summer Annual Meeting, Proceedings of Seminar J, 13-17 September 1993, England, pp51-53.

LCSC (1994) Report fro the NSW level Crossing Strategy Council (LCSC) 1994

Leschinski, R. et al, Identification and Evaluation of Cost Effective Measures to Improve at Railway Level Crossings ARRB TR Contract Report RC6029, June 1997. (ARRB Transport Research Ltd: Vermont South, Victoria)

Lord, S.R, et al, 'Physiological factors Associated with Falls in Older Community-Dwelling Women' in J Am Geriatric Society 1994; Vol 42, pp 1110-1117.

McKee, Campbell, 'Making Rail Vehicles Accessible to Disabled Passengers', presented at Transport for People with a Mobility Handicap, PRTC European Transport, Highways and Planning 21st Summer Annual Meeting, Proceedings of Seminar J, 13-17 September 1993, England, pp45-50.

Miller, Ted R., Douglass, John B. & Pindus, Nancy M., (1994) 'Railroad Injury: Causes, Costs, and Comparisons with Other Transport Modes', Journal of Safety Research, Vol.25, No.4, pp183-195.

Moses, Leon N & Savage, Ian (eds), Transportation Safety in an Age of Deregulation, Oxford University Press, New York, 1989.

National Safety Council (1994) Accident Facts pp 95-97.

Obrist, Ekkehard, 'The Swiss Railways and the Disabled; Practical Applications', presented at Transport for People with a Mobility Handicap, PRTC European Transport, Highways and Planning 21st Summer Annual Meeting, Proceedings of Seminar J, 13-17 September 1993, England, pp55-68.

Ogden, K.W. et al (1973)' Safer Roads: A Guide to Road Safety Engineering' (Department of Civil Engineering, Monash University: Melbourne).

Peacock, Richard D. et al., (1994) Fire Safety of Passenger Trains: A Review of Approaches and of New Concepts (U.S. Department of Transportation, U.S. Government Printing Office: Washington).

Perrott Lyon Mathieson Pty Ltd & Greg Tucker and Associates Pty Ltd, Women's Transport Needs, July 1995. (unpub)

Pettitt, A.N., Haynes, M.A., and George, A.W. (1993) Development of Accident Risk Assessment System for Queensland Railways - Report 2: Analysis of 1991 and 1992 Incident Data and Trends of Monthly Incident Data from March 1990 to December 1992 (Office of Commercial Services, Queensland University of Technology: Brisbane, for Quality Improvement Manager, Queensland Railways; unpub.).

Polk, Amy E, 'An In-Vehicle System for School Buses at Rail-Highway Grade Crossings', presented at the Fourth International Symposium on Railroad-Highway Grade Crossing Research and Safety 8-10 October 1996, Knoxville, Tennessee, USA, pp95-101.

Queensland Rail, Corporate Safety Report July-August 1997, 18 September 1997.

Queensland Rail (1997) Brisbane Suburban Area Train Protection Evaluation, March 1997.

Queensland Transport (1995) 'Part 7- Railway Crossings' in Manual of Uniform Traffic Control Devices

Queensland Transport (1995) Rail Safety Performance: Queensland Compared with other Australian States 1984-1993 Report Number Rail 95/001 (Queensland Transport, Road Transport and Safety Division, Strategy Branch, Rail Safety Accreditation Unit: Brisbane).

Queensland Transport (1996) The Safety of Railway Level Crossings 1991-1995 (unpublished), Rail Safety Accreditation Unit, Strategy Branch, Land Transport & Safety Division, Queensland Transport.

Queensland Transport (1996) Independent Inquiry: Rail collision between a passenger and freight train near Bowen Hills, Queensland, Thursday 14 March 1996.

Queensland Transport (1996) Rail safety Management Within Queensland.

Queensland Transport (1997) Evaluation of Level Crossing protection and Other measures of Improving Safety at Level Crossings (Working Paper 2/97)

Queensland Treasury, Project Evaluation Guidelines, March 1997.

Railtrack PLC Railway Group Safety Plan 1995/96 (Railtrack PLC: London)

Railtrack PLC Railway Group Safety Plan 1996/97 (Railtrack PLC: London).

Railtrack PLC, Railway Group Safety Plan 1997-98 (Railtrack PLC: London)

'Railway Occurrence Statistics January - March 1997', Reflexions, May 1997.

RSARC (1994) On Track - The Future of railway Safety in Canada - Railway Safety Act Review Committee 1994 (RSARC: Canada)

Schwier C; Lake R.W. & King A.W.(1981) Evaluation of Railway Safety Projects (Canadian Transport Commission, Ottawa, Ontario), pp7-8.

Smith, R A (1995) 'Crashworthiness Moves from Art to Science', Railway Gazette International, April 1995.

Sommerfield J., 'Council to probe bus, train drama', Courier Mail, 4 August 1997, p 3.

Spiro, Elizabeth and Parfit, Andrew, (1995) 'Applying cost-benefit analysis to marine safety measures', Marit. Pol. Mgmt., Vol.22 No.3, 215-223.

Standards Australia (1992) Fixed Platforms, Walkways, Stairways and Ladders - Design, Construction and Installation AS 1657, Section 4 - Stairways

Standards Australia (1993) Design for Access and Mobility - Part 1 General Requirements for Access - Buildings AS1428.1

Standards Australia (1993) Design for Access and Mobility - Part 2 Enhanced and Additional Requirements - Buildings and Facilities AS1428.2

Standards Australia (1995) Railway safety management, Part 1: General and interstate requirements, AS 4292.1

Steering Committee on National Performance Monitoring of Government Trading Enterprises, Government Trading Enterprises Performance Indicators 1991-2 to 1995-6 Vol1-Report & Vol2-data, Industry Commission, Melbourne, May 1997

Stephensen, I (1994) Level Entry System for Rail Passengers - Platforms at Treadplate Height, (Queensland Rail: Brisbane).

Swanson R.G.(1996) 'Office of Railroads and Waterways Market Research Study: Identifying Minnesota's Perceptions of Rail Crossings (summary)', presented at the Fourth International Symposium on Railroad-Highway Grade Crossing Research and Safety, 8-10 October 1996, Knoxville, Tennessee, USA, pp149-155.

Tasman Institute &Institute of Public Affairs (1993) Victoria's Transport sector: A New Vision, (Tasman Institute Pty Ltd & Institute of Public Affairs Ltd:Melbourne)

TMG International (1993) Queensland Rail Brisbane Suburban Area ATP study - Final Report, TMG International, November 1993

Transportation Safety Board of Canada (1996) TSB Statistical Summary Railway Occurrences 1996 (Transportation Safety Board of Canada: Quebec).

UITP (1986) 'Passenger Safety in Metropolitan Railways', UITP Review, Vol. 1, No. 1.

United Kingdom. Department of Transport (1988) Railway Safety: Report on the safety record of the railways in Great Britain during 1987 (Her Majesty's Stationery Office, London) 1988.

United Kingdom Department of Transport. Health and Safety Executive 1992, Railway Safety: Report on the safety record of the railways in Great Britain during 1990, Her Majesty's Stationery Office, London, 1992.

United Kingdom Department of Transport. Transport Statistics of Great Britain, 1996. Her Majesty's Stationery Office, London, 1997.

United Nations. Economic Commission for Europe. Inland Transport Committee. Principal Working Party on Rail Transport (1996) Railway Safety (United Nations. Economic and Social Council: Fiftieth session, 15-17 October 1996, agenda item 5).

U.S. Department of Transportation. Bureau of Transportation Statistics (1993) National Transportation Statistics: Annual Report, September 1993; Historical Compendium, 1960-1992 (U.S. Government Printing Office: Washington) pp67-72.

U.S. Department of Transportation. (1994) Highway-Rail Crossing Safety, Action Plan Supporting Proposals June 1994; (U.S. Government Printing Office: Washington).

Vintler, P. (1996) Transport for People with Disabilities - Summary report Institute of Science and Technology Policy, Murdoch University, Melbourne, 1996.

Ware, D. K., 'Power operated doors for rail vehicles' Proceedings of the Institution of Mechanical Engineers International Conference: Rail Vehicles for Passengers, 22-24 November 1988, The Watershed Conference, Bristol, England, pp 119-126.

Waring, A.(1996)'Monitoring and Measuring Safety Performance' in Safety Management Systems, First Edition, Chapter 9, Chapman & Hall, London, 1996.

Western Australia. Department of Transport Going out and Getting there: Action Plan for Accessible Public Transport for People with Disabilities in Perth (Government of Western Australia: Perth).

Westrail (1995) Westrail safeworking Audit, GHD Transmark, December 1995 (Westrail: Perth)

Westrail (1996) Disability Service Plan for the Western Australian Government Railways Commission trading as Westrail (Customer Focus Western Australia).

Wigglesworth;E C. (1992) 'Improving Safety at Open Railway Crossings' Report to Vicroads, (Vicroads: Melbourne)

EXHIBITS

Exhibit No. **Description**

1. Information from Queensland Rail. Including:

   (a) Queensland Rail Safety Standards Committee Charter

   (b) Queensland Rail Safety Council Charter

   (c) Queensland Rail Corporate Safety Plan 1995/1996

   (d) Queensland Rail Citytrain Group Safety Management Plan April 1996

   (e) Queensland Rail Corporate Safety Audit Framework

   (f) Queensland Rail Safety Council Submission - Safety Training

   (g) Queensland Rail Citytrain Monthly Report March 1996 (extracts)

   (h) Queensland Rail By-law No. 1193 Book of Rules for the Guidance of Employees in the service of the Commissioner for Railways (1986)

   (i) Queensland Rail Rollingstock Book December 1991

   (j) Queensland Rail Safety Management System Safety Policies 01 to 20 (uncontrolled draft) 1997

   (k) Queensland Rail SPAD Reduction Strategy (version 2) 1997

   (l) Queensland Rail Safety Management System - Standard STD/0011/WHS Safety Training and Accreditation (draft) 1997

   (m) Queensland Rail - Scope of Works for "Trainsafe" - a commitment to increased security for staff and patrons using QR's facilities and services - capital works item 3413 Citytrain Group 1996

   (n) Queensland Rail Trainsafe project report February 1997 (March 1997)

   (o) Queensland Rail briefing notes - Inspection by the Committee, 24 March 1997, Mayne Depot

   (p) Queensland Rail Employee Relations Policy (draft) - *Recruitment and Selection for Drivers of Rail Operated Vehicles*

   (q) Queensland Rail - overhead transparencies used during opening statement by Mr Glen Dawe, Group General Manager, Citytrain - Brisbane public hearing 27 March 1997

2. Statistics provided by Queensland Rail. Including:

   (a) Queensland Rail Safety Incident Data Warehouse, 4 July 1997 (disc)

   (b) Livestock collisions (Citytrain) - 1.7.91-30.6.97

(c) Passenger injuries (Citytrain) by date 1.1.95 - 30.6.97

(d) Passenger injuries (Citytrain) by location type 1.1.95 - 30.6.97

(e) Passenger injuries (Citytrain) by time of day 1.1.95 - 30.6.97

(f) Passenger falls (Citytrain) between trains and platforms 1.1.95 - 30.6.97

(g) Fatalities (all groups) 1.6.93 - 31.8.97

(h) Trespasser injuries (Citytrain) 1.1.95 - 30.6.97

(i) Passenger falls (Citytrain) by treatment type 1.1.95 - 30.6.97

(j) Needlestick injuries (Citytrain) 1.1.95 - 30.6.97

(k) Wheelchair injuries (Citytrain) 1.1.95 - 30.6.97

(l) Escalator injuries (Citytrain) 1.1.95 - 30.6.97

(m) Passenger train door injuries (Citytrain) 1.1.95 to 30.6.97

(n) Passenger injuries (Citytrain) by age 1.1.95 to 30.6.97

(o) Passenger injuries (Citytrain) by sex 1.1.95 to 30.6.97

(p) Passenger injuries (Citytrain) by injury outcome 1.1.95 -30.6.97

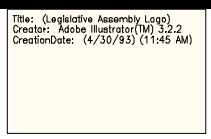
(q) AWS faults (Brisbane Suburban Area) by category 1.7.96 - 30.6.97 and reports

(r) Level crossing incidents (Citytrain) 1.7.91 - 30.6.97

3. Correspondence, 7 March 1996. Corrs Chambers Westgarth solicitors to Queensland Rail re: Workplace Health & Safety Legal Compliance Program

APPENDIX A — CALL FOR SUBMISSIONS

CALL FOR SUBMISSIONS



Parliamentary Travelsafe Committee

Inquiry into

Passenger Safety and Security on the Brisbane Citytrain Network

The Travelsafe Committee is an all-party Committee appointed by the Parliament to inquire into and report on all aspects of road safety and public transport in Queensland. In particular, the Committee shall monitor, investigate and report on:

(a) issues affecting road safety including the causes of road crashes and measures aimed at reducing deaths, injuries and economic costs to the community;

(b) the safety of passenger transport services, and measures aimed at reducing the incidence of related deaths and injuries; and

(c) measures for the enhancement of public transport in Queensland and reducing dependence on private motor vehicles as the predominant mode of transport.

The Committee is investigating the adequacy of current arrangements for the safety and security of passengers accessing and travelling on trains throughout the Brisbane Citytrain Network. This network covers the following lines: Brisbane to Beenleigh/Gold Coast, Caboolture/Gympie, Cleveland, Ferny Grove, Shorncliffe, Ipswich/Rosewood, Pinkenba and Pinkenba shuttle service.

Submissions made will be treated as public documents unless the Committee determines that confidentiality is required. Requests for confidentiality should be clearly marked. Persons making submissions to the Committee may be called upon to give evidence to the Committee.

Submissions should be forwarded by Friday 26 July 1996 to:

The Research Director
Parliamentary Travelsafe Committee
Parliament House
Cnr George and Alice Streets
BRISBANE QLD 4000

For further information or submission guidelines, contact the Research Director: Telephone (07) 3406 7669 or Facsimile (07) 3406 7262.

John Goss MLA, Chairperson
5 June 1996

APPENDIX B — LIST OF SUBMISSIONS RECEIVED

1. Mr R Bennett
   NUDGEE QLD 4014

2. Mr and Mrs P Simon
   SHERWOOD QLD 4075

3. Mr/s A H Bailey
   SUNNYBANK HILLS QLD 4109

4. Mrs L Arnold
   CHELMER QLD 4068

5. Mrs M Lewis-Driver
   Coordinator
   Queensland Injury Surveillance and Prevention Project
   SOUTH BRISBANE QLD 4101

6. Mr C Ashton
   MUNRUBEN WOODS QLD 4125

7. Mr I Holmes
   DEAGON QLD 4017

8. Ms E Grigg
   CORINDA QLD 4075

9. Mr G Wilson
   Managing Director
   Guardian Angel
   Research and Development Pty Ltd
   BULIMBA QLD 4171

10. Ms K Cook
    TARINGA QLD 4068

11. Mr R Draper
    Associate
    Security Risk Management Australia
    BROWNS PLAINS QLD 4118

12. Mr V O'Rourke
    Chief Executive
    Queensland Rail
    BRISBANE QLD 4001

13. Mr J Mathews
    Chief Executive Officer
    Pine Rivers Shire Council
    STRATHPINE QLD 4500

14. Mr D Meyer
    Manager Transport Planning
    Caboolture Shire Council
    CABOOLTURE QLD 4510

15. Mrs M Shaw
    VICTORIA POINT QLD 4165

16. Ms A Slipper
    Director
    Nambour Community Preschool and Kindergarten Association Inc.
    NAMBOUR QLD 4560

17. Mrs S Woodbridge
    Acting Executive Director
    Council on the Ageing Queensland Inc.
    NUNDAH QLD 4012

18. ANONYMOUS

19. Ms J Smith
    Secretariat
    Safety Institute of Australia
    Queensland Division
    SPRING HILL QLD 4004

20. Ms P Godsell
    Domestic Violence Worker
    Women's Legal Service
    ANNERLEY QLD 4103

21. Mrs P Avery
    Hon State Secretary
    National Council of Women of Queensland (Inc)
    BRISBANE QLD 4000

22. Mr H Wright
    Chief Executive Officer
    Redland Shire Council

CLEVELAND QLD 4163

23. Ms M Young
Chief Executive Officer
Paraplegic and Quadriplegic
Association of Queensland Inc.
WEST END QLD 4101

24. Mr G Gardiner
Director
TRICOM Australia Pty Ltd
BRADMAN STREET D.C. QLD 4110

25. Mr D Deans
Chief Executive
National Seniors Association
BRISBANE QLD 4001

26. Mr P Blake
Executive Director
Land Transport Safety
Queensland Transport
FORTITUDE VALLEY QLD 4006

27. Mr L Crofton
Branch Secretary
Public Transport Union
(Queensland Branch)
BRISBANE QLD 4000

28. Mr N Roberts MLA
Member for Nudgee
BANYO QLD 4014

29. Mrs J Rutch
YANDINA QLD 4561

30. Mr B Horne
General Manager Disability Programs
Queensland Spastic Welfare League
FORTITUDE VALLEY QLD 4006

31. Mr J P O'Sullivan
Commissioner
Queensland Police Service
BRISBANE QLD 4001

32. Mr/s H MacDonald
ST LUCIA QLD 4067

33. Mr K Carmody
Industrial Officer
Rail Services Union
SOUTH BRISBANE QLD 4101

34. Mr M Henman
CORINDA QLD 4075

35. Mr L Ardill MLA
Member for Archerfield
COOPERS PLAINS QLD 4108

36. Ms K Godfrey
BOOVAL QLD 4304

37. Ms S Little
RAYMONDS HILL QLD 4305

38. Dr D Lange
Chief Health Officer
Health Advancement Branch
Queensland Health
BRISBANE QLD 4001

39. Mr M Simpson
Area Coordinator
NHW NUSNHSW2 Neighbourhood Watch
WAVELL HEIGHTS QLD 4012

40. Rev A Male
Director-General
Department of Families, Youth and Community Care
BRISBANE QLD 4001

41. Mr D Cheetham
HOLLAND PARK QLD 4121

42. Ipswich Women's Health Clinic and Sexual Assault Service
IPSWICH QLD 4305

43. Mr C English
Branch Chairman
No. 5 State Councillor
Australian Federated Union of Locomotive Enginemen (Queensland)
MAYNE QLD 4006

44. CONFIDENTIAL

APPENDIX C — WITNESSES AT PUBLIC HEARINGS

BRISBANE — 27 MARCH 1997

Senior Sergeant Ian Limback	Officer in Charge - Railway Squad	Queensland Police Service
Superintendent Bob Watson	Specialist Services Branch (Brisbane)	Queensland Police Service
Inspector Bob Harding	Specialist Services Branch - Railway Squad	Queensland Police Service
Senior Constable Helena Adriannsen	Intelligence Officer - Railway Squad	Queensland Police Service
Mr Kelvin Steer	Honorary Member and Representative	Public Transport Union
Mr Colin English	Train driver and State Councillor	Australian Federated Union of Locomotive Enginemen
Ms Victoria Wight	Industrial Officer	Railway Services Union
Mr Roderick Draper	Managing Director	Amtac Professional Services
Mr Robert Jones	Access Consultant and Chairperson	Queensland Disability Advisory Council
Mr Greg Ford	Principal Advisor - Railway Safety Accreditation Unit	Queensland Transport
Mr Bruce Couch	Acting Manager - Rail Safety Accreditation Unit	Queensland Transport
Ms Helen Stehbens	Director - Rail and Port Authority Policy	Queensland Transport
Mr Stephen Hart	Senior Policy Adviser - Rail and Port Authority Policy	Queensland Transport
Mr Norm Boniface	Acting Principal Adviser - Transport Planning (SEQ) Branch	Queensland Transport
Mr Martin Thomsett	Manager - Scheduled Services - Public Transport Division	Queensland Transport
Mr Vince O'Rourke	Chief Executive	Queensland Rail

BRISBANE — 27 MARCH 1997 CONTINUED

Mr Kevin Band	General Manager (Safety)	Queensland Rail
Mr Glen Dawe	Group General Manager (Citytrain)	Queensland Rail
Mr Rob McAlpine	Manager - Planning and Business Development (Citytrain)	Queensland Rail
Mr Keith Stafford	Manager - Protective Services (Citytrain)	Queensland Rail

BRISBANE — 28 MAY 1997

Mr Vince O'Rourke	Chief Executive	Queensland Rail
Mr Kevin Band	General Manager (Safety)	Queensland Rail
Mr Glen Dawe	Group General Manager (Citytrain)	Queensland Rail
Mr Rob McAlpine	Manager - Planning and Business Development (Citytrain)	Queensland Rail
Mr Keith Stafford	Manager - Protective Services (Citytrain)	Queensland Rail

APPENDIX D — SECTIONS 140 AND 142 TRANSPORT INFRASTRUCTURE ACT 1994

MAINTAINING ROADS CROSSING RAILWAYS

140(1) A railway manager for a railway must maintain —

1. the part of the railway on a road; and

2. the surface of a road, in a character in keeping with the road—

   a) between the rails; and

   b) outside the outermost rails to a distance of 0.6 m.

(2) If a railway is built by way of a bridge over a road, the authority that maintained the road before the railway was built must continue to maintain the road under the bridge.

EXTENDING ROADS ETC. THROUGH OR OVER RAILWAY LAND

142(1) A railway manager may allow a local government to construct, maintain and operate a road on railway land by way of—

(a) a bridge over the railway; or

(b) a bridge that allows the road to pass under the railway; or

(c) a level crossing.

(2) The permission may be subject to conditions.

(3) The railway manager may continue to use the land, and the airspace above the land, other than any land and airspace excluded by a condition of the permission.

(4) The railway manager, and its agents or employees, do not have any duty or liability for the road or its use or operation.

(5) Once the road is used, it is taken to be—

(a) a road under the relevant local government's control; and

(b) a road under any Act about the use vehicles on a road.

(6) Unless the railway manager and the local government otherwise agree—

(a) the local government is responsible for maintaining the road and the bridge or level crossing; and

(b) if the road stops being used — the local government is responsible for the cost of taking the bridge or level crossing away and of restoring the railway.

APPENDIX E — CITYTRAIN NETWORK MAP

Suburban and Inter Urban Network Map

APPENDIX F — CITYTRAIN ROLLINGSTOCK

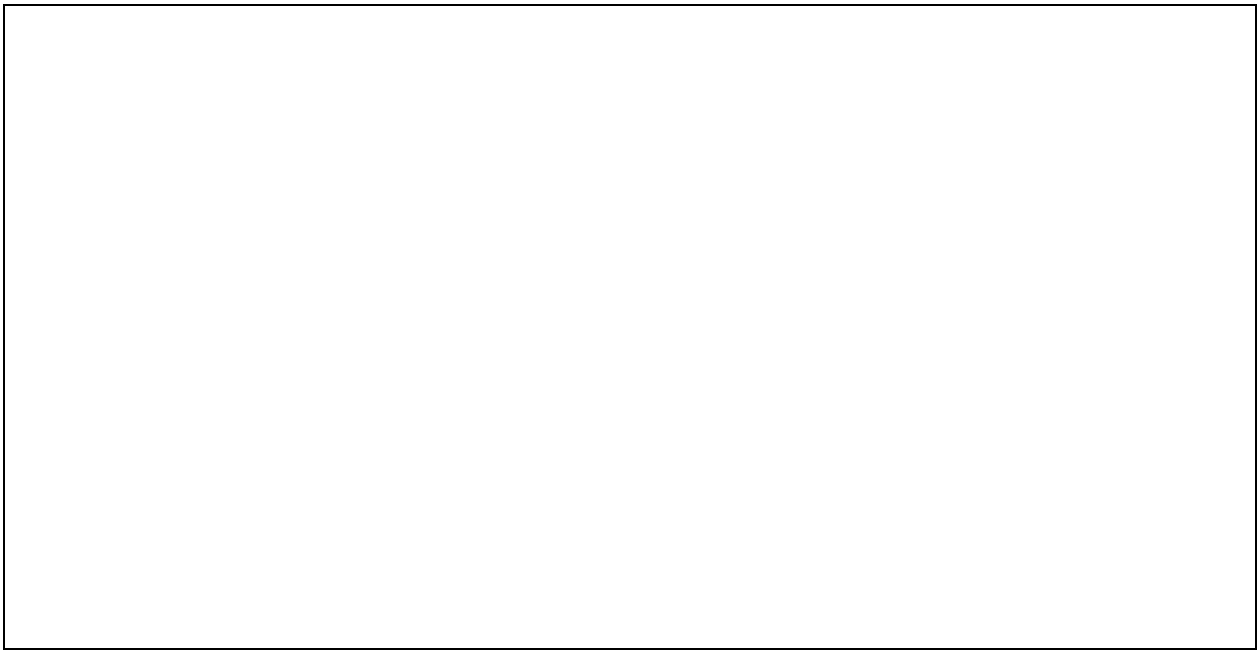


Photo 1: Electric Multiple Unit (EMU)

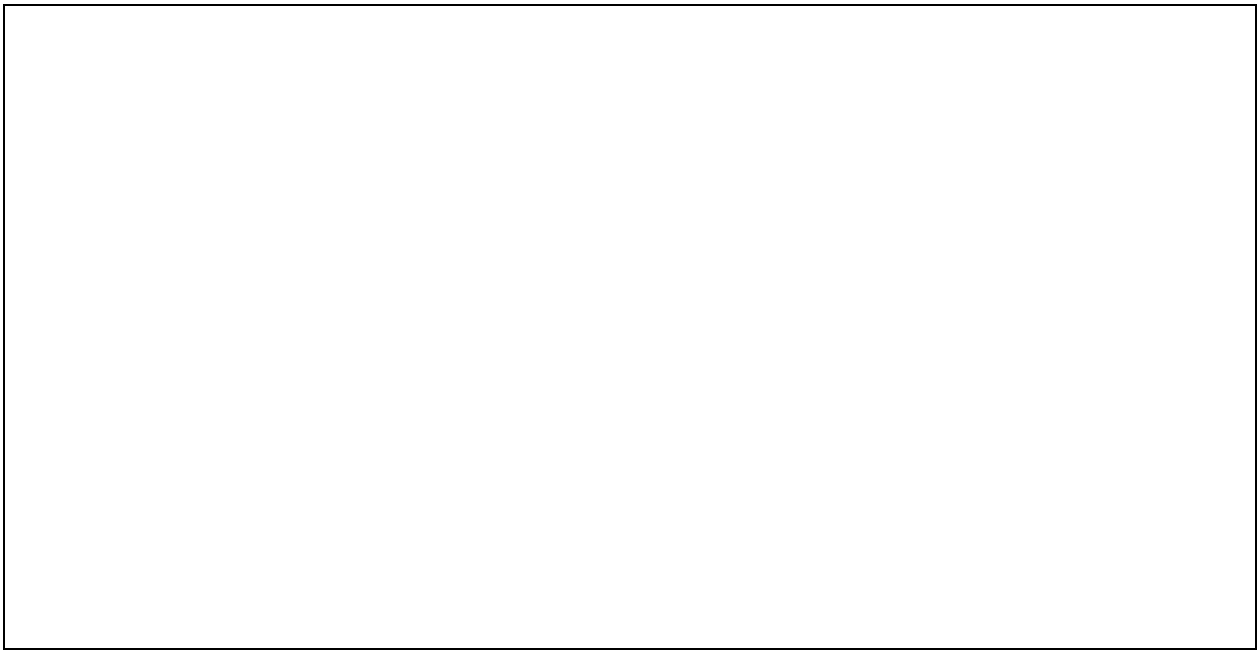


Photo 2: Suburban Multiple Unit (SMU)

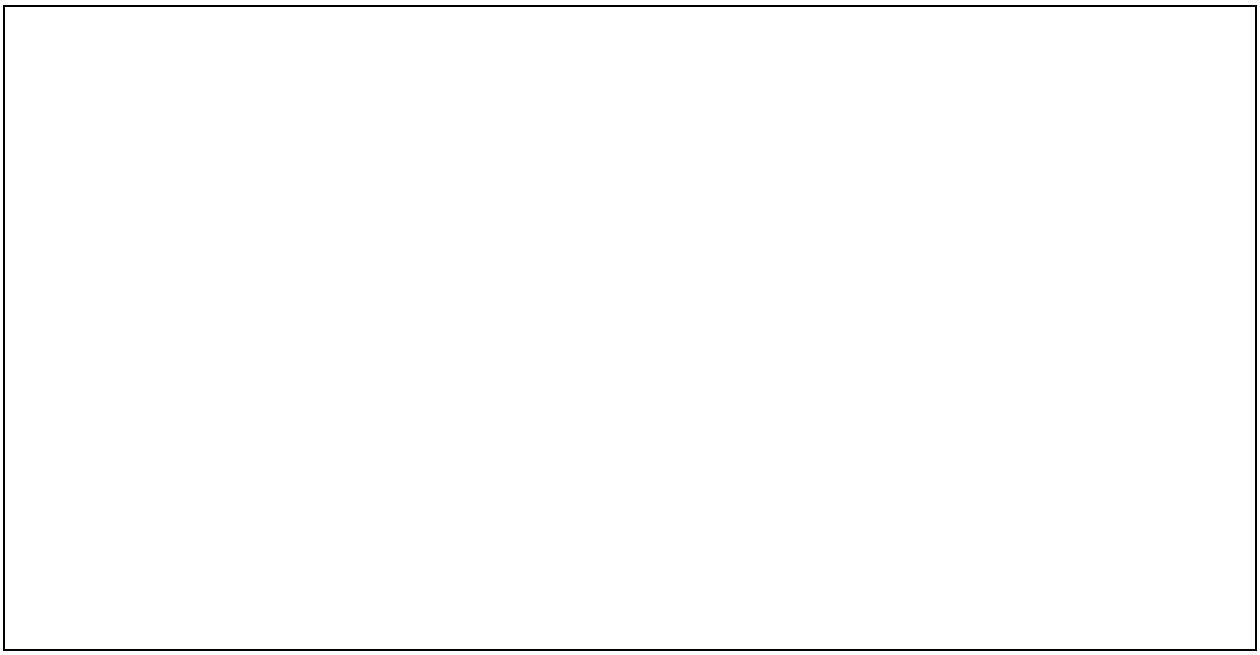


Photo 3: Interurban Multiple Unit (IMU)

APPENDIX G — SAFETY AUDIT OF QUEENSLAND RAIL REFERENCE DOCUMENTS

Table 19: Safety Audit of Queensland Rail Reference Document

AUDIT REFERENCE	DOCUMENT NO.	REFERENCE NO.	COMMENTS
Page 5 Table 1.2 and commentary	1 2	Page 9 Page 10	The Audit commented the UK rate was one passenger fatality per 41 million passenger journeys. Document 1 shows the UK rate as being 1.1 per 50 million journeys. Document 2 also supports this claim.
Page 5 Table 1.3	3	Table 9	The Australian Bureau of Statistics figures shown in Table 9 are for all rail related fatalities. Table 1.3 shows the exact same figures minus those which are in Table 1.1. This is justified by the fact Australian Bureau of Statistics figures are for all fatalities whereas Table 1.3 is for public fatalities and Table 1.1 is for passenger fatalities.
Page 6 Figure 1.1 & Figure 1.2	3	Table 9 & 10	Tables 9 and 10 of documents quote Australian Bureau of Statistics figures which were used to compare fatality trends with population trends and then to calculate the fatality rate per million of population.
Page 6	3	Table A	Table A of document 3 shows that rail fatalities involving collisions with motor vehicles was 31.1% between 1984 to 1993. This is very close to the 30.2% quoted as being the percentage of level crossing accidents. It should also be noted that Table B shows that the Queensland fatality rate per 10 million people is lower than the Australian average.
Page 7 Commentary regarding UK public fatality rates	1	Page 26	The figure in document 1 shows the UK public fatality rates are around 1 per million of population as stated in the Audit. The document commentary also validates that UK data excludes suicides.
Page 7 Section 1.2.1.3	8	Page 23	The commentary and figure in Document 8 regarding workforce safety indicates the fatality rate was around 1 per 10,000 employees in 1995 as stated in the Audit.
Page 8 Section 1.2.1.4	1 5	Page 30 Appendix 8	The safety performance statistics on page 30 of Document 1 lists the number of collisions for 1990 to 1994. Document 5 gives the performance normaliser and accident statistics including collisions for

			Queensland Rail over the same period.

AUDIT REFERENCE	DOCUMENT NO.	REFERENCE NO.	COMMENTS
Page 9 Section 1.2.1.5, Table 7 and figure 1.3	1 5 7	Page 30 Appendix 8	Document 1 shows UK derailment numbers, Document 7 shows Queensland Rail derailments and Document 7 shows breakdown of Queensland Rail derailments.
Page 10 Section 1.2.1.6 Commentary on signals passed at danger	1 8 6 10	Page 12 Page 26 Pages 13 & 14 All	Document 1 and Document 8 show UK spad numbers and rates. The Queensland Rail statistics quoted in the Audit statements were taken directly from the Bowen Hills collision inquiry report which is Document 6. The evidence submitted to this Inquiry has been retrieved from archives and the spad related evidence is Document 10 which clearly identifies Queensland Rail spad numbers.
Page 12 Section 1.3.4	9	All	A search of Queensland Rail records has proved difficult to find the two Queensland Rail passenger train collisions quoted in the Audit report however document 9 shows incident details of 2 incidents that may have been included.
General Commentary in relation to Queensland Rail's safety performance compared with other Australian States and the rest of the world.	3 11 12	All All All	Document 3 is a Queensland Transport report published in 1995 (prior to the Audit) and uses Australian Bureau of Statistics figures to make detailed comparisons between Queensland and other Australian States rail safety performance. This report concluded that "generally, since the late 1980's, Queensland's rail safety performance has been better than the Australian average." Document 11 compares Queensland Rail related fatalities to that of the USA using the United States Federal Railway Authority performance measures. This document clearly shows Queensland's rail related fatalities per million train kilometres are approximately half that of the USA. Document 12 is in fact a number of reports from Canada, Australia, Great Britain and the United States which may be of use to the Committee in its considerations. The first page shows among other things Canadian rail fatalities and million train miles which when converted equals a rate of .9 fatalities per million train kilometres which is well above the Queensland rate.

Table 20: Document List - Safety Audit of Queensland Rail

DOCUMENT NO.	DESCRIPTION OF DOCUMENT
1	British Rail, Railway Group Safety Plan 1995/96.
2	British Rail Safety Plan 1995
3	Queensland Transport report "Rail Safety Performance Queensland Compared with Other Australian States 1984 - 1993" dated 18 November 1995.
4	British Railway Group Safety Plan 1996/97.
5	Queensland Rail statistical report including performance normalisers and accident statistics 1991 to 1995.
6	Queensland Transport report on Independent Inquiry into Bowen Hills Train Collision on 14 march 1996.
7	Queensland Rail report on derailment statistics.
8	British Rail, Railway Group Safety Plan 1997-98.
9	Queensland Rail Incident records of passenger train collisions 1991-1995.
10	Bowen Hills train collision inquiry evidence regarding details of Queensland Rail signals passed at danger.
11	Report comparing USA and Queensland Rail fatality rates.
12	A grouping of rail safety performance articles and papers.

REPORTS OF THE TRAVELSAFE COMMITTEE

NUMBER	TITLE	TABLING DATE
1.	Annual Report for the period 10 May 1990 to 30 June 1990	5 September 1990
2.	The need for some form of compulsory periodic inspections of passenger vehicles as an effective means of reducing road crashes and the severity of associated injuries, AND The need to improve the standards of motor vehicle repairs as a means of improving vehicle and road safety	4 December 1990
3.	Road Safety Education AND Traffic Law Enforcement	4 September 1991
4.	Annual Report for the period 1 July 1990 to 30 June 1991	2 October 1991
5.	Bicycle Safety	28 November 1991
6.	Achieving High Levels of Compliance with Road Safety Laws - a review of road user behaviour modification	18 March 1992
7.	Road Environment and Traffic Engineering	28 April 1992
8.	Annual Report for the period 1 July 1991 to 30 June 1992	25 August 1992
9.	Pedestrian and Cyclist Safety	15 July 1993
10.	Annual Report for the period 1 July 1992 to 30 June 1993	18 November 1993
11.	The Safety and Economic Implications of Permitting Standees on Urban and Non-Urban Bus Services	18 November 1993
12.	Local Area Traffic Management	28 April 1994
13.	Annual Report for the period 1 July 1993 to 30 June 1994	27 October 1994
14.	The Desirability of Requiring Compulsory Third Party Insurance Cover for Boats and Trailers	22 November 1994
15.	Speed Cameras: Should They Be Used in Queensland?	24 November 1994
16.	Report on Driver Training and Licensing	3 April 1996
17.	Annual Report for the period 1 July 1995 to 30 June 1996	4 September 1996
18.	Queensland’s Road Toll : An Overview	8 December 1996

NUMBER	TITLE	TABLING DATE
19.	Queensland's Road Toll : Drink Driving (Part 1)	8 December 1996
20.	Unsecured Loads	16 May 1997
21.	Annual Report for the period 1 July 1996 to 30 June 1997	18 November 1997
22.	Compulsory BAC Testing	13 December 1997

Reports are available from the committee office website www.parliament.qld.gov.au or the committee's secretariat:

Parliament House
George Street
BRISBANE QLD 4000

Telephone: (07) 3406 7908
Facsimile: (07) 3406 7262