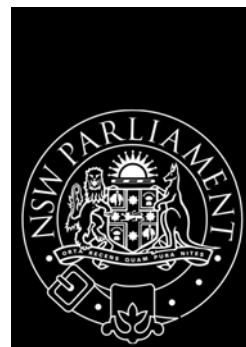PARLIAMENT OF NEW SOUTH WALES

Staysafe Committee

REPORT ON UPDATING PROGRESS ON RAILWAY LEVEL CROSSING SAFETY

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Terms of Reference

In 2001, the Committee received a Ministerial reference from the Hon Carl Scully MP, then Minister for Roads, following several fatal crashes at railway level crossings in southern New South Wales.

The Committee resolved to conduct an inquiry into the safety of railway level crossings in New South Wales, with the following terms of reference:

- The status of railway level crossings in New South Wales;
- Factors contributing to crashes at railway level crossings;
- Countermeasures which may increase the safety of railway level crossings;
- Motorist behaviour and education regarding the use of railway level crossings; and
- Any other related matters.

In October 2004, the Committee handed down its findings and recommendations.

The final recommendation made by the Committee in the 2004 report provided for a further review, as follows:

> RECOMMENDATION 69:
>
> The Rail Infrastructure Corporation, the Roads and Traffic Authority, local councils, and other agencies, be subject to a further review in 2006 by the STAYSAFE Committee regarding the response to the findings and recommendations of the inquiry into the safety of railway level crossings in New South Wales.

In mid-2006, the Committee commenced an inquiry to review the response to the findings and recommendations arising from its 2004 report into the safety of railway level crossings in NSW. The Committee expressed the view that a further review by the Committee regarding the response to the findings and recommendations of the inquiry into the safety of railway level crossings in NSW should be conducted at the end of 2008, if not earlier.

In November 2008, the Committee resolved to conduct a further public hearing into railway level crossing safety and take evidence from relevant organisations in order to obtain updated responses to its earlier recommendations.

List of Abbreviations

AGD	Attorney General's Department
ALCAM	Australian Level Crossing Assessment Model
ARA	Australasian Railway Association
ARCSIG	Australian Railway Crossing Strategy Implementation Group
ARTC	Australian Rail Track Corporation
ATC	Australian Transport Council
ATSB	Australian Transport Safety Bureau
BCG	Behavioural Coordination Group
BITRE	Bureau of Infrastructure, Transport and Regional Economics
CRN	Country Regional Network
DISPLAN	State Disaster Plan
EPA	Environment Protection Authority
GPS	Global Positioning System
HAZMAT	Hazardous Materials
ITSRR	Independent Transport Safety and Reliability Regulator
LCAM	Level Crossing Assessment Model
LCIP	Level Crossing Improvement Program
LCSC	Level Crossing Strategy Council
LCU	Level Crossing Unit
LED	Light-Emitting Diode
LGSA	Local Government and Shires Association
LXM	Level Crossing Management
MoT	Ministry of Transport
NSWPF	New South Wales Police Force
OH&S	Occupational Health & Safety
OTSI	Office of the Transport Safety Investigator
RIC	Rail Infrastructure Corporation
RISSB	Rail Industry Safety and Standards Board
RLX	Railway Level Crossing
RTA	Roads and Traffic Authority
RTBU	Rail, Tram and Bus Union
SCOT	Standing Committee on Transport
SEMC	State Emergency Management Committee
SEPP	State Environmental Planning Policy

Chair's Foreword

This report completes an extensive review process into railway level crossing safety by the Staysafe Committee. The first referral of this Inquiry in 2001 followed several fatal crashes at railway level crossings in southern New South Wales and resulted in a comprehensive investigation of contributing causes and suggestions for future safety improvements.

The initial report findings in 2004 included systemic, collaborative and educational recommendations to address underlying deficiencies in the then policy and regulatory regime.

Much has happened since the 2004 report and the Committee is pleased that many of its earlier recommendations have been adopted. As a result of evidence taken from the organisations and agencies who contributed to the earlier reviews, a further set of recommendations have been made which addresses some of the remaining issues identified as still requiring resolution. These include railway level closures, signage, coordination agreements, strategic planning, new technology and further research directions.

It is also timely that the Committee's report is brought down in time for National Rail Safety Week, which will be held throughout Australia and New Zealand in July. The Committee supports the raising of awareness and greater understanding of level crossing safety issues and encourages involvement in the Week's activities, which will have participation by State and Federal Transport Ministers, media representatives and industry. Every jurisdiction will conduct a variety of safety activities throughout the Week and promote greater public exposure to rail safety initiatives.

Finally, I would like to thank all those who have made contributions and participated in the present and past Staysafe inquiries in this vital area of road safety.

I am pleased to present this Report and thank my fellow Committee Members and the Committee Secretariat for their contributions and assistance.

Geoff Corrigan MP
<u>Chair</u>

List of Recommendations

RECOMMENDATION 1:

The Committee recommends that the Level Crossing Strategy Council continue to give priority to reviewing the status of under-utilised railway level crossings with a view to recommending their closure, if appropriate, as part of a national railway safety agenda.

RECOMMENDATION 2:

The Committee, conscious of the potential for creating confusion and potential complacency on the part of drivers approaching inactive railway level crossings recommends the removal, or bagging of all signs at such crossings.

RECOMMENDATION 3:

The Committee recommends that road authorities honour their obligations under the *Rail Safety Act 2008 (NSW)* to ensure adequate implementation of Interface Coordination Agreements, thereby achieving the objectives of increased railway level crossing safety and coordination.

RECOMMENDATION 4:

The Committee recommends that the Level Crossing Strategy Council conduct consultations with key stakeholder groups on how to implement its Strategic Plan to ensure that there is general support for its provisions and scope.

RECOMMENDATION 5:

The Committee recommends that, as part of the Level Crossing Strategic Plan, and in order to reduce unnecessary duplication, the Level Crossing Strategy Council coordinate its activities relating to the design, trialling and implementation of new and existing intelligent transport technology applications for use at railway level crossings with the work undertaken by the relevant National Transport Policy working groups.

RECOMMENDATION 6:

The Committee recommends that the Level Crossing Strategy Council undertake a review of the impact of increased heavy vehicle traffic on collision risks at railway level crossings and include an examination of the potential benefits of GPS tracking at railway level crossings to improve safety, as part of the review.

RECOMMENDATION 7:

The Committee recommends that in order to ensure consistent standards in the determination of research and planning priorities and to minimise duplication, the Level Crossing Working Group include and build on the work of the Behavioural Change Group as part of its remit. This will assist in providing a national focus for and consistency in future railway level crossing behavioural research initiatives and priorities.

Chapter One - Introduction

BACKGROUND

1.1   In 2001, the Staysafe Committee received a Ministerial reference from the Hon Carl Scully MP, as Minister for Roads, following several fatal crashes at railway level crossings in southern New South Wales.

1.2   The then Committee resolved to conduct an inquiry into the safety of railway level crossings in New South Wales, with the following terms of reference:
- The status of railway level crossings in New South Wales;
- Factors contributing to crashes at railway level crossings;
- Countermeasures which may increase the safety of railway level crossings;
- Motorist behaviour and education regarding the use of railway level crossings; and
- Any other related matters.

1.3   The Committee held three days of public hearings, and conducted inspections throughout regional NSW and interstate. The inquiry lapsed due to the prorogation of the 52nd Parliament in February 2003.

1.4   After its re-establishment in mid-2003, the Staysafe Committee resolved to recommence the railway level crossing safety inquiry with the previously adopted terms of reference.

1.5   In October 2004, the Committee handed down its findings and recommendations.

1.6   The findings of the inquiry are summarised below:
- No single solution can be implemented to increase safety. A flexible range of strategies must be developed and implemented to deal effectively with railway level crossing safety;
- A comprehensive inventory of the number and types of railway level crossings in NSW must be developed;
- Restructuring the Level Crossing Strategy Council, with representatives from rail, road, local councils and police, would ensure a more coordinated and whole-of-Government approach to the administration of safety at level crossings;
- A risk identification model must be developed to provide an objective priority ranking for upgrades; this should eliminate any potential for an inconsistent approach and enable a State wide perspective to be developed;
- There is a need to ensure a comprehensive policy framework for improving safety at railway level crossings, including a policy document that outlines Government objectives for level crossings, the responsibilities of the relevant parties and the role of the Level Crossing Strategy Council;
- There must be a greater emphasis on educating road users and the community about the risks at level crossings, through coordinated and strategically targeted campaigns, as well as an examination of the educative and deterrent role that enforcement can play; and
- There is a need to consider instituting a closed corridor policy on high-speed lines, which could involve the closure of crossings, grade separations, possible provision of alternative access, upgrading of passive crossings to 'active protection', and use of alternative technologies.

1.7   The report contained 69 recommendations, grouped according to matters relating to:

- The administration of railway level crossings;
- The road environment at railway level crossings;
- Train crews;
- Locomotives and rolling stock;
- Motor vehicles at railway level crossings;
- Drivers and other road users at railway level crossings; and
- The railway environment at level crossings.

1.8   The final recommendation made by the Committee in the 2004 report provided for a further review, as follows:

> RECOMMENDATION 69:
>
> The Rail Infrastructure Corporation, the Roads and Traffic Authority, local councils, and other agencies, be subject to a further review in 2006 by the Staysafe Committee regarding the response to the findings and recommendations of the inquiry into the safety of railway level crossings in New South Wales.

1.9   In mid-2006, the Committee commenced an inquiry to review the response to the findings and recommendations arising from its 2004 report into the safety of railway level crossings in NSW.

1.10   The report of the Committee, tabled in December 2006, did not make any formal findings or recommendations about progress on responses to earlier recommendations. However, the Committee expressed the view that a further Staysafe review of action taken on the findings and recommendations of the earlier inquiry into the safety of railway level crossings in NSW should be conducted at the end of 2008.

1.11   The current inquiry, entitled updating progress on railway level crossing safety, was initiated in November 2008 and sought submissions and input from organisations and lead agencies who had appeared previously and given evidence to the Committee in 2004 and 2006.

CONDUCT OF INQUIRY

1.12   In December 2008, invitations to make submissions and to provide status reporting on railway level crossing safety were extended to organisations who had participated in the earlier Staysafe reviews. Information requested included updated activity on implementation of the Committee's prior recommendations.

1.13   In its response to the 2004 report, the Government fully or partially supported 58 of the Committee's 69 recommendations. Therefore, rather than an exhaustive examination of all issues dealt with in previous reports, the Committee has focused its attention on earlier recommendations not implemented in full by Government.

1.14   A public hearing was conducted in Sydney on 6 March 2009, where evidence was obtained from Asciano, the Australasian Railway Association and the Level Crossing Strategy Council. As a result of evidence taken at the hearing, additional information was sought from these organisations to amplify and clarify outstanding issues.

REPORT STRUCTURE

1.15   Evidence collected in submissions and the public hearing forms the basis for this report. This is supplemented by other information gathered as background to the Inquiry.

1.16   Chapter 2 analyses the current response to the Committee's previous recommendations and Chapter 3 identifies priorities and policy implications resulting from this analysis. Further conclusions and recommendations are made to address shortcomings in previous responses and to continue the process of improving safety at railway level crossings.

Chapter Two - Progress on Previous Recommendations

OVERVIEW OF RAILWAY LEVEL CROSSING SAFETY IN NSW

2.1   A railway crossing is defined as any crossing of a railway at grade, providing for both vehicular traffic and other road users including pedestrians. Level crossings represent the main point of interaction between rail and road users and pose a high risk for serious collisions between trains and road vehicles.

2.2   There are more than 3,800 level crossings in NSW. Most are located in regional areas[1] and 1,460 are crossings on publicly accessible roads. The majority of these are on roads under the administrative responsibility of local councils. In the last two financial years, 2006-07 and 2007-08, 57 railway level crossings have been approved for closure[2].

2.3   The type of control at a railway crossing depends on the requirements of individual locations and takes account of safety, traffic volume, geometry and other factors. The absolute minimum treatment required at any railway crossing, where there is provision for motor vehicles to cross the railway, is an assembly comprising a railway crossing sign and a Give Way sign[3].

2.4   The control of railway crossings is classified as either active or passive according to the following criteria:

- *Active Control* - "Control for the movement of vehicular or pedestrian traffic across a railway crossing by devices such as flashing signals, gates or barriers, or a combination of these, where the device is activated prior to and during the passage of a train through the crossing"[4].

- *Passive Control* - "Control for the movement of vehicular or pedestrian traffic across a railway crossing by signs and devices, none of which are activated during the approach or passage of a train and which rely on the road user, including pedestrians, detecting the approach or presence of a train by direct observation"[5].

- In addition to "active" and "passive" controlled crossings there are also "occupational" or "accommodation" crossings between private property and public roads; maintenance crossings; and illegal crossings.

2.5   The Australian Standard *Manual of Uniform Traffic Control Devices - Part 7: Railway Crossings* (AS1742.7) was revised in 2007, following a major review, carried out by

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[1] Submission 2, ARA, p. 4.
[2] Data obtained from Level Crossing Strategy Council, *Railway Level Crossing Safety Improvement Programs*, Yearly Reports 2006-07 and 2007-08.
[3] Australian Standard, *Manual of uniform traffic control devices, Part 7: Railway crossings* (AS 1724.7 – 2007), p. 30.
[4] Australian Standard, *Manual of uniform traffic control devices, Part 7: Railway crossings* (AS 1724.7 – 2007), p.7. Flashing signals shall commence activation a minimum of 20 seconds prior to the arrival of a train at a single train crossing.
[5] ibid.

Progress on Previous Recommendations

road and railway authorities, of safety requirements such as signs, markings and delineation at railway crossings[6].

2.6   The principal changes included:

- Changes to standard signs;

- Provision for active advance warning of the activation of railway crossing signals under certain conditions;

- Greater detail for sight distance requirements at passive control crossings for stop and give-way sign control;

- The need to avoid unsafe queuing of traffic on railway crossings upstream of traffic signals, and utilisation of signs and box markings to prevent this; and

- Substantial upgrade of standards for pedestrian crossing treatments at railway crossings, including provisions for people with disabilities.

2.7   According to the NSW Independent Transport Safety and Reliability Regulator (ITSRR), there were six collisions between trains and road vehicles at level crossings in 2007-08. Three of the six collisions occurred at passive crossings. This is lower than the count for 2006-07 and consistent with a 10-year decreasing trend in collisions at passive crossings. No injuries were reported for these collisions.

2.8   Of the three collisions at active level crossings in 2007-08, one incident at Leeton resulted in a minor injury when a freight train collided with a road vehicle at the Canal Road level crossing and the driver of the road vehicle was conveyed to hospital.

2.9   There was also one collision with a person at a passive crossing in 2007-08, when a trespasser was struck and fatally injured by a freight train at a private level crossing near Casino[7].

2.10   Within the overall road safety environment in NSW, railway level crossing crashes represent a small percentage of motor vehicles involved in road crashes. This is despite the fact that, according to the Australian Transport Safety Bureau (ATSB), approximately one third of all Australian rail travel (as measured in km travelled) and approximately one quarter of all rail freight takes place in NSW[8].

2.11   Compared to other States, and on the basis of the amount of rail activity involved, the following tables illustrate the relatively low frequency of incidents, injuries and fatalities at level crossings in NSW.

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[6] This standard is not applicable to railway crossings provided for the exclusive use of the occupier of private land or by other people with the knowledge and agreement of the occupier (sometimes known as 'occupation' crossings).

[7] ITSRR, *Rail Industry Safety Report 2007-2008*, December 2008, p. 18.

[8] ATSB, *Transport Safety Report, Rail Statistics RR-2008-11*, October 2008, p. 10.

TABLE 1: Level crossing incidents on the NSW rail network[9]

	Person (Passive)	*Fatalities*	*Injuries*	Vehicle (Passive)	*Fatalities*	*Injuries*	Vehicle (Active)	*Fatalities*	*Injuries*
2007-08	1	*1*	*0*	3	*0*	*0*	3	*0*	*1*
2006-07	n.a.	*n.a.*	*n.a.*	7	*1*	*5*	1	*0*	*2*
2005-06	0	*0*	*0*	5	*0*	*1*	4	*1*	*1*
TOTAL	1	*1*	*0*	15	*1*	*6*	8	*1*	*4*

TABLE 2(a): Road vehicle collisions at level crossings - by jurisdiction and year, 1 January 2001 to 30 June 2008

Year	Jurisdiction							Total
	QLD	*NT*	*SA*	*WA*	*VIC*	*TAS*	*NSW*	
2001	22	0	17	1	36	1	15	92
2002	21	1	11	5	34	3	18	93
2003	20	0	11	3	35	2	12	83
2004	13	1	11	2	30	3	13	73
2005	21	0	8	6	26	5	6	72
2006	22	2	10	4	27	5	9	79
2007	13	0	6	5	19	2	10	55
2008	9	0	4	2	13	1	2	31
TOTAL	141	4	78	28	220	22	85	578

Table 2(b): Normalised road vehicle collisions as level crossings, rate per million train km travelled, by jurisdiction and year, 1 January 2001 to 30 June 2008.

Year	Jurisdiction							Total
	QLD	*NT*	*SA*	*WA*	*VIC*	*TAS*	*NSW*	
2001	1.11	0.00	2.07	0.13	1.95	2.17	0.46	1.06
2002	1.08	10.87	1.27	0.5	1.79	6.52	0.56	1.04
2003	1.04	0.00	1.36	0.3	1.85	4.08	0.39	0.95
2004	0.64	1.52	1.28	0.17	1.59	5.46	0.42	0.8
2005	1.07	0.00	0.91	0.49	1.37	8.62	0.2	0.79
2006	1.13	2.9	1.15	0.31	1.41	9.61	0.31	0.88
2007	0.65	0.00	0.7	0.39	1.01	4.35	0.34	0.61
2008	0.46	0.00	0.47	0.12	0.73	2.28	0.07	0.33
TOTAL	0.48	0.63	0.61	0.16	0.78	2.95	0.18	0.43

2.12 These statistics, together with the relatively high number of level crossings, indicate that NSW is managing one of the busiest rail networks in the country relatively effectively. This does not mean, however, that railway level crossing safety should be ignored or that there is any room for complacency.

2.13 The previous reports of the Committee have made recommendations designed to improve the management and regulation of level crossings and to further reduce the risks associated with the intersection of road and rail traffic. In addition, as previously stated in the Committee's 2004 report, the consequences of a major derailment as a result of a motor vehicle incident at a crossing has the potential to incur catastrophic loss of life and substantial costs to the rail operators as well as to the hospital and emergency systems.

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[9] Sources: Independent Transport Safety and Reliability Regulator, *Rail Industry Safety Report*, 2007-08, Figure 15, p. 19; Independent Transport Safety and Reliability Regulator, *Rail Industry Safety Report*, 2006-07, Figure 12, p. 123; Independent Transport Safety and Reliability Regulator, *Annual Report*, 2005-06, Figure 10, p. 134.

KEY STAKEHOLDER GROUPS

2.14   Individual rail and road agencies are responsible for the management of safety of the various components of their railway level crossing infrastructure. Regulatory oversight is provided by the Independent Transport Safety and Reliability Regulator (ITSRR) for rail operations and infrastructure, and by the RTA and Police for roads.

2.15   Major responsibility for managing and coordinating railway level crossing safety is shared between a range of agencies, while overall coordination is carried out by the Level Crossing Strategy Council, as detailed below.

Level Crossing Strategy Council (LCSC)

2.16   The Level Crossing Strategy Council (LCSC) is an interagency forum that provides coordination between agencies and promotes railway level crossing safety. It comprises road, rail and regulatory bodies with responsibilities for the safety of railway level crossings in NSW, plus the Ministry of Transport and the NSW Local Government and Shires Association (LGSA). The Level Crossing Strategy Council meets every second month. A Level Crossing Working Group develops and implements LCSC strategies and meets monthly. The LCSC member agencies are:

- Australian Rail Track Corporation;
- Independent Transport Safety and Reliability Regulator;
- Local Government and Shires Association of NSW;
- Ministry of Transport;
- NSW Police Force;
- Rail Infrastructure Corporation;
- RailCorp; and
- Roads and Traffic Authority.

2.17   The primary role of each agency is outlined below:

Australian Rail Track Corporation (ARTC)

The Australian Rail Track Corporation manages and maintains the NSW country and interstate rail network under a 60-year lease from the State Government. ARTC also maintains the remaining country rail network under agreement to the Rail Infrastructure Corporation (RIC).

Independent Transport Safety and Reliability Regulator (ITSRR)

The Independent Transport Safety and Reliability Regulator's role is to ensure public transport and commercial railway operations are safe for use by the communities and businesses of NSW.

Local Government and Shires Association of NSW (LGSA)

The Local Government and Shires Association of NSW is the peak body representing the interests of NSW metropolitan, regional and rural councils to other areas of government and the wider community.

Ministry of Transport (MoT)

The Ministry of Transport's (MoT) strategic objective is to provide independent, considered policy advice and financial and strategic co-ordination for the transport portfolio to improve passenger and freight transport service outcomes for the people of NSW.

NSW Police Force (NSWPF)

NSW Police aims to protect the community and property by, preventing, detecting and investigating crime, monitoring and promoting road safety, maintaining social order, performing and coordinating emergency and rescue operations. Other major services include traffic control, communications, intelligence analysis, anti-terrorist negotiation and security coordination.

Rail Infrastructure Corporation (RIC)

The Rail Infrastructure Corporation owns the NSW country rail network on behalf of the State Government.

RailCorp

RailCorp owns and maintains the rail infrastructure in the greater metropolitan Sydney region and delivers CityRail and CountryLink passenger services. It was created in 2004 to provide safe, clean and more reliable rail transport.

Roads and Traffic Authority (RTA)

The NSW Roads and Traffic Authority is responsible for promoting road safety and traffic management, driver licensing and vehicle registration. It is also responsible for maintaining and developing the national highway and State road network in NSW. It provides funding assistance to local councils for regional roads and to a limited extent, for local roads.

National Coordination

2.18   Superimposed on this network of State agencies is another set of Ministerial and advisory/administrative forums providing a broader national policy framework for level crossing issues, as follows:

Australian Transport Council (ATC)

Established in June 1993, the ATC provides a forum for Commonwealth, State, Territory and New Zealand Ministers to consult with and provide advice to governments on the coordination and integration of all transport and road policy issues.

Standing Committee on Transport (SCOT)

Senior coordinating body providing support to the ATC. SCOT has a formal committee structure that provides advice on a range of policy and technical matters. The committee structure is reviewed by the ATC on a regular basis.

Standing Committee on Transport (SCOT) Rail Group

One of the transport model groups established by the Standing Committee on Transport (SCOT) to advise on cross-jurisdictional transport issues in Australia.

Australian Railway Crossing Strategy Implementation Group (ARCSIG)

Manages the implementation of the national level crossing strategy via 20 projects (endorsed by ATC in May 2003).

Australian Level Crossing Assessment Model National Committee (National ALCAM Committee)

Develops, implements and continuously improves nationally consistent risk scoring, methodologies and tools for level crossings.

MECHANISM FOR REVIEWING LEVEL CROSSING CONTROL PRIORITY

2.19   The Australian Level Crossing Assessment Model (ALCAM) provides guidance on when a crossing should progress from one type of control to the next, i.e. passive control to active control and active control to elimination. ALCAM is also the assessment tool used to assist in the prioritisation of railway level crossings according to their comparative safety risk[10].

2.20   The model is a complex scoring algorithm, which considers each site's physical properties (characteristics and controls) and the related common human behaviours, to provide each level crossing with a comparative "Risk Score". This score is then multiplied by the site's "Exposure Rating" (a factor of vehicles, trains and consequence). This enables the comparison of the relative Total Risk Exposure Score across level crossings within a given jurisdiction.

2.21   There are particular risks at sites identified regardless of the site's overall level of risk (High/Medium/Low). This is designed to highlight risk areas, which, although having a low likelihood of occurrence, may result in a level of risk considered intolerable. As well as producing an overall comparative "Risk Score" for each site, ALCAM highlights where specific risks exist, determines proposed treatments to address these risks and considers cost in relation to risk reduction benefits.

2.22   The ALCAM strategy is one tool used in the safety assessment of level crossings. It should ideally be used in conjunction with stakeholder site assessments, standards and other risk mitigation strategies. The ALCAM process involves the collection of data through a combination of site surveys and train and vehicle information. Once data is collected and entered into ALCAM, reports are generated to produce a priority listing, which can be used to devise safety improvement programs. In addition to data, the Level Crossing Management System (LXM) can record other important information (such as incident history and digital photographs) to assist in the overall decision-making process.

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[10] For the most recent list of prioritised sites, see Appendix 1.

DEVELOPMENTS SINCE 2006 STAYSAFE REPORT

2.23   Since the Committee's last report in 2006, a range of structural and legislative changes have been made in the NSW rail industry. These are as follows:

- The establishment of the Independent Transport Safety and Reliability Regulator with responsibility for rail safety;

- The vesting of all rail infrastructure facilities in the metropolitan rail area (including existing goods lines) to RailCorp;

- The 60 year lease for the Australian Rail Track Corporation (ARTC) to maintain and operate the mainline interstate and Hunter Valley networks; and

- The reduction of the Rail Infrastructure Corporation's (RIC) responsibility for the management of the NSW rail network following the creation of RailCorp and the lease of track to ARTC[11].

2.24   Other more recent developments include changes to the State Infrastructure Environmental Planning Policy, mandating Council consideration of impacts of level crossings on planning and development, the implementation of the NSW *Rail Safety Act* on 1 January 2009 and an announcement to integrate the Rail Infrastructure Corporation within RailCorp on 1 July 2009.

EVIDENCE FROM SUBMISSIONS

2.25   The Committee received three initial submissions from organisations with responsibility in the area of railway level crossing safety, namely: Asciano, a major rail infrastructure owner and the largest rail freight operator in NSW; the Australasian Railway Association (ARA), representing the interests of the rail industry in Australia and New Zealand; and the Level Crossing Strategy Council (LCSC). As previously described, the LCSC is the body charged with coordinating the efforts of all NSW government agencies involved in level crossing safety and following up implementation of the Government's responses to the Committee's recommendations.

2.26   A main focus of the LCSC is monitoring the implementation of the RTA Level Crossing Improvement Program. This Program provides annual funding for safety upgrades at level crossings throughout NSW, using the ALCAM to determine relative safety risks. A summary of funding provided under this Program for 2000-08 is provided in the following table.

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[11] Submission 3, LCSC, p. 4.

Progress on Previous Recommendations

TABLE 3: NSW Level Crossing Improvement Program Funding[12]

Allocation	2000-01 $m	2001-02 $m	2002-03 $m	2003-04 $m	2004-05 $m	2005-06 $m	2006-07 $m	2007-08 $m
Level Crossing Improvement Program								
- Base funding (RTA)	2	2	2	2	2	2	2	2
- Base funding (supplemented by RIC)		2	2	2				
- Additional funding (RTA)				1	3	4	5	5
Total Level Crossing Improvement Program Funding	**2**	**4**	**4**	**5**	**5**	**6**	**7**	**7**

2.27 Continued funding for the Program was announced in 2007, when the Government agreed to maintain accelerated funding levels in each of the four years 2007-08 to 2010-11. This would bring total funding for the Program to $28 million over the four years (comprising $2 million recurrent allocation and $5 million accelerated funding per annum).

2.28 In addition to the Level Crossing Improvement Program, the Rail Infrastructure Corporation spent $277,000 on improvements to roadways and level crossing control upgrades at eight crossings on its network in 2006-07. In the same year, the ARTC undertook improvements to 67 level crossings on its network to a value of $1.65 million. RailCorp spent $2.4 million on its pedestrian level crossing improvement program, with two major and eight minor pedestrian upgrades commissioned in the year.

2.29 Furthermore, in 2007-08 RIC spent $1.94m and the ARTC $6.9m on maintenance, improvement and upgrade of level crossings. The ARTC works covered 124 level crossings and included grade separation of the level crossing at Swinging Ridge Road through the construction of an over bridge at the cost of $4m, which was completed as part of the Ardglen Loop Extension Project in the Hunter Valley Corridor. RIC also commenced a major review of all public and private level crossings on the Country Regional Network (CRN) to establish a priority list of required works. RailCorp provided $2.65m towards safety improvements at level crossings on its network[13].

2.30 Another significant development in the period 2006-08 was the provision of funding to the National Railway Level Crossing Behavioural Strategy. The NSW Government allocated $93,000 in both 2006-07 and 2007-08 to the Australian Transport Council endorsed National Railway Level Crossing Behavioural Strategy research project. The ITSRR and RTA were represented on the National Behavioural Coordination Group (BCG) which managed the project and reported to the SCOT Rail Group. This Group completed a survey of community attitudes and behaviour at level crossings, a targeted education and enforcement project in Victoria and Western Australia and developed an inventory of existing Australian and international behavioural programs.

2.31 The future work proposed for the Behavioural Change Group is being considered for inclusion in the future program of the National Transport Policy, Level Crossing Working Group. This is in line with recommendations contained in the ARA submission that there should be a national focus for all level crossing initiatives in

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[12] Submission 3, LCSC, p. 9.
[13] Submission 3, LCSC, p. 10.

order to minimise duplication and ensure consistent standards in the determination of research and planning priorities.

2.32   Other priorities stressed in the ARA submission include: rationalisation of level crossings in close proximity to one another and the removal of redundant crossings; harsher infringement penalties and stricter enforcement of breaches by motorists at crossings; risk assessments of the introduction of B-triples on the road network; support for intelligent transport systems applications at railway crossings; and increased funding for level crossing safety initiatives.

2.33   In its submission to the Inquiry, Asciano has reinforced the thrust of the ARA submission by recommending the removal of unwanted crossings. Asciano also supports the removal or masking of signage on disused rail lines, upgrading high-risk crossings by improving sight lines and warning signage and mandating interface agreements between road authorities and track providers.

2.34   The LCSC submission contains a status summary of government responses to earlier Staysafe recommendations under functional areas, in addition to detailed descriptions of action taken on all individual recommendations. This is set out at Appendix 2.

2.35   According to the LCSC, the *Rail Safety Act 2008 (NSW)* underpins the requirement for cooperation between road and rail managers to reduce risk at level crossings and strengthens the ongoing delivery of safety improvements recommended by Staysafe in its earlier report[14]. Other major initiatives resulting from the Committee's recommendations include: the development of a level crossing strategic plan, to be completed by mid 2009; improved integration of rail and traffic signals; improved support for personnel attending level crossing collisions; improvements to train visibility and development of in-vehicle navigation warning systems; and a review of penalties for level crossing user infringements.

2.36   As previously described, many of these initiatives are being considered as part of a broader national action plan under the auspices of the Standing Committee on Transport and its supporting sub-groups.

EVIDENCE FROM HEARINGS

Level Crossing Closures

2.37   In its appearance before the Committee, Asciano reiterated its strong support for a rationalisation of railway level crossings. As expressed by the General Manager for Rail Compliance:

> I also believe that there is an opportunity and there is a direct correlation between level crossings and the number of accidents. New South Wales has been a very progressive State and in the metropolitan area you virtually have eliminated level crossings. I think there is only a handful left, but that has not spread out to the broader State. My experience with level crossings over the last few years has been that very often the question is never asked: Why was the level crossing actually there?…my recommendation to the Committee is that we really need to establish a threshold that says at what point does the community accept the risk of having a level crossing? You will never get a risk-free level crossing. Eliminating level crossings wherever possible is

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[14] Submission 3, LCSC, p. 3.

the best way of reducing your fatalities, injuries and harm that arrive from level crossings[15].

2.38   The Australasian Railway Association representative stressed the benefit of national coordination and cooperation in the determination of appropriate risk assessments and action on level crossing closures. In appearing before the Committee, the General Manager of the Rail Industry Safety and Standards Board referred to the Rail Level Crossing Group, set up under the auspices of the Standing Committee on Transport. ARA described the benefits of this group in the following terms:

…with the creation now of this rail level crossing group the management is going to be a lot better because a lot of the chairmen on those State rail level crossing groups are actually now on this national level crossing group. So there is going to be a lot more harmonisation and coordination…we would be suggesting that might be the best way to go: consolidate our resources, make our strategy based on a national approach rather than a State-based approach[16].

Level Crossing Signage

2.39   Another major issue raised by Asciano was that signage at disused crossings promoted complacency in drivers approaching level crossings. According to the Asciano representative:

…where a line is unused please remove the signage, because people get in the habit of ignoring it. The local farmer knows the line is closed, you see the level crossing sign and you switch off, you do not even respond. Then he comes to an active crossing, on an active line, and the reaction is, "I'll ignore this one, too."[17]

2.40   The Australasian Railway Association, in discussing this issue, had a slightly different view:

We would prefer signage removed but we understand the cost involved in that. Our strategy argues for the removal of signs and what have you but the cost, as discussed with Mr McNaught, is expensive and the cheaper option of course is to bag those signs. That is already occurring in some councils at the moment. The sugar cane industry does it in Queensland.[18]

Interface Agreements

2.41   Asciano considers that the most significant recent reform of level crossing safety has been the introduction of interface agreements.

…one of the greatest things that has happened is the requirement that road and rail authorities have an interface agreement. For many years in Victoria I was involved with level crossings and there was no requirement that the level crossing authority or the road authority and the rail authority worked together. I could cite a number of examples where there were complete failures of that interaction. I endorse, and I am most appreciative, that that has now been introduced as a requirement. It will, I am sure, take time to roll out and take traction and have full effect, but I think you find that will be every improvement into the future[19].

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[15] Transcript of Evidence, 6 March 2009, pp. 1-2.
[16] Transcript of Evidence, 6 March 2009, p. 13.
[17] Ibid.
[18] Transcript of Evidence, 6 March 2009, p. 11.
[19] Transcript of Evidence, 6 March 2009, p. 7.

ADDITIONAL EVIDENCE RECEIVED

2.42   The Committee also received a late submission from the Rail, Tram and Bus Union, NSW Branch (RTBU). This industry union represents 12,000 rail, tram and public sector bus workers in NSW, specifically including drivers of passenger and freight trains, on train crew including hospitality staff and infrastructure workers undertaking the maintenance and upgrading of rail level crossings and associated equipment, whose work impacts directly on the Inquiry.According to its submission: "The RTBU believes that rail level crossings are the major safety risk for the Australian rail industry. As shown by the Kerang rail accident of June 2007 rail level crossing accidents have the potential to be catastrophic with major loss of life. … For the RTBU membership rail level crossing accidents across Australia present the greatest risk of death or serious injury. Five train drivers have been killed in rail level crossing accidents across Australia since 2002. None of these deaths occurred in NSW"[20].

2.44   The RTBU submission refers to the lack of development by the LCSC of a strategic plan for level crossing management in NSW, as recommended by Staysafe in 2004, and submits that such a plan be developed in consultation with major stakeholders. The submission also supports increased emphasis being placed on railway crossing closures, seeks audits to identify sub-standard crossings and fleet compliance with statutory requirements, argues for improved consultation processes with all affected parties (including the RTBU), calls for increased focus on pedestrian safety at railway crossings and a thorough review of the Canadian "Operation Lifesaver" public education program to assess its usefulness for NSW and nationally.

2.45   Another major concern for the RTBU is the role of heavy road vehicles and the safety implications of the interaction of trucks and trains at railway crossings, particularly for B-double and B-triple networks. The submission argues for additional measures to improve heavy vehicle driver training and education and specific risk assessments for crossings on the proposed B-triple network. In relation to new technology, the RTBU supports greater use of intelligent systems to improve monitoring and enforcement of driver behaviour at crossings and its phased introduction into heavy vehicles and buses.

2.46   It should be noted in this context that Staysafe has embarked upon a separate and extensive review of heavy vehicle safety, which will be examining all aspects of heavy vehicle driver risk and will make recommendations to improve driver fatigue management and associated safety concerns.

QUESTIONS ON NOTICE

2.47   As a result of their appearance before the Committee, some witnesses provided additional information tabled as part of their evidence. Witnesses were also requested to provide information to expand on their answers or furnish additional material to assist the Committee. This is summarised below:

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[20] Submission 4, RTBU, p. 3.

Australasian Railway Association

2.48   The General Manager of the Rail Industry Safety and Standards Board tabled the results of an ARA commissioned National Rail Level Crossing study undertaken by Roy Morgan Research, reported in February 2008. The large study (4,402 respondents) consisted of a quantitative and qualitative analysis of public perceptions of railway level crossings by vehicle drivers across Australia. The results of this research indicated that 25% of those surveyed had engaged in self reported risky behaviour at railway level crossings, with those in the 16-25 year old category considered to be most at risk. Driver inattentiveness and impatience were identified as the most significant risk factors[21].

2.49   An additional document tabled[22] was a report by the Cooperative Research Centre for Rail Innovation into understanding and preventing level crossing incidents. The report documented the results of a workshop conducted in February 2009, designed to reduce crashes and injuries at level crossings. The results are contained in Table 4.

TABLE 4: Top ten research priorities

Project Ideas	Priority	Number of High Votes	Number of Medium Votes
Establish a National Incident Database	1	21	1
Establish a National Crash Database	2	20	3
Trial road Vehicle driver response to a range of in-vehicle warning systems to warn of approaching RLX			
Trial technology in vehicles to advise drivers of an approaching train (in-vehicle ITS)	4	14	8
Trial Cameras on locomotives to collect information for both crash and incident databases	5	11	9
Trial road vehicle driver response to a range of different road based measures at RLX (includes red lights)	6	11	7
Establish how and why older drivers are overrepresented at RLX crashes and the behaviour leading to this	7	10	5
Observational study of pedestrian behaviour at different crossing types	8	7	9
Trial application of changes in speed limits approaching RLX and driver response*	9	6	4
Establish an understanding of why a proportion of drivers drive through RLX without being aware	10	5	12

* Recommended to be combined.

2.50   In answers to supplementary questions, the ARA calls for increased monitoring and improved enforcement of traffic infringements at level crossings in addition to increased penalties for such breaches, in line with the practice in Victoria and the Northern Territory. The ARA further recommends that a national road and rail taskforce be established to oversee and trial intelligent transport system technology for use at level crossings, including GPS tracking of heavy vehicles at such

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[21] Roy Morgan Research, *National Rail Level Crossing Study*, February 2008.
[22] CRC for Rail Innovation, *New Approaches to Understanding and Preventing Level Crossing Incidents Report, 2009*.

crossings. The Association also supports funding of the prioritised research projects set out in the CRC Report tabled at the hearing and set out in Table 4.

Level Crossing Strategy Council

2.51   Additional information was provided by the LCSC in response to questions on notice. This included greater detail about decisions governing level crossing upgrade prioritisation, factors influencing the ALCAM ratings and specific level crossing proposals. This information is included at Appendix 3.

2.52   Answers to supplementary questions forwarded after the conclusion of the public hearing elaborated on the frequency of audits conducted in relation to rail infrastructure, the management of level crossing corridor strategies, the imposition of maximum speed limits on level crossing approaches, the use of camera and other monitoring technologies, other physical barriers to improve safety at crossings, OH&S issues and public education and enforcement campaigns. This information is included at Appendix 4.

2.53   The Committee's overall assessment of the information provided and recommendations for further action is set out in the following Chapter of the report.

Chapter Three - Conclusions and Recommendations

3.1   The following conclusions and recommendations relate to the principal issues identified in Chapter 2 as being areas requiring further action and follow up based on evidence received since the previous review by Staysafe.

RAILWAY LEVEL CROSSING CLOSURES

3.2   In submissions and in evidence taken at the public hearing, there was unanimous support for a greater rationalisation of existing crossings on the rail network. According to the Australasian Railway Association "rationalising level crossings and ultimately removing potential level crossing collision locations will help to further decrease the number of level crossing collisions in NSW"[23]. This sentiment was echoed by Asciano and reinforced by the LCSC, in the context of placing greater emphasis on coordination and harmonisation as part of a national approach to railway crossing safety.

3.3   The Committee recognises that 57 railway crossings have been approved for closure in the previous two financial years and commends this process. Obviously, the determination of further closures should be made as part of a consolidated national approach based on appropriate risk assessments and consultation with affected parties, taking account of local access needs. The recently established Rail Level Crossing Group, under the auspices of the Standing Committee on Transport of the Australian Transport Council will assist in this regard.

> **RECOMMENDATION 1:**
>
> **The Committee recommends that the Level Crossing Strategy Council continue to give priority to reviewing the status of under-utilised railway level crossings with a view to recommending their closure, if appropriate, as part of a national railway safety agenda.**

RAILWAY LEVEL CROSSING SIGNAGE

3.4   Another strong theme in submissions, evidence and additional material received relates to the need to avoid motor vehicle driver confusion at disused railway crossings. This confusion results from the failure to remove or obscure the signage at such crossings. It is argued that the signs alerting drivers to approaching trains where drivers know the crossing is no longer active results in complacency and a tendency for drivers to also ignore signs at active crossings.

3.5   Two suggested solutions to remedy this situation are the complete removal of the signs or obscuring them. Whereas Asciano supports complete removal, the ARA has recommended the less expensive option of bagging the signs.

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[23] ARA, Responses to Supplementary Questions, Appendix 4, p. 1.

> **RECOMMENDATION 2:**
>
> **The Committee, conscious of the potential for creating confusion and potential complacency on the part of drivers approaching inactive railway level crossings recommends the removal, or bagging of all signs at such crossings.**

INTERFACE COORDINATION AGREEMENTS

3.6   Until the commencement of the *Rail Safety Act 2008 (NSW)* on 1 January 2009, responsibility for road and infrastructure maintenance at level crossings was not clearly delineated. The Act now requires rail infrastructure managers and road authorities to jointly manage risks at level crossings. Under these new provisions, to be implemented over three years, infrastructure managers and road authorities must enter into Interface Coordination Agreements (ICA's), also known as safety coordination agreements, for this joint management[24].

3.7   The Australasian Railway Association, although very supportive of this development, has voiced concern that these ICA's could impose budgetary pressures on some road authorities. It is feared this may result in reduced basic level crossing safety initiatives and redirection of funds to other community based projects. It is further claimed that this could adversely affect maintenance commitments at level crossings. The Committee shares this concern.

> **RECOMMENDATION 3:**
>
> **The Committee recommends that road authorities honour their obligations under the *Rail Safety Act 2008 (NSW)* to ensure adequate implementation of Interface Coordination Agreements, thereby achieving the objectives of increased railway level crossing safety and coordination.**

LEVEL CROSSING STRATEGIC PLAN

3.8   The Committee notes that the Level Crossing Strategy Council submission makes reference to the commencement of development of a strategic plan "to guide level crossing safety effort by member agencies across NSW". This is expected to be completed in mid 2009[25]. The development of such a plan was recommended by Staysafe in its 2004 report.

3.9   The submission from the Rail, Tram and Bus Union, (RTBU), records its disappointment at the long lead-time for this recommendation to be adopted. The RTBU further suggests that the strategic plan be subject to extensive stakeholder consultations before its implementation, to ensure harmonisation with a national railway level crossing plan and to promote wider support for its scope and objectives.

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[24] Submission 2, ARA, p. 2.
[25] Submission 3, LCSC, p. 11.

RECOMMENDATION 4:

The Committee recommends that the Level Crossing Strategy Council conduct consultations with key stakeholder groups on how to implement its Strategic Plan to ensure that there is general support for its provisions and scope.

NEW TECHNOLOGY

3.10   A range of technological solutions suggested to alleviate the problems currently experienced at level crossings include the trialling and possible adoption of in-vehicle navigation systems, other GPS tracking devices, intelligent transport systems, warning devices and level crossing cameras. Increased monitoring and surveillance would also assist in improved enforcement of traffic breaches and have the potential to reduce risk at level crossings.

3.11   The LCSC reported that the Rail Cooperative Research Centre has completed research on the effectiveness of engineering, enforcement and education approaches to improving the safety of motorists at level crossings[26]. Additionally, several working groups established under the National Transport Policy are investigating such options. In order to reduce unnecessary duplication of such research, the Committee supports the coordination of such activities nationally through the National Transport Policy working groups.

RECOMMENDATION 5:

The Committee recommends that, as part of the Level Crossing Strategic Plan, and in order to reduce unnecessary duplication, the Level Crossing Strategy Council coordinate its activities relating to the design, trialling and implementation of new and existing intelligent transport technology applications for use at railway level crossings with the work undertaken by the relevant National Transport Policy working groups.

HEAVY VEHICLES

3.12   The ARA is exploring the use of GPS tracking technology to oversee the operation of heavy vehicles at level crossings, in conjunction with Transport Certification Australia (TCA). The technology adopted aims to facilitate improved road access for heavy vehicles in exchange for improved monitoring for compliance[27]. The role of heavy vehicles in level crossing incidents is likely to increase risks, particularly with the introduction of the proposed B-Triple network.

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[26] Submission 3, LCSC, p. 7.
[27] Submission 2, ARA, p. 12.

RECOMMENDATION 6:

The Committee recommends that the Level Crossing Strategy Council undertake a review of the impact of increased heavy vehicle traffic on collision risks at railway level crossings and include an examination of the potential benefits of GPS tracking at railway level crossings to improve safety, as part of the review.

3.13   Notwithstanding the above recommendation, Staysafe is currently undertaking a separate Inquiry into Heavy Vehicle Safety and will report on measures to address shortcomings in this area of road safety in a separate report.

ADDITIONAL RESEARCH

3.14   The formation of the National Railway Level Crossing Behavioural Coordination Group (BCG) resulted in a collaborative approach to the development of behavioural research programs between jurisdictions to produce national outcomes. Its work led to the implementation of a number of behavioural projects representing practical initiatives in the area of level crossing safety. Although the establishment of the BCG was for a two-year period which concluded last year, future behavioural research work is being considered for inclusion through working groups as part of the National Transport Policy.

3.15   Additional research is essential to continue the development of level crossing safety initiatives. This requires a national framework and collaboration between the rail industry, governments and research institutions.

RECOMMENDATION 7:

The Committee recommends that in order to ensure consistent standards in the determination of research and planning priorities and to minimise duplication, the Level Crossing Working Group include and build on the work of the Behavioural Change Group as part of its remit. This will assist in providing a national focus for and consistency in future railway level crossing behavioural research initiatives and priorities.

Appendix 1 – ALCAM List of Priority Sites

ALCAM #	ROAD	SUBURB
1	Garfield Road	Riverstone
2	Princes Highway	Unanderra
3	Beaumont Street	Hamilton
4	Park Road	Woonona
5	Merewether Street	Civic
6	Pine Road	Fairfield
7	Bellambi Lane	Bellambi
8	Gosford Road / Rawson Road	Woy Woy
9	Creamery Road	Albion Park Rail
10	Nolan Street	Unanderra
11	Railway Parade (Street)	Corrimal
12	Bong Bong Road	Dapto
13	Belgrave Street	Kempsey
14	Bundarra Street	Blackheath
15	General Holmes Drive	Mascot
16	Liverpool Hospital	Liverpool
17	Couche Crescent / Koolewong Road Crossing	Koolewong
18	Stewart Avenue	Wickham
19	Shellharbour Road	Dunmore
20	Fern Street	Omega (Gerringong)
21	Camden Road	Douglas Park
22	High Street	Coffs Harbour
23	Shamrock Street	Hexham
24	West Dapto Road	Kembla Grange
25	Liverpool Street	Scone
26	Macquarie Street	Taree
27	Muldoon Street	Taree
28	Parramatta Road	Granville
29	Clyde Street	Islington
30	Oxley Highway	Wauchope
31	Railway Street	Wickham
32	Balfour Street / Olympic Highway	Culcairn
33	Hulbert Street	Sawtell
34	Avondale Road	Dapto
35	Bourke Street	East Richmond
36	Fernleigh Road	Wagga
37	New England Highway	Scone
38	Mulgrave Road	Mulgrave
39	Clarinda Street - Sir Henry's Drive	Faulconbridge
40	Willton Road (Maldon Creek Road)	Maldon
41	Docker Street	Wagga
42	Fairey Road	Windsor
43	Casula Road	Casula
44	Warnervale Road	Warnervale
45	Military Road	Yennora
46	Blumer Avenue	Griffith
47	Thurgoona Road	Albury
48	Ash Street	Orange
49	Fallon Street	Albury
50	Taree Road	Wingham
51	St James Road	Adamstown
52	Poplar Avenue (Leeton Truck By Pass)	Leeton
53	Range Road	Whittingham

Appendix 1 – ALCAM List of Priority Sites

ALCAM #	ROAD	SUBURB
54	Summerland Way	Koolkhan
55	Bushland Drive	Taree
56	Lansdowne Road	Kundle Kundle
57	Olympic Highway (Doddyns Street)	Junee
58	Byng Street	Orange
59	Brook Street	Muswellbrook
60	Sheep Wash Road	Calwalla
61	Dalton Street	Orange
62	Siaden Street	Henty
63	King Street	Paterson
64	Hoddle Street (IIIawarra Highway)	Robertson
65	Gundagai Road	Cootamundra
66	Rosier Parade (Yankee Road)	Henty
67	Bruxner Highway	Casino
68	Landsdowne Road	Landsdowne
69	Victoria Street / Mitchell Highway	Dubbo
70	Summer Street	Orange
71	Urana Street	The Rock
72	River Street (Comboyne Street)	Kendall
73	Bullus Drive	Moree
74	Yerong Street	The Rock
75	Newell Highway (MR17)	Welcome
76	Landsdowne Road	Coopernook
77	Robert Street	Tamworth
78	Station Lane	Lochinvar
79	Summerland Way (Kyogle Road)	Namoona
80	Dandaloo Street	Narromine
81	Wheelers Lane	Dubbo
82	Canal Road	Leeton
83	Newell Highway (MR17)	Tichborne
84	Lansdowne Road	Melinga
85	Olympic Highway	Bethungra
86	Adelaide Street / Mid Western Highway	Blayney
87	Tilly Willy Street / McKay Street	Macksville
88	Olympic Highway	Illabo
89	Single Street	Werris Creek
90	Segenhoe Road	Aberdeen
91	Primrose Street	Wingham
92	Venda Road / Burley Griffin Way	Yoogali / Griffith
93	Wharf Road	Berry
94	Marquis Street	Gunnedah
95	Golden Highway / Sandy Hollow Road	Denman
96	Blumer Avenue	Griffith
97	Darling Street	Dubbo
98	Plunkett Street	Yerong Creek
99	Burley Griffin Way - West Street	Stockinbingal
100	Geordie Street	Bowenfels
101	Young Road	Bribbaree
102	Racecourse Road	Clarendon
103	Hebden Road	Ravensworth
104	Holten Drive	Broken Hill
105	Limestone Road / Sandy Creek Road	Muswellbrook
106	Olympic Highway	Tanyinna
107	Dampier Street	Bomen
108	Newell Highway	Mirrool

ALCAM #	ROAD	SUBURB
109	Fitzroy Street	Dubbo
110	North Street	Kempsey
111	Middle Folbrook Road	Nundah
112	Tip Road	Dunmore
113	Dallinger Road	Albury
114	Rothbury Road	Belford
115	Big Creek Road	Hilldale
116	Tynans Road	Table Top
117	The Escort Way	Borenore
118	Malbon Street	Bungendore
119	Level Crossing Road	Vineyard
120	Myall Park Road	Yenda
121	Brisbane Street	Tamworth
122	Newell Highway	Parkes
123	Burradoo Road	Burradoo
124	Murrimba Road	Wingelo
125	Blackshaw Road	Goulburn
126	Whitton Street	Narrandera
127	Mackays Road	Coffs Harbour
128	Mid Western Highway	Caragabal
129	Eastbank Roa	Nana Glen
130	Boothemba Road	Dubbo
131	Gwydir Highway / Alice Street	Moree
132	Hotham Street	Casino
133	Collombatti Link Road	Tamban
134	Yarrangundry Street	Uranquinty
135	Dungog Road (Clarencetown Road)	Wallarobba
136	Main Road (MR243)	Rockview
137	Yellow Rock Road	Urunga
138	Glennies Creek Road	Glennies Creek
139	New Street	Gunnedah
140	Oakhampton Road	Oakhampton
141	Dolly's Flat Road	Killawarra
142	Summerland Way	Wiangaree
143	Martins Creek Road	Martins Creek
144	Crossing Street	Griffith
145	Plough mans Lane	Orange
146	Newell Highway (MR17) / Dowling Street	Forbes
147	East Road	Gerogery
148	Ebert Street	Griffith
149	Parkes Road	Manildra
150	Mitchell Highway	Nyngan
151	Suttor Road	Moss Vale
152	Dowling Street (Stroud Road)	Dungog
153	Cootamundra Road - Ellis Street	Stockinbingal
154	Darling Street	Tamworth
155	Bentley Road	Kyogle
156	Warne Street	Wellington
157	Leeton - Griffith Road	Leeton
158	Markham Street	Armidale
159	Clergate Road	Clergate
160	Henry Street	Quirindi
161	McNabbs Lane	Coolamon
162	Parker Street	Cootamundra
163	Schnapper Beach Road	Valla

Appendix 1 – ALCAM List of Priority Sites

ALCAM #	ROAD	SUBURB
164	Goulburn Road	Perthville
165	Kings Creek Road	Wauchope
166	Maxwell Street	Wellington
167	Andersons Road	Kyogle
168	Red Lane	Koolkhan
169	Gisbourne Street	Wellington
170	Beckom Road	Beckom
171	Hall Street	Tamworth
172	Bridge Street	Forbes
173	Young Road	Milvale
174	Nandabah Street	Rappville
175	Wagga - Temora Road (TR57)	Old Junee
176	Sheraton Road	Dubbo
177	Iona Park Road	Calwalla
178	L10yds Road	Bathurst
179	Back Brawlin Road	Cootamundra
180	Mitchell Highway	Trangie
181	South Bank Road	Eungai
182	Junee Road	Temora
183	Purvis Lane	Dubbo
184	Whybrow Street	Griffith
185	Cowcumbla Street	Cootamundra
186	Eulomogo Road	Dubbo
187	Williams Crossing	Henty
188	Irrigation Way	Widgelli
189	Burrendong Way (MR573)	Apsley (Wellington)
190	Brown's Crossing Road	Macksville
191	Racecourse Road (MR86)	Dunedoo
192	Old North Road	Blandford
193	Whiley Road	Spring Hill
194	Irrigation Way	Wumbulgul
195	Golden Highway	Beni
196	Twynam Street	Temora
197	Carrs Peninsular Road	Koolkhan
198	Nowland Street	Quirindi
199	Manildra Street	Narromine
200	Tambar Springs Road	Connemarra
201	Newell Highway	Gilgandra
202	Werris Creek Road	Currabubula
203	Mangoola Road	Mangoola
204	Dennison Street	Tamworth
205	Shepards Road	Shepards Siding
206	Barmedman Road	Bribbaree
207	Parkes - Orange Road	Bumberry
208	Temora Road	Cootamundra
209	Public Road (Saleyards)	Dubbo
210	Johnson Creek Road (Tereel Road)	Wards River
211	Boorowa Road	Cunningar
212	Mitchell Highway	Trangie
213	Trahairs Lane	Bomen
214	Single Street (North)	Werris Creek
215	Borenore Road / Amaroo Road	Borenore
216	Neuhaus Lane	Yerong Creek
217	Oakey Forest Road	Lithgow
218	Bundook Road	Bulliac

ALCAM #	ROAD	SUBURB
219	Nash Street	Parkes
220	Phillips Street	Gloucester
221	Lake Street	Ganmain
222	Marsden Road	Wirrinya
223	Camira Creek Yard	Camira Creek
224	Woodward Road	Orange
225	Mogriguy Road	Mogriguy / Eumungerie
226	Tracey Street / Trunkey Road	Georges Plains
227	Mt Marsh Road	Whiporie
228	Ogilvie Street	Denman
229	Macedone Street	Griffith
230	Blaxland Street	Parkes
231	Cemetery Lane	Whittingham
232	Cowabbie Street	Coolamon
233	Mongogarie Road	Leeville
234	Baird Street	Culcairn
235	Kiewa Street / Parkes Road	Manildra
236	Warral Road (Behtremere Road)	Warral
237	Molong Street / Orange Road	Manildra
238	Huntly Road	Spring Hill
239	Off Muscle Creek Road	Grasstree
240	Yellow Rock Road	Raleigh
241	Garema Pinnicle Road (South End)	Garema
242	Henry's Lane	Moorland
243	Mt George Station Yard	Mt George
244	Mangoola Road	Mangoola
245	Cudal / Manildra Road / Boree Street	Manildra
246	River Street	Narrandera
247	McKellar Road	Yanco
248	Gurrendah Road	Breadalbane
249	Golden Highway (MR84)	Dunedoo
250	Dunwoodie Street	Kendall
251	Condobolin Road	Parkes
252	Mangoola Road	Mangoola
253	Castlereagh Highway	Mendooran
254	Fountaindale Road	Robertson
255	Rosemount Road	Denman
256	Mendooran Road	Broklehurst
257	Illabo	Illabo
258	Jacks Road	Gloucester
259	Meryla Street	Robertson
260	Narrandera - Leeton Road	Yanco
261	Polaris Street	Temora
262	Lowes Creek Road	Quipolly
263	Rossglen Road	Rossglen
264	Mirari Road	Kilbride
265	Perryman's Lane	Table Top
266	Burley Griffin Way - Stockinbingal to Temora Road	Springdale
267	Samuel Street	Wellington
268	Charles Street	Wellington
269	Rylstone Road / Bylong Valley Way	Sandy Hollow
270	Fry Street	Grafton
271	Wyalong Road	Quandialla
272	Dunedoo Road / Golden Highway	Beni
273	Cowra Road / Grenfell Road	Forbes

Appendix 1 – ALCAM List of Priority Sites

ALCAM #	ROAD	SUBURB
274	Kamilaroi Highway	Curlewis
275	Coolamon Street	Ariah Park
276	Ettamogah Road	Albury
277	Yarrandale Road	Dubbo
278	Merriwa Road	Willow Tree
279	Caragabal Road	Quandialla
280	Brolgan Road	Brolgan
281	McCourt Road (North Fork)	Moss Vale
282	Woods Road	Craven
283	Bathurst Street	Forbes
284	Leeville Station Road	Leeville
285	Liamena (MR86)	Dunedoo
286	Barbigal Road/Beni Street	Wongarbon
287	Albany Street	Berry
288	Harley Hill Road	Berry
289	Victoria Street	Temora
290	Bathampton Road	Wimbledon
291	Moonagee Street / Mitchell Highway	Nyngan
292	Carroll Street	Gunnedah
293	Brolgan Road	Parkes
294	Greghamstown Road	Blayney
295	Station Street	Gulgong
296	Halls Creek Road	Murrurundi
297	Crowthers Road	Stratford
298	Old South Road	Cullarin
299	Broadway Road	Jerrawa
300	Coralville Road	Moorland

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
MATTERS RELATING TO THE ADMINISTRATION OF RAILWAY LEVEL CROSSINGS				
1	Ministry of Transport (MoT) to be the lead agency for matters associated with railway level crossings (RLXs), that is, intersections where a road and railway meet at the same level.	LCSC	The Level Crossing Strategy Council (LCSC) should continue to be responsible for coordinating and directing the level crossings strategy in NSW. The Director-General (D-G), MoT, chairs the LCSC. Each agency – the Rail Infrastructure Corporation (RIC), RailCorp, Roads and Traffic Authority (RTA), Australian Rail Track Corporation (ARTC) should continue to be accountable for the safety of its own infrastructure, including level crossings. This approach will ensure that safety accountabilities are not distorted.	Individual infrastructure owners/managers are responsible for their own infrastructure, while the LCSC coordinates agency efforts to improve level crossing safety. Interface agreements between road and rail agencies as required under new rail safety legislation, will assist with a coordinated approach across agencies. (See Recommendation 4).
2	The D-G, MoT continues to chair the LCSC.	MoT	**Supported**	The D-G of the Ministry of Transport continues to chair the LCSC.
3	Where a grade separation (bridge or underpass) is under consideration to replace a RLX the RTA should take the role of lead agency and the LCSC should continue to make recommendations on which RLXs are of such a risk as to warrant this level of action.	RTA	**Supported**	The RTA is the lead agency for projects that involve road grade separation to replace railway level crossings. The RTA provides information to the LCSC regarding proposed grade separation projects.
4	Matters associated with RLXs to be: a) co-ordinated and directed through a high level council comprising the relevant Minister(s) and chief executives of the roads and transport portfolios, to be known as the LCSC; b) managed through a RLX manager employed by the RIC; c) administered in terms of budget and works programs by the RIC; and with	LCSC	**Supported with change.** The LCSC is responsible for coordinating and directing the level crossings strategy in NSW. The Council includes the Chief Executive Officer (CEO) or delegated representative of the member agencies. The Manager Level Crossing Unit (LCU), on behalf of the LCSC, oversees all level crossing projects and acts as the interface between relevant agencies.	Although the LCSC has a coordinating role, infrastructure managers are responsible for railway level crossing infrastructure and related matters. The basis for these responsibilities has been further strengthened with the recent passing of the *Rail Safety Act 2008* (*NSW*) which introduces obligations on rail infrastructure managers and road managers to seek to enter interface agreements for the joint management of safety risks at rail level crossings and other road/rail interfaces. The RTA administers the Level Crossing

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
	responsibilities regarding roads in the immediate vicinity of RLXs to be negotiated and co-ordinated by the RLX manager in consultation with the RIC, the RTA and local councils.			Improvement Program (LCIP) with assistance from the RailCorp LCU.
5	The government agencies and other organisations to form the LCSC should include: the MoT; the RIC; the RTA; NSW Police (NSWPF); the Local Government & Shires Associations of NSW (LGSA); the Independent Transport Safety & Reliability Regulator (ITSRR); the Australasian Railways Association (ARA); and the ARTC.	LCSC	**Supported with change.** Membership of the LCSC currently includes the CEO or delegated representative from: the MoT; Rail Infrastructure Corporation (RIC); RTA; RailCorp; the ITSRR; and ARTC. The LCSC also includes representatives from NSW Police, the LGASA and the ARA. The LCSC will request that the ARA be represented on the Australian Rail Crossing Safety Implementation Group (ARCSIG), a national forum for the consideration of safety issues at level crossings.	
6	All incidents at RLXs - 'near miss' or potential crashes, collisions, trespass and suicide - be recorded in a central register and maintained by the RIC and Level Crossing Manager.	ITSRR	**Supported with change.** The *Rail Safety Act 2002* (*NSW*) requires all rail network owners in NSW, including RIC, RailCorp and the ARTC report "notifiable" Incidents within their respective organisations to ITSRR. ITSRR will compile this information as part of their Notifiable Incident Database.	The *Rail Safety Act 2008 (NSW)* was passed by the Parliament in late 2008 and applies from 1 January 2009. It retains the requirements regarding reporting of notifiable incidents.
7	That the RLX incidents register be presented regularly to the LCSC for review and response to recorded incidents.	ITSRR	**Supported** ITSRR currently provides quarterly updates to the LCSC on level crossings incidents.	ITSRR provides bi-monthly reports to the LCSC on level crossing incidents.
8	That all investigations of RLX crashes and other incidents be conducted by the ITSRR, in conjunction with the RIC, MoT, RTA, NSWPF, LGSA, and the ARA, with the resulting reports to be furnished to the LCSC through the Level Crossing Manager.		Responsibility for the investigation of a level crossing incident is established in legislation and is dependent on the nature of the incident. The Office of the Transport Safety Investigator (OTSI) may investigate in relation to rail safety. RailCorp, RIC and ARTC are required to investigate incidents at level crossings for which they are responsible. NSW Police will investigate on behalf of the Coroner, or breaches of relevant legislation. WorkCover	

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
			may be involved in relation to OH&S matters. The relevant legislation/jurisdiction establishes the availability of the reports to the LCSC.	
9	The LCSC publish an annual report of its activities.	LCSC	**Supported** The LCSC has produced an annual report for distribution to its member agencies for the past three years.	Yearly reports have been prepared from 2001-02 until 2007-08. These are made available on the Level Crossings Website.
10	The Ministers for Transport and Roads review the recurrent funding formula for upgrading RLXs, with specific regard to:		**Supported**	
	a) The adequacy of the recurrent funding to achieve the necessary and desirable improvements in public rail and road safety within a reasonable timeframe and in a manner that promotes the development of rail transport in NSW;	RTA	In addition to funding for grade separations, the RTA has increased the level of funding for upgrading level crossings from $2 million in 2003-04 to $5 million in 2004-05. Funding for 2005-06 is $6 million and for 2006-07 is $7 million. Future funding levels will be considered through the annual Budget process.	In 2007 the Government announced it would continue to provide accelerated funding of an additional $5 million per annum over the period 2007-08 to 2010-11 to the RTA LCIP, bringing funding for the program to $28 million over the four years (comprising $2 million recurrent allocation and $5 million accelerated funding per annum). The additional funding enables accelerated implementation of level crossing safety upgrades. The LCSC is currently developing a Strategic Plan (see Recommendation 11) to guide level crossing safety efforts across NSW and as background, assessment is being made of the level crossing upgrade costs to inform future funding levels.
	b) The capacity of local councils to contribute to the recurrent funding formula; and	LCSC	The LCSC will investigate this issue further in consultation with Local Government.	The LCSC has raised this with the LGSA which has indicated that Local Government acknowledges a role for Local Government to contribute funding to level crossing upgrades in their areas within their financial capacity and taking into account other spending priorities. The *Rail Safety Act 2008* (*NSW)* introduces obligations on rail infrastructure managers and road managers, including councils to seek to enter interface agreements for the joint management of safety risks at rail level crossings and other road/rail interfaces. As

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
				part of the process of developing interface agreements, rail infrastructure managers and road managers will need to negotiate which party is responsible for implementing and maintaining specified risk controls.
	c) Whether the recurrent funding formula allows the effective and efficient planning of upgrading works associated with RLXs.	RTA	Recent RTA funding increases of $13 million over four years (ending 2006-07), in addition to recurrent funding of $2 million annually, will accelerate the upgrade program. The increased funding allocation allows for treatment of high-risk sites and has allowed for a more comprehensive and strategic approach and the creation of a more robust, prioritised program. Future funding levels will be considered through the annual Budget process.	RTA LCIP funding levels since 2003-04 accelerated the delivery of priority projects under the Program. The increased funding allocation has allowed for treatment of the highest risk sites and has allowed for a more comprehensive and strategic approach and the creation of a more robust, prioritised program. The level of funding has in many cases allowed for projects to be developed and delivered over more than one year which is important when dealing with multiple stakeholders and complex projects. The LCSC is currently developing a Strategic Plan (see Recommendation 11) to guide level crossing safety efforts across NSW and as background, assessment is being made of the level crossing upgrade costs to inform future funding levels.
11	The LCSC should: a) Develop a longer term plan for improvements in the safety of RLXs; and b) Ensure that member agencies and organisations reflect this strategic focus within their own planning processes and documentation.	LCSC	**Supported**	The LCSC is developing a strategic plan to guide level crossing safety effort by member agencies across NSW. It is expected that the plan will finalised in mid 2009.
12	In the event that a local Council is unable to meet the one-third cost contribution for the upgrading of a RLX, the previous practice for the RTA to defer the upgrading work from the annual LCIP and re-prioritise funds elsewhere in the program should be discontinued.	RTA	**Noted** The "previous practice" referred to has not occurred in recent history. The RTA does not delay the delivery of level crossing upgrades due to lack of Local Government contributions. All sites identified for upgrade that fall within the scope of the LCIP are completed and funded	Contribution from relevant local governments toward level crossing improvement work is requested where appropriate.

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
			from the State Government irrespective of Local Government funding contributions. The LGSA notes that Local Government acknowledges a role for Local Government to contribute funding to level crossing upgrades in their areas within their financial capacity and taking into account other spending priorities.	
13	The LCSC actively promote development and implementation of a nationally consistent standard reference for RLXs that provides a unique reference number/descriptor, is communicable, visible and easily understood by the public, rail/road authorities, and police and emergency services.	LCSC	**Supported with change.** The LCSC will raise the need for a nationally consistent standard reference for RLXs at the ARCSIG and in the current review of the *Australian Standard 1742.7- Railway Crossings* (*AS 1742.7*) on RLXs.	The need for a nationally consistent standard reference for RLXs was raised in the review of the *AS 1742.7* on RLXs. It is noted that in NSW all active level crossings are fitted with unique identifying plaques. Although the review of *AS 1742.7* considered this recommendation it was not included in the revised standard that was published in February 2007.
14	The RIC, in consultation with the RTA and other agencies, develop and maintain an inventory of all intersections between railways and roads, including all intersections where a road, road-related area, pedestrian access route or other access route meets a railway at substantially the same level (e.g., actively signalled road level crossings, passively signed road level crossings, accommodation crossings, maintenance crossings, pedestrian crossings, etc.).	RailCorp	**Supported** Inventory and database development has commenced.	The RailCorp LCU has established an inventory of all public level crossings in NSW, using details provided by road and rail asset owners. This inventory is used for the purposes of assessing sites using the Australian Level Crossing Assessment Model (ALCAM) which informs the development of the priority list for upgrade under the RTA Program. The top 300 sites ranked according to ALCAM are on the Level Crossings website. Rail infrastructure managers also maintain an inventory of the level crossings on their network. The RTA and ITSRR are also developing level crossing databases. The adequacy of current arrangements and the case for developing more comprehensive level crossing inventory arrangements consistent with the detailed proposal recommended by StaySafe will be monitored as the requirements for interface agreements between road and rail managers are being implemented. (See Recommendation 4).

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
15	The RIC ensure public internet access to the inventory of intersections between railways and roads, including intersections where a road and railway meet at substantially the same level.	LCSC	Access to the inventory, including by the general public, will be considered by the LCSC as part of the development of the inventory.	A list of the 300 public level crossings that have been assessed using the ALCAM methodology is available on the Level Crossing website: www.levelcrossings.nsw.gov.au (See also Recommendation 14).
16	The RIC, in consultation with the RTA, local councils, and other agencies, develop and implement a regular and ongoing program of audit for all RLXs, including at least annual inspections of road markings, signs and advance warning signals on roads approaching RLXs.	RTA, RIC, RailCorp, ARTC and Councils.	**Supported with change.** Each agency has responsibility for the inspection and maintenance of its own assets, under the oversight of ITSRR. The frequency of any audit (inspection) is determined by the agencies' own risk based safety management systems and processes.	
17	The RIC, in consultation with other rail agencies interstate, continue to develop and maintain a risk assessment and prioritisation program for RLXs.	LCSC	**Supported** The LCSC has a program of safety improvement for RLXs across NSW. It uses the Level Crossing Assessment Model (LCAM) to assess, evaluate and priorities relative safety risk of level crossings, and to determine the optimum treatment for individual sites. At the May 2003 ATC meeting "all State and Territory Transport Ministers agreed to adopt this innovative method of risk assessment". It is the only comprehensive level crossing model in Australia. The LCSC will continue to participate on the Australian LCAM Group, which is responsible for administering, controlling and developing LCAM nationally.	It is the responsibility of each infrastructure owner/manager to assess and manage risk at its own level crossings. The rail network managers for example have their own risk assessment processes. ALCAM has been developed to assess, evaluate and prioritise sites relative to safety risk of level crossings statewide, and is used to assist in determination of relative risks of individual sites across NSW. ALCAM is available to agencies through the LCU to use for assessment of level crossings. The ALCAM is also used to assess, evaluate and prioritise sites for the RTA LCIP.
18	The RIC, in consultation with other rail agencies interstate, ensure that the development of a risk assessment and prioritisation program for RLXs is organised to readily identify issues associated with high-speed passenger services, and high-speed rail operations generally.	LCSC	**Supported with change.** The Level Crossings Assessment Model (LCAM) considers speed as one of its assessment factors. The risks and issues associated with high-speed rail operations and the implications for LCAM are currently under consideration.	The management of risk associated with the rail network is the responsibility of the relevant network managers. See Recommendation 17. There is an increasing impetus for level crossing management to now be considered from a corridor perspective. The Corridor Strategy was endorsed at the LCSC meeting in October 2005. The Cootamundra – Albury corridor was chosen as the initial corridor for investigation and implementation commenced

Appendix 2 – Level Crossing Strategy Council Summary of Responses to Earlier Staysafe Recommendations

No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
				in 2006. The further development and implementation of the corridor approach is being considered in development of the level crossing Strategic Plan.
19	The MoT, in consultation with the RIC, the RTA, local councils, rail operators, and other agencies develop and implement rail corridor management strategies for NSW railway lines.	LCSC	**Supported with change.** Development of a corridor strategy is underway. The Cootamundra – Albury corridor has been chosen as a pilot. See Recommendation 18.	Implementation of a corridor strategy for management of level crossings between Cootamundra and Albury commenced in 2006. To date, five level crossings have been closed and design work has commenced for three upgrades. However, progress with the strategy has stalled as Councils in the area have been concerned that consultation, especially around proposals for level crossing closures, needs to be improved. The LCSC Chair, the ARTC CEO and the RTA are to meet with Councils in the area in February 2009 with a view to identifying a way forward which addresses the needs of all stakeholders. RIC also developed a corridor management approach for the rail line between Werris Creek and Moree. A component of this strategy was the successful negotiation for mining companies to provide $2.4 million for level crossing upgrades on the Gap-Narrabri corridor and for $0.6 million from the owners of the new Narrabri Mine to upgrade the level crossing at that location. The further development and implementation of the corridor approach is being considered in development of the level crossing Strategic Plan. While the LCSC has a coordinating role, responsibility for development and implementation of a specific corridor strategy will rest with the relevant network manager.
20	The MoT, in consultation with the RIC, the RTA, local councils, rail operators, and other agencies adopt a closed corridor	LCSC	**Supported with change.** Development of a corridor strategy is underway. The Cootamundra – Albury corridor	Development of a corridor strategy for management of level crossings on specific corridors is underway.

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
	strategy for high-speed railway lines in NSW.		has been chosen as a pilot. See Recommendation 18.	(See Recommendations 18 and 19). The appropriateness of adoption of the closed corridor approach will be considered in development of the Strategic Plan. (See Recommendation 11).
21	The maximum speed of trains within the NSW rail network should not exceed 120 km/h unless the rail corridor is a closed corridor.		Rather than establishing a blanket speed limit, the maximum speed of trains and the use of a closed corridor strategy will continue to be determined on a case-by-case basis using a risk management approach. Risk assessments may result in different speeds being determined as appropriate for different circumstances.	The corridor strategy process considers corridor train speed along with identifying which treatments and combination of treatments are most appropriate for the various level crossings within the corridors.
22	The general policy to be adopted by rail and road agencies is that the at-grade intersection of roads and railway tracks through provision of a RLX is to be avoided wherever possible.	LCSC	**Supported**	Policy adopted.
23	The MoT, in consultation with the RIC, the RTA, local councils, and other agencies, actively seek the closure or relocation of RLXs across the NSW rail network.	LCSC	**Supported with change.** The LCSC is responsible for the implementation of this response, rather than the MoT.	Network managers are responsible for recommending closure of level crossings to the Minister for Transport. Closure of level crossings is promoted by the LCSC. A Level Crossing Rationalisation Strategy was approved at the June 2005 LCSC meeting. The Strategy is being implemented on an ongoing basis. The Minister for Transport has approved closure of 57 level crossings since over the period 2006-07 – 2007-08, the majority of these being private level crossings.
24	The relevant legislation be amended to: a) Allow the D-G MoT to order the closure/relocation of intersections where road and railway meet at substantially the same level;		Responsibility for the management of level crossings is established in the *Transport Administration Act 1988* (TAA), the *Rail Safety Act 2000* and the Road Transport Legislation. This includes rail infrastructure owners being able to close level crossings, with the Minister's approval. The proposal to have the D-G MoT order level crossing closure could potentially distort safety accountabilities for level	See Recommendation 23.

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	b) Specify the mechanism and grounds for appeal of a decision by the D-G MoT to close or relocate an intersection where a road and railway meet at substantially the same level; and
	
	c) Provide for the RTA and local council to be party to any appeal of a decision by the D-G MoT to close or relocate an intersection where a road and railway meet at substantially the same level.
			crossings.
			  The decision-making processes involving level crossing closures and relocation are not excluded from administrative review provisions.
			  Provisions in the TAA relating to level crossing closure already make it a requirement that the infrastructure owner notify the RTA and the local council before closing a level crossing.	

25	The Minister for Emergency Services, in consultation with the LCSC, should review the State Disaster Plan and other state-wide emergency plans to ensure adequate and effective contingency planning for serious incident scenarios such as a crash at a RLX involving a fast passenger train or a freight train carrying dangerous goods (hazardous materials) on metropolitan, regional and rural railway lines within NSW.	Other	**Supported and being implemented.** Current strategies include: 1. The Specific Health Services Supporting Plan and the Ambulance PLAN detail arrangements specific to a rail accident; 2. For rail accidents involving hazardous materials, the recently revised HAZMAT Plan details the arrangements for dealing with hazardous materials; 3. Local and District committees include railway crossings in their risk assessments; and 4. Emergency Management Districts are incorporating rail crossing accident emergencies in their training programmes. *Note* - The State Displan, which is regularly reviewed and is currently under review, provides for all hazards including railway accidents.	The LCSC Chairman wrote to the Office of Emergency Services in November 2004 requesting advice. The Chairman of the State Emergency Management Committee (SEMC) advised in letter of December 2004 that the SEMC has oversight of the portfolios listed in relation to the Emergency Management arrangements and is in a position to review plans including the State Disaster Plan. Once the risks have been identified and analysed, Local and District Plans including the rescue arrangements will be reviewed to ensure appropriate response arrangements are in place.
26	The MoT commission or conduct research to estimate: a) The probabilities for the likely occurrence of RLX crashes; and b) The projected human, capital and economic costs likely to be associated with such crashes.	LCSC	**Requires further consideration.** The LCSC will consider this recommendation within the context of its long term strategic planning, which is to commence in 2005-06 (See Recommendation 11).	The ARA is working in conjunction with the Bureau of Infrastructure, Transport and Regional Economics (BITRE) to collect data on the cost of railway level crossing collisions. It is expected that the data collection will be complete by the end of June 2009, with the final report expected to be released before the end of 2009.

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
27	The RIC, in consultation with the RTA, ensure that issues associated with RLXs on heritage and tourist railways are identified, considered, and addressed in general policies and programs to improve the safety of operation of RLXs.	ITSRR	**Supported with change.** ITSRR accredits heritage and tourist railways and addresses level crossing issues through this process.	A letter from the ITSRR CEO to the Chair of the LCSC (21 April 2006) advised that under s.11(2) of the *Rail Safety Act 2002*, all operators must have a safety management system "that includes undertaking a risk assessment and the specification of controls for identified risks" – including level crossings.

Further "from 1 January 2007 applications for accreditation must address the more explicit requirements concerning level crossings of the National Rail Safety Accreditation Package".

The *Rail Safety Act 2008* (*NSW)* was passed by Parliament in late 2008 and applied from 1 January 2009. The Act retains the above requirements of the 2002 Act and introduces obligations on rail infrastructure managers and road managers to seek to enter interface agreements for the joint management of safety risks at rail level crossings and other road/rail interfaces. These provisions cover tourist and heritage railways.

The ITSSR is responsible for enforcing the *Rail Safety Act 2008 (NSW)*, including the interface agreement requirements in NSW. ITSRR has drafted guidance on the requirements relating to interface agreements for rail or road crossings and a template interface agreement and will be undertaking further briefing sessions across NSW in early 2009. |
| **MATTERS RELATING TO THE ROAD ENVIRONMENT AT RAILWAY LEVEL CROSSINGS** | | | | |
| 28 | The RIC, in consultation with the RTA, ensures that issues associated with RLXs on private railways are identified, considered, and addressed in general policies and programs to improve the safety of operation of RLXs. | ITSRR | **Supported with change.** ITSRR accredits private railways and addresses level crossing issues through this process. | ITSRR letter to the LCSC of 21 April 2006 confirmed: "The application of level crossing policies and programs are reviewed as part of ITSRR's continuous inspection and audit process".

The *Rail Safety Act 2008* (*NSW)* introduces obligations on rail infrastructure managers and |

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				road managers to seek to enter interface agreements for the joint management of safety risks at rail level crossings and other road/rail interfaces. These provisions cover level crossings on private railways.
29	The RIC, in consultation with the RTA, local councils, and other transport agencies, seek and participate in the review of *AS 1742.7* relating to RLXs, including, but not limited to a range of technical issues associated with signals technology, signage, markings, etc.	LCSC	**Supported** In October 2001, the LCSC wrote to Standards Australia requesting the review of *AS 1742.7*. The review is currently in progress with NSW representation from RTA, RailCorp and ITSRR.	The revised standard was published February 2007 and addresses the recommendation.
30	The RIC, in consultation with the RTA, seek to adopt Australian technologies and to adopt best practice principles for the management of RLXs.	LCSC	**Supported with change.** The LCSC notes that whilst the agencies might seek and encourage Australian technologies, the most appropriate solutions will be procured.	Examples of best practice technology have been developed and implemented. (See Recommendation 31).

31	The RIC, in consultation with the RTA, and other agencies, encourage the development and implementation of new technologies to improve the safety of RLXs.	LCSC	**Supported with change.**
			The recent project delivery teams have developed and implemented new technologies (e.g. grade crossing predictors) and this will continue. The LCSC will refer this recommendation to the Rail Cooperative Research Centre (Rail CRC) for consideration and advice.
				New technologies have been developed and implemented by rail infrastructure managers (e.g. grade crossing predictors, magnetic gate latches at pedestrian swing gates). Also NSW rail agencies have adopted high intensity LED light technology to replace incandescent lamp technology.
				    The ARTC is currently trialling the use of a low-cost Private Level Crossing Warning Device based on the ARTC's system for rail personnel working on or near the rail track.
				    The LCSC referred this recommendation to the Rail CRC for its consideration and advice.
				    The Rail CRC recently completed research on the effectiveness of engineering, enforcement and education approaches to improving the safety of motorists at the road/rail interface. This report was received in mid-January 2009 and is now being reviewed. It is expected to provide useful information for development of new technologies.

32	The RIC, in consultation with the RTA, local councils, and other agencies, ensure	LCSC	**Supported with change.** The LCSC monitors world best practice and	In each of 2006-07 and 2007-08 NSW allocated $93,000 to the ATC endorsed

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
	that there are opportunities for the assessment of innovative approaches to addressing the problems associated with RLXs.		participates in national and international forums on safety management at level crossings. See Recommendation 31.	National Railway Level Crossing Behavioural Strategy research project. The ITSRR and RTA were represented on the National Behavioural Coordination Group (BCG) which managed the project and reported to the SCOT (Standing Committee on Transport-comprised of transport and roads agency heads from each Australian jurisdiction) Rail Group. This Group completed a survey of community attitudes and behaviour at level crossings, a targeted education and enforcement project in Victoria and Western Australia and developed an inventory of existing Australian and international behavioural programs. Details of the three project elements are available on the ARA website at www.ara.net.au. See also Recommendation 31, which considers the effectiveness of various approaches to problems at level crossings.
33	The RIC, in consultation with the RTA and local councils, develop a program for the installation of gateway treatments and other perceptual countermeasures to provide better cues to motorists on roads approaching RLXs, including but not limited to road markings, signage, roadside infrastructure, the road pavement design and construction (e.g., road width, road surface treatment, rumble strips, etc.), and traffic signals (e.g., approach flashing lights).	RTA	**Supported with change.** All upgrade projects are assessed for additional warning and delineation enhancements. This has resulted in all upgraded sites having the implementation of approach guideposts to form a "gateway" on the approach to the crossing and sites with poor sight distance being treated with advance flashing warning lights. This is also being considered in the review of *AS 1742.* See Recommendation 29.	The RTA has adopted the Australian Standard *AS 1742.7* 2007 for the planning, design and installation of traffic facilities on the approach, and at, level crossings. *AS 1742.7* permits the provision of "gateway" treatment via the installation of signposting and pavement markings. VicRoads has conducted a trial of "rumble strips" at passively protected level crossings. The report of the trial is expected early in 2009. Once the final results of the trial are available, the RTA will be asked to advise the LCSC on the feasibility of their application in NSW. Until then the recommendation is to remain open.
34	The RTA and the RIC, with local councils (where appropriate), provide for the integration of rail signals with any traffic signals on roads approaching RLXs.	RTA	**Supported with change.** It is a safety and efficiency imperative that where rail signals are in close proximity to road signals that the two systems are co-coordinated if not fully integrated. Coordination and integration of road and rail signals already	An interface agreement for the Installation and Maintenance of Joint Rail and Road Structures and Cabling at Level crossings is now in place between RTA and RailCorp.

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			exist at a number of locations in NSW. The integration will continue where installation of new traffic lights is adjacent to a level crossing in consultation with all stakeholders.	
35	The RIC and the RTA develop and trial a new RLX signal system based on the existing road traffic signals where: a) A system of green-amber-red lights is displayed to road traffic approaching a RLX so that drivers see: 　i. a green light when no train is present or approaching; 　ii. an amber light indicating the approach of a train; and 　iii. a red light (or double red lights) to indicate the imminent approach and transit of a train; b) the use of <u>flashing</u> green-amber-red lights is compared with a steady green-amber-red lights display; and c) the RLX signal system uses modern technologies (e.g., LED displays, detection of train speeds, microwave technology, GPS technology, etc.)	LCSC	**Requires further consideration.** The LCSC will consider options for further investigation of these technologies and the legislative implications.	The safety benefits of this recommendation are not yet proven and the LCSC will monitor the trial of this type of protection, which is to be undertaken by VicRoads.
36	The RTA and the RIC assess the feasibility of installing train-activated rumble strips at passive RLXs.	RTA	**Supported**	VicRoads has conducted a trial of "rumble strips" at passively protected level crossings. The report of the trial is expected to be released in early 2009. 　Once the final results of the Victorian trial are available, the RTA will be asked to advise the LCSC on the feasibility of their application in NSW.
37	The RIC ensure that the roadside and railway infrastructure that is installed at RLXs minimises the likelihood of serious injury in the event of collisions between a train and a vehicle or person through: a) The design and construction of	RTA	**Supported** This recommendation is already being implemented at new installations where practicable. Removal and replacement is undertaken progressively where practicable as part of upgrade and renewal programs.	Rail infrastructure managers work with the RTA and Councils on such initiatives. LCIP projects for example include the removal of non-frangible posts and structures from level crossings and immediately surrounding areas. 　The *Rail Safety Act 2008 (NSW)* introduces

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
	frangible (breakaway) road side and rail infrastructure; and b) The removal and replacement of non-frangible roadside and railway infrastructure at RLXs.			obligations on rail infrastructure managers and road managers to seek to enter interface agreements for the joint management of safety risks at rail level crossings and other road/rail interfaces. These provisions strengthen requirements for road and rail managers to work together to address the issues raised by this recommendation.
38	The RTA, in consultation with the RIC and local councils, develop guidelines for the installation of median barriers at RLXs.	RTA	**Supported** Concrete medians have been constructed on the approaches to level crossings at a number of sites where driving around boom gates has been witnessed. There are RTA Road Design guidelines covering the use of concrete median strips.	The guidelines for the provision of concrete medians is to be reviewed to ensure they are effective in reducing unsafe driver behaviour at RLXs and, where installed, maximise road safety.
39	The RTA, in consultation with local councils and the RIC, develop a consistent policy regarding the use of approach warning signage, signals and road markings prior to the immediate approaches and entry into a RLX.	RTA	**Supported** Warning signs and road markings are covered under *AS1742.7*. This standard is currently under review. See Recommendation 29.	The revised standard was published in February 2007 and addresses the recommendation.
40	The RTA, in consultation with the RIC, ensure that the angles of intersection between the road and the railway line are such to allow the drivers approaching and entering the RLX to view the railway line—in both directions—for the presence of a train.	RTA	**Supported** The Level Crossing Assessment Model (LCAM) assesses the impact of sighting of skewed crossings when determining priorities for safety improvement.	National road design standards such as AUSTROADS provide guidance on intersection angles and sight distance requirements. This was also included in the review of *AS 1742.7*. In addition to the RTA other infrastructure managers (rail and Councils) have responsibilities in this area. Upgrades to intersection angles can be very expensive. Where this is the case upgrades to level crossings minimise the risk by provision of cost effective measures to the road environment to improve driver sight distance at level crossings. See Recommendations 39, 41-43.
41	The ITSRR, in consultation with the RIC, the ARTC and the operators of private rail lines, ensure that structures (e.g. signal boxes) within the rail reserve do not	ARTC, RIC and RailCorp.	**Supported** Current infrastructure engineering practices address this issue.	The ALCAM process also considers and assesses sight distance obstructions caused by vegetation and structures. ITSRR accredits level crossings on private rail lines.

No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
	impede the view of the railway line of a driver approaching or stopped at the entry to a RLX.			
42	The RTA, with local councils and the RIC, consider developing a general advisory sign for use on major roads where RLXs occur, or on roads intersecting with high use railway lines.	RTA	**Supported** Additional signs or changes to existing signs will be considered in the current review of *AS 1742.7.* See Recommendation 29.	The revised *AS 1742.7* was published February 2007 and addresses this requirement. When the need arises, the RTA improves existing and introduces new signage to improve driver behaviour at level crossings.
43	The RIC, in consultation with local councils, the RTA and the Environment Protection Authority (EPA) ensure that there is a program to remove obstructive roadside and railway vegetation within the sight triangles associated with RLXs.	LCSC	**Supported with change.** The LCSC will request road and rail authorities to identify and remove any obstructions of sight lines by vegetation when checking RLXs. Removal of obstructive vegetation will be done in accordance with relevant environmental legislation.	Infrastructure managers have responsibility in this area and the LCSC Chair has requested road and rail authorities to check for and remove any obstructions of sight lines by vegetation when checking RLXs. (LCSC letters to the three network managers and LGSA March 2006). Removal of obstructive vegetation is normally carried out by the appropriate infrastructure manager and done in accordance with relevant environmental legislation. It is the responsibility of each infrastructure manager to have appropriate maintenance strategies in place to address these issues on an ongoing basis. The *Rail Safety Act 2008* (*NSW)* introduces obligations on rail infrastructure managers and road managers to seek to enter interface agreements for the joint management of safety risks at rail level crossings and other road/rail interfaces. These provisions strengthen requirements for road and rail managers to work together to address the issues raised by this recommendation.
44	The RIC, in consultation with rail operators, review the safety of departmental crossings associated with vehicular and pedestrian access onto or across railway tracks.	ARTC, RailCorp and RIC.	**Supported with change.** The management of risks at departmental crossings occurs within the context of each organisations risk based safety management system and process.	The LCSC wrote letters to the three network managers in March 2006 requesting review of the safety of departmental crossings associated with vehicular and pedestrian access onto or across railway tracks. Under the *Rail Safety Act 2002 (NSW)* railway operators were required to have a system to

Appendix 2 – Level Crossing Strategy Council Summary of Responses to Earlier Staysafe Recommendations

No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
				identify and manage risks to safety associated with carrying out their railway operations. Such risks would include departmental crossings associated with vehicular and pedestrian access onto or across railway tracks.
45	The RIC and the RTA, ensure that local councils, when considering land use planning and development issues, take account of issues associated with RLXs, and that such considerations are documented by local council traffic committees.	LCSC	**Supported with change.** The LCSC will take lead responsibility for this matter.	An Infrastructure State Environmental Planning Policy (SEPP) which includes provisions relating to level crossings was gazetted in December 2007. The provisions require councils to notify rail authorities of development applications impacting on level crossings and to not grant approval for the development without the concurrence of the rail authority. The LCSC provided coordinated advice from its member agencies to the Department of Planning on the level crossing provisions.
MATTERS RELATING TO TRAIN CREWS				
46	The ITSRR, in consultation with the RIC, the ARA and the MoT, ensure the development and implementation of an independent and confidential reporting system to assist in the identification of problems associated with the operation of the NSW rail network, and RLXs specifically.	ITSRR	**Supported with change.** The OTSI has a confidential reporting line for the reporting of problems associated with the operation of the NSW rail network, including level crossings.	The OTSI is now a statutory authority separate to the ITSRR.
47	The RIC, in consultation with the WorkCover Authority, NSW Health, rail unions, rail operators, other Transport NSW agencies, NSWPF, and other relevant agencies and organisations, review the support provided for train crews and other personnel involved in attending RLX crashes to: a) Identify best practice principles; and b) Develop and implement improved programs to support train crews and other personnel involved in attending RLX crashes.	LCSC	**Supported with change.** The LCSC will take lead responsibility for this matter.	RailCorp, RIC, ARTC and NSW Police advise that they already have arrangements in place to support staff following incidents at level crossings. Discussions with WorkCover will be organised early in 2009.

No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
	MATTERS RELATING TO LOCOMOTIVES AND ROLLING STOCK			
48	The maximum speed within the NSW rail network should be 120 km/h unless there is a closed corridor for train operations.		See Recommendation 21.	It is considered that the most appropriate approach should be based on a corridor strategy approach considering all factors within the corridor along with train speed.
49	The MoT, in consultation with rail operators, rail unions, the WorkCover Authority, and other relevant agencies and organisations, identify and review the efficacy of measures to improve the conspicuity of trains, with specific attention to issues associated with trains travelling across RLXs, including but not limited to: ● Locomotive ditch lights; ● Locomotive strobe lights; ● General locomotive lighting; ● The use of locomotive highlights; and ● The use of retroflective marking on locomotives, goods wagons and passenger carriages.	LCSC	**Supported** The retrofitting of reflective marking or increased running lights (or both) on all rolling stock operating on the NSW standard gauge system was completed by the end of 2003-04 across all operators. The National SCOT is currently addressing "train conspicuity" (visibility) as a national issue. The MoT represents NSW on this Committee.	The ARA has developed a train conspicuity standard for rolling stock. The standard calls for the following: *Reflective Delineators* – Retro-reflective markers along the sides of all rail vehicles *Livery* – A minimum of one square metre on the front of new and existing locomotives will be painted in high visibility colours. New locomotives shall have high visibility livery on the side of rail vehicles but there are no prescribed minimum area requirements. *Lighting* – Triangular or rectangular lights configuration at the front of locomotives – visibility lights. Comprised of separated low-level visibility and high level headlights, which may be a single or separated arrangement. Locomotives shall have at least one white headlight fitted at any leading end. The centreline of each headlamp beam should be aimed at the centre of the track at least 240m ahead and in front of the headlight. New and modified locomotives shall have two white visibility lights at any leading end. Existing locomotives shall have at least one red taillight fitted at any trailing end. New and modified locomotives shall have red tail and white marker lights fitted as high and wide as practical at both sides of each end. This is a voluntary standard, so it was not accompanied by a compliance timetable. However, independently from the Standards development on 5 April 2005 the ARA announced that existing locomotives were

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
				expected to comply with the National Locomotive Lighting and Visibility Standards by 2008.
50	The RIC investigate and review crashes involving trains and motor vehicles, and trains and pedestrians, to identify: • The characteristics of the point of impact between the train and motor vehicle or pedestrian; and • The potential for the use of energy absorbing structures at common points of impact locations between trains and motor vehicles or pedestrians.	LCSC	**Requires further consideration.** The LCSC will refer this issue to the Rail CRC for their consideration and advice.	The Rail CRC research (see Recommendation 31) is being reviewed to assess the case for further action on this recommendation.
51	The MoT, in collaboration with the Emergency Services, Police, Health, Environment, and Roads portfolios, commission or conduct risk assessments for serious incident scenarios such as a crash at a RLX involving a fast passenger train or a freight train carrying dangerous goods (hazardous materials) on railway lines within NSW.	LCSC	**Supported with change.** The LCSC is responsible for the implementation of this response, rather than the MoT. (See also Recommendation 25).	The State Emergency Services advised that level crossing risks would be included as part of Local and District Emergency Risk Assessment and incorporated into their Risk Register and that the risk assessments will be coordinated by the District Emergency Management Officers with the support/assistance of their District. (See also Recommendation 25).
MATTERS RELATING TO MOTOR VEHICLES AT RAILWAY LEVEL CROSSINGS				
52	The RTA, in consultation with the RIC and other relevant agencies and organisations, identify and review the possible mechanisms and contribution of driver distraction as a contributor to RLX crashes, including but not limited to placement and complexity of roadside signage and signals, in-vehicle devices and instrumentation, and the vehicle environments (soundproofing, air conditioning, etc.).	RTA	**Supported with change.** This is a research project that would be better conducted under a National forum. RTA will raise this matter at National levels.	A letter has been sent to the Transport Safety and Security Working Group requesting it give consideration to research on this matter being undertaken as part of the new Level Crossing Working Group (which works to the Safety and Security Working Group). The Safety and Security and the Level Crossing Working Groups were established as part of the National Transport Policy which Australian Transport Ministers agreed to develop in early 2008. The Groups will take over safety matters, including level crossing issues, previously dealt with by SCOT Road and Rail Modal Groups, the BCG, ARCSIG and the ALCAM National Group. NSW is

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
				represented on both Working Groups and the ALCAM Group.
53	The RTA support the development of a capability with in-vehicle navigation systems to alert drivers potentially hazardous situations, e.g. RLXs.	RTA	**Supported with change.** In vehicle navigation and warning systems are a matter for vehicle manufacturers and Australian Design Rules. The RTA will raise this matter at National levels.	A letter has been sent to the new Transport Safety and Security Working Group requesting it give consideration to research on this matter being undertaken as part of the new Rail Level Crossing Group program.
MATTERS RELATING TO DRIVERS AND OTHER ROAD USERS AT RAILWAY LEVEL CROSSINGS				
54	The RIC, in consultation with local councils and the RTA, review the current approaches to the education and awareness of motorists and pedestrians regarding safe and appropriate behaviour where a road, road-related area, pedestrian access route or other access route meets a railway at substantially the same level, with particular regard to the effectiveness of public advertising, driver education materials, and road signage.	RTA	**Supported with change.** Over the past two years, the RTA has conducted a railway level crossing safety campaign targeting rural NSW. This was funded jointly with RIC and included radio, print and outdoor mediums. Initial qualitative and quantitative research was conducted pre and post the campaign that looked at drivers' understanding and behaviour with regard to RLXs. The Education Campaign is designed to meet the following objectives: • Increased awareness of the importance of obeying road rules at level crossings. • Create awareness of the dangers caused by the stopping limitations of trains. • Increased safe behaviours by drivers crossing RLXs. Targeted press, radio and outdoor media are used during campaigns. The Education Campaign will continue to be reviewed and developed by the LCSC.	This campaign has been undertaken each year since 2002. The RTA education and awareness campaigns have been jointly funded by RIC and additionally more recently ARTC and RailCorp. In each of 2006-07 and 2007-08 NSW allocated $93,000 to the ATC endorsed National Railway Level Crossing Behavioural Strategy research project. The ITSRR and RTA were represented on the National BCG which managed the project and reported to the SCOT Rail Group. This Group completed a survey of community attitudes and behaviour at level crossings, a targeted education and enforcement project in Victoria and Western Australia and developed an inventory of existing Australian and international behavioural programs. This work provides an important resource to help inform development of future NSW education and awareness campaigns as will the recently completed Rail CRC research referred to in Recommendation 31. Details of the three project elements are available on the ARA website at www.ara.net.au. Future work proposed by the BCG is being considered for inclusion in the forward program of the Level Crossing Working Group.
55	The RTA, in consultation with local councils and the RIC, ensure that the	RTA	**Supported with change.** See Recommendation 54.	

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No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
	education and awareness of motorists and pedestrians regarding safe and appropriate behaviour at RLXs addresses issues associated with the 'culture of blame' where trains and train drivers are seen as responsible for a crash or near miss incident.			
56	The RIC, in consultation with the RTA, conduct research into the knowledge, behaviour and beliefs of motorists and pedestrians about RLXs.	RTA	**Supported** See Recommendation 54. Initial qualitative and quantitative research that looked at motorists' understanding and behaviour with regard to RLXs was conducted pre and post the RTA education campaign.	See Recommendation 54.
57	The RTA, in consultation with NSWPF and the RIC, review the means currently and potentially available to enforce traffic law regarding motorists transiting a RLX, including but not limited to red light camera technologies and locomotive-mounted video cameras.	RTA	**Supported with change.** Penalties for queuing across level crossings or driving contrary to signals were increased in January 2003. Three demerit points were added to the penalty as well as an increase in fines from $74 to $300. The LCSC will further investigate current arrangements.	The RTA will further investigate current arrangements and technologies. Enforcement is primarily the responsibility of the NSW Police. The RTA will work with the Police on improving enforcement at level crossings. Red light cameras cannot be used under current legislation and under current rail signal design standards.
58	The RTA and RIC examine the use of flashing amber to indicate signal fault or misfunction and 'fail safe' operation for motorists approaching an actively protected RLX.	RTA	**Supported with change.** The LCSC agrees with this recommendation in conjunction with Recommendation 35.	A letter has been sent to the new Transport Safety and Security Working Group requesting it give consideration to research on this matter being undertaken as part of the new Rail Level Crossing Group program.
59	The Attorney General's Department (AGD), in consultation with the RIC and RTA, review the current criminal law regarding motorists and pedestrians using RLXs and determine if the current offences are sufficient to deter unsafe and inappropriate behaviour and if further specific offences are required.	LCSC	**Supported**	The AGD undertook this review which concluded the current offences and maximum penalties are sufficient to address a broad range of unsafe behaviours by level crossing users and that specific new offence provisions to deter unsafe behaviour are not necessary. The AGD suggested the deterrent effect of existing offences could be increased by publicizing the existence of the criminal liabilities and their potential application to level crossing users. The RTA has been asked to consider including these provisions as part of

No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
				future level crossing awareness campaigns.
60	The AGD, in consultation with the RIC and the RTA, review the current civil law regarding motorists and pedestrians using RLXs and determine if the current tort liabilities are sufficient to deter unsafe and inappropriate behaviour.	LCSC	**Supported**	The AGD underook this review which concluded the current tort liabilities are sufficient to address negligent behaviour at level crossings and that changes to tort law or tort liability are not considered necessary or appropriate to deter unsafe behaviour at level crossings. The AGD suggested the deterrent effect of existing tort liability could be increased by publicizing the existence of these civil liabilities and their potential application to level crossing users. The RTA has been asked to consider including these provisions as part of future level crossing awareness campaigns.
61	The RIC, the RTA, local councils, and other transport agencies, review the safety of pedestrian facilities associated with crossing railway tracks, including pedestrian-only level crossings as well as level crossings used by motor vehicles.	LCSC	**Supported** The LCSC is participating in the continuing development of a Pedestrian Level Crossing Assessment Model and National standards for disabled pedestrian access; these will enable the LCSC to make better more informed decisions about improving pedestrian level crossings safety. The current review of *AS 1742.* is also relevant to this issue. See also Recommendation 29.	RailCorp has a specific pedestrian upgrade program for which it is has allocated more than $2 million per annum in recent years. Upgrades to level crossings on the RIC and ARTC networks are undertaken as part of upgrades funded through the LCIP. Additionally, the RailCorp Level Crossing Unit is participating in the National ALCAM Group initiative to develop a pedestrian level crossings assessment model.
62	The LCSC consult with the Victorian Railway Pedestrian Crossing Upgrades Committee regarding the safety of pedestrians, cyclists, and people using wheelchairs, who use RLXs at roads or as stand-alone pedestrian crossing points.	LCSC	**Supported**	The RailCorp LCU on behalf of the LCSC consulted with the Victorian Railway Pedestrian Crossing Upgrades Committee on pedestrian issues. The development of the 2005 RailCorp Pedestrian Standard included consultation with the Victorian Railway Pedestrian Crossing Upgrades Committee and has been considered in the review of *AS 1742.7.* The LCSC has ensured that all network managers are made aware of the Victorian developments.
63	The RIC, in consultation with the NSWPF and other transport agencies, review the	ARTC, RIC and RailCorp.	**Supported with change.** The broader issue of trespass is outside the	Each network manager has its own processes in place to manage trespass from a risk

Appendix 2 – Level Crossing Strategy Council Summary of Responses to Earlier Staysafe Recommendations

No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
	incidence of trespass across railway lines and develop, where possible, effective means for the prevention of trespass and intervention with trespassers on railway property.		remit of the LCSC. This issue primarily lies with the rail network owners and managers. RailCorp has an active trespass program. Nevertheless the LCSC will refer the matter to the rail network owners for consideration.	perspective.
64	The RIC, in consultation with NSWPF, ensure that where unauthorised, short-cut sites that allow pedestrian movement across operating railway lines are identified, action is taken to close these crossing points permanently.	ARTC, RIC and RailCorp.	**Supported with change.** Like the case for trespass, management of unauthorised short cut sites lies primarily with network owners/managers. Nevertheless the LCSC will refer the matter to the rail network owners for consideration. See Recommendation 63.	
65	The RIC, in consultation with employee organisations and NSW Health, review the incidence of suicide at RLXs and develop, where possible, effective means for the prevention of suicides and intervention with persons exhibiting suicidal tendencies.	ITSRR	**Supported with change.** The extremely low incidence of suicide in the data is likely to preclude valid conclusions being drawn about options for prevention. Nevertheless the incidence of suicide at level crossings will continue to be monitored.	ITSRR letter 21 April 2006 confirmed that suicides (as declared by the Coroner) will be included as such in ITSRR's incident reports to the LCSC.
66	The MoT, RTA and local councils review the Operation Lifesaver program in Canada and the USA for possible use, when adapted to Australian conditions and culture, in NSW.	LCSC	**Supported with change.** In developing the LCSC Education Campaign (see Recommendation 54) the LCSC will continue to considered programs from the US, Canada and UK.	In developing the Education and Awareness Campaign (see Recommendation 54) the RTA and RailCorp considered programs from the US, UK and Canada including the Operation Lifesaver program. These programs will continue to be monitored and reviewed by the RTA and rail network managers.
67	The ARA, in consultation with the RIC and the RTA, hold a workshop and seminar on road user behaviour at RLXs.	ARA	**Supported**	This workshop was conducted and was attended by the RailCorp LCU and ARTC. The workshop resulted in the eventual development of the National Railway Level Crossing Behavioural Strategy. (See Recommendation 32).
MATTERS RELATING TO THE RAILWAY ENVIRONMENT AT LEVEL CROSSINGS				
68	The RIC, in consultation with NSWPF, RTA, and local councils: a) Develop policies and strategies to combat vandalism associated with RLXs; and b) Review the adequacy of current	LCSC or network owners.	**Supported with change.** The LCSC will ask its member agencies to consider level crossings when reviewing of and developing their broader policies and strategies to combat vandalism.	Infrastructure managers have policies and strategies to address and combat vandalism associated with RLXs.

No.	Recommendation	Lead Agency	Initial Response (2006)	Final Response (2009)
	legislation to effectively deal with vandalism/criminal damage of railway and road infrastructure.		The LCSC will ask its member agencies to consider level crossings when conducting reviews of legislation effecting vandalism.	
CONCLUDING COMMENTS				
69	The RIC, the RTA, local councils, and other agencies, be subject to a further review in 2006 by the Staysafe Committee regarding the response to the findings and recommendations of the inquiry into the safety of RLXs in NSW.	LCSC	Noted.	

Appendix 3 – Level Crossing Strategy Council Responses to Questions Taken on Notice

Question

Are the Level Crossing Strategy Council's yearly reports available on www.levelcrossings.nsw.gov.au?

Response

At the time of the public hearing, the yearly reports of the Level Crossing Strategy Council were not available at www.levelcrossings.nsw.gov.au. The 2006/07 yearly report is now available on the website.

Question

Will the fencing on the Cootamundra to Albury Line be replaced once the upgrade of the line is complete?

Response

The Australian Rail Track Corporation (ARTC) advises that the fencing on the Cootamundra to Albury corridor was originally constructed to prevent livestock entering the rail corridor. The fencing consisted of four horizontal strands of plain wire and two strands of barbed wire. This type of fencing does not restrict trespassers' entry to the rail corridor. A portion of this type of fencing has been removed near Uranquinty to allow access for construction and maintenance work. ARTC advises that the fencing will be replaced where risk assessment requires or where required by the *Public Works Act 1912.*

Question

Were the seven fatalities at level crossings in 2002 the result of a single accident?

Response

In 2002, there were three (not seven) single fatality incidents at level crossings in NSW, each of which involved a collision between a train and a road vehicle. These occurred at Kyogle, 7 February 2002, at Albury, 12 February 2002 and at Wickham, 18 March 2002.

Question

What is the average speed on different parts of the NSW rail network?

Response

ARTC advises that the average speed of trains is difficult to calculate because it is impacted by timetable decisions and the impact of curves and grades (where trains have to slow down) and the capacity of individual trains themselves.

ARTC advises that the major works being undertaken by it, will see improvements in average times, due to the elimination of the Electric Staff System between Casino and Acacia Ridge (in Brisbane), which means trains do not have to stop to exchange staffs at each crossing loop. Should the Committee have questions about the speed of specific trains, the ARTC has offered to provide further information.

Question

Which level crossings are likely to be included in the Level Crossing Improvement Program and which will have to be funded separately?

Response

The 1,400 public road level crossings in New South Wales have each been assessed using the Australian Level Crossing Assessment Model (ALCAM) and prioritised for safety upgrade based on this assessment. Crossings included in the Level Crossing Improvement Program are chosen based on their ALCAM ranking, to the extent of available funding (which is $7 million per year up until 2010-11). The top 300 sites ranked according to their ALCAM assessment can be obtained from www.levelcrossings.nsw.gov.au. All road and rail agencies collaborate in developing the annual program of works for the Level Crossing Improvement Program.

Rail and road agencies also upgrade level crossings in addition to those upgraded under the Level Crossing Improvement Program. The decision on which level crossings an agency will upgrade is influenced by a number of factors including:

- An agency's own risk profile;
- An agency's own maintenance program; and
- Any network upgrade plans and operational changes.

In addition to the Level Crossing Improvement Program, in 2007/08 the Rail Infrastructure Corporation spent $1.94 million on maintenance, improvement and upgrade of level crossings; the Australian Rail Track Corporation spent $6.9 million including grade separation of the level crossing at Swinging Ridge Road at a cost of $4 million and RailCorp provided $2.65 million for safety improvements at level crossings on its network.

Question

How do the traffic levels and the risk ranking of the level crossing at Wauchope on the Oxley Highway compare to those of the level crossing on the New England Highway at Scone?

Response

The traffic levels and Australian Level Crossing Assessment Model (ALCAM) ranking of the crossings at Wauchope and Scone are set out below.

	Traffic Volume (daily annualised)		ALCAM Priority
	Road Vehicles	Trains	
Wauchope – Oxley Highway	7710	22	29
Scone – New England Highway	8544	26	38

There are a number of factors in addition to road and rail traffic volume such as sighting distance, road geometry and the number of rail tracks that are taken into account when deriving the ALCAM priority. While the crossing at Wauchope has slightly fewer trains and vehicles using the crossing, additional factors which contribute to higher risk at Wauchope include:

- The road alignment on the approach to the crossing (i.e. Wauchope has a more curved approach to the crossing – a straight approach is considered safer than a curved approach)

- The distance from the advance warning to the crossing

Also, the site at Scone has active advanced warning lights on the approach whereas Wauchope does not.

Question
What triggers the application for the major works required by grade separations?

Response
Grade separations are not funded under the Level Crossing Improvement Program. Where it is determined a crossing is to be grade separated, this is funded separately by the RTA. In determining if a crossing is to be grade separated a detailed analysis would be undertaken of safety risk, project costs, traffic implications, site conditions and local and social environmental factors.

Question
Are there any proposals to grade separate Casula Road, Casula level crossing as part of the construction of the Southern Sydney Freight Line?

Response
Prior to the commencement of operations on the Southern Sydney Freight Line, two public level crossings will be closed and alternative vehicular and pedestrian access will be provided through grade separation. One level crossing is located at Liverpool Hospital, at the southern end of Casula railway station. Another level crossing, mainly used by RailCorp staff for maintenance of facilities at Sefton Triangle, will be relocated from its current location (access through Wellington Road) to another location (access through Carlingford Street) which is primarily an industrial area.

Appendix 4 – Responses to Supplementary Questions

AUSTRALASIAN RAILWAY ASSOCIATION

Question

Given the statistics provided in the 2008 Australian Institute of Health and Welfare (AIHW) report on page 4 of the submission, it would appear that injuries from level crossing incidents in NSW are in the lower range nationally, representing about 20% of those in Victoria over the same period.

a) To what do you attribute the relatively low injury rate in NSW, compared to other States?

b) Are there any features of level crossings in NSW that provide a safety advantage over those in other States?

Response

According to the Australian Institute of Health and Welfare (AIHW), from 2001-2002 to 2005-2006, New South Wales (NSW) had a lower incident rate of level crossing collisions than Victoria, Queensland and South Australia yet the number of level crossing incidents in NSW were higher than Tasmania, the Australian Capital Territory and the Northern Territory.

The ARA would not necessarily attribute the lower number of collisions in NSW to level crossing features but more to the fact that NSW has fewer level crossings than Victoria and Queensland. Victoria has the highest number of level crossings of any Australian jurisdiction. The ARA would argue that there is a direct correlation between the number of level crossings and number of collisions. The number of collisions in Victoria is representative of this fact.

Regardless of the above, the ARA continues to argue that rationalising level crossings and ultimately removing potential level crossing collision locations will help to further decrease the number of level crossing collisions in NSW.

Question

The submission details the establishment of the National Railway Level Crossing Behavioural Coordination Group (BCG) in 2006 (p.5).

a) The submission recommends that projects identified as a result of studies conducted through pilot programs and workshops conducted through the BCG should be nationally based (p.7). Is there also a case for locally based projects to be undertaken in NSW to reflect particular conditions applying in this State?

Response

The National Railway Level Crossing Behavioural Coordination Group (BCG) pilot demonstrated that enforcement has a positive effect on road user compliance at level crossings. The ARA believes that all level crossing collisions are avoidable if road users obey the controls and signage. Accordingly, the ARA suggests that the NSW Government

urge their Police Forces across the state to increase monitoring and enforcement of correct level crossing behaviour. Further, the ARA recommends that the accompanying penalties for level crossing infringements be raised to reflect the potentially catastrophic nature of level crossing collisions and the higher penalties currently distributed in Victoria and the Northern Territory.

The BCG's Workshop identified a number of potential level crossing projects. Whilst the ARA would ultimately like to see safety measures adopted in a nationally coordinated approach to provide a consistent experience for road users, the ARA would support NSW conducting its own trials and sharing the outcomes with the other States. But the ARA would urge NSW not to duplicate trials being done in other States.

Question

The ARA supports the development and implementation of Intelligent Transport System (ITS) technology in NSW (p.11).
   a)   How do you propose that such technology be funded across the transport
         industry?

Response

Intelligent Transport Systems (ITS) need to be independently trialled before any implementation at level crossings. The ARA would suggest NSW trial ITS solutions and share the results nationally. However, to avoid duplication and to ensure national consistency, it is recommended that a National road and rail Taskforce be established to oversee the State and Territory ITS projects. In Victoria, the Government provides annual Statewide Level Crossing Control Upgrade Program funding. This is then managed by the Victorian Railway Safety Steering Committee. The ARA suggests that the NSW Government adopt this funding approach for NSW projects; which could include a trial of ITS at level crossings.

Question

The ARA also makes reference to investigating the use of GPS tracking technology to oversee the operation of heavy vehicles at crossings (p.12).
   a)   Can you provide the Committee with more details about the development of GPS
         technology for use at level crossings?
   b)   Has this been trialled in other States?

Response

The GPS tracking device referred to within the ARA submission is a Transport Certification Australia (TCA) product, the Intelligent Access Program (IAP). IAP is a voluntary program for heavy vehicles. According to the TCA website, 'IAP uses the Global Navigational Satellite System to monitor "heavy vehicles" road use, giving transport operators flexible access to the Australian road network to suit their specific business and operational needs. In return, the IAP provides road authorities with greater confidence that heavy vehicles are complying with the agreed road access conditions'. The ARA believes the IAP could be

used as a method to monitor heavy vehicle behaviour at level crossings and could be also used as an enforcement tool for heavy vehicle compliance.

Whilst the legislation for IAP has been passed in NSW, Queensland and Victoria, it is yet to be trialled as a level crossing safety measure. The ARA recommends that the NSW Government take the lead on behalf of the other States and Territories by trialling IAP at level crossings. This does not have to be an expensive exercise as the trial could be undertaken using IAP fitted vehicles which regularly cross level crossings in the chosen test area. This trial could be undertaken in partnership with TCA, the Roads and Traffic Authority (RTA), the ARA and Australian Trucking Association (ATA).

Question

The submission makes reference to the joint management of railway crossing risks by rail infrastructure managers and road authorities under the Interface Coordination Agreements (p.12).
   a)   Can you expand on your claim that there may be a potential for a lack of
        adequate funding assistance as part of the Interface Coordination Agreements?
   b)   How can this be remedied?

Response

The ARA welcomes the Interface Coordination Agreements (ICA's). However, we believe that during these current difficult economic times, there is the possibility that the ICA requirements could place additional pressures on some road authorities. The ARA is concerned that funds will be redirected from ICA's to other community-based projects which could in turn reduce councils' level crossing maintenance commitments. The ARA proposes that the Government provide funds where needed to enable local councils to adequately meet the ICA requirements.

Question

The submission also recommends the commissioning of additional research projects into rail safety.
   a)   Which aspects of railway crossing safety should be prioritised in future
        commissioned research projects?
   b)   Who is best qualified to conduct such research?

Response

Additional research is required to determine the next steps forward in level crossing safety. The Cooperative Research Centre for Rail Innovation (CRC) was set up in late 2007 by rail Industry partners, the Commonwealth Government and six Australian Universities. The CRC has a number of research programs one of which covers level crossing safety. The CRC recently held the *New Approaches to Understanding and Preventing Railway Level Crossing Incidents Workshop* to identify and prioritise a possible list of level crossing research projects that the CRC or other interested parties could conduct. Thirty participants from the road and rail industries (including Government reps) as well as universities identified a number of potential projects. These were prioritised and a list of the top ten

research priorities was produced. This list can be found on page four of the report provided to Committee members at the hearing.

Whilst the CRC will proceed with the rail specific projects on the list it does not have the resources to complete all projects. But from a NSW Government perspective the RTA might be best placed to research a project that is not specifically related to rail. Importantly if the NSW Government decides to pursue a project we request that it do so on behalf of the other states and territories and share the findings with them.

LEVEL CROSSING STRATEGY COUNCIL

Question

What is the total number of railway level crossings in NSW, including:
   a)   Public crossings
   b)   Private/occupational/accommodation crossings?
   c)   "Active" and "passive" controlled crossings?

Response

There are 1,370 public level crossings, 1,051 of which are passively protected and 319 are actively protected.

There are approximately 2400 private level crossings across New South Wales.

Question

The Council previously responded to this question by stating that each agency has responsibility for the inspection and maintenance of its own assets. Additionally, the frequency of any audit (inspection) is determined by the agencies' own risk-based safety management systems and processes.
   a)   What is the range in the frequency of audits undertaken by the various agencies?
   b)   Is the LCSC aware of any agencies that appear to perform this obligation better than others?

Response

The Level Crossing Strategy Council (LCSC) is the interagency group whose purpose is to promote the coordination of the efforts of agencies with responsibilities for level crossing safety. The frequency of road infrastructure audits at railway infrastructure is a responsibility of the roads authority, on local and regional roads this is the local council and their respective asset maintenance systems. In view of this, it is not possible to provide an accurate frequency of audits of road assets.

The ITSRR undertakes audits and inspections of rail infrastructure managers' maintenance and internal audit processes and has the power to act on safety issues raised through such activities. In addition Interface Agreements which are required under the *Rail Safety Act 2008* and will be implemented over the next three years will require that accountabilities for the safety of level crossings (both the road and rail components), including for audits and inspections, are specified. As for rail authorities, the ITSRR will have responsibility for enforcing the provisions of the Interface Agreements as they relate to road authorities.

Question

The LCSC has reinforced the potential benefits to be derived from a 'corridor' strategy/approach to railway level crossing safety, but that responsibility for development and implementation of specific corridor strategies lies with the relevant network manager.
  a) How keen are the network managers to adopt this approach?
  b) Has this been affected by the problems encountered with the Cootamundra – Albury corridor strategy? How confident are you that these issues will be resolved?
  c) Can you provide more detailed information about current negotiations regarding rail corridor management arrangements?
  d) Who is responsible for taking overall ownership of this strategy?
  e) What is the difference between a 'corridor strategy' and a 'closed corridor strategy'?

Response

The aim of a 'closed corridor strategy' is to have a rail corridor that does not intersect at the same level with any roads, that is, only grade separated crossings would be permitted on such corridors. Closed corridors are not being pursued in NSW.

A corridor strategy, on the other hand, attempts to improve safety at the road/rail interface along a stretch of rail corridor by undertaking a comprehensive analysis of all the level crossings and then implementing safety improvements which may include level crossing upgrades, operational changes and where feasible and alternative access is available closure of crossings. Leadership of such a strategy would normally rest with the rail infrastructure manager, but engagement and consultation with road agencies, other key stakeholders and the affected community is essential if this approach is to be effective.

While the Level Crossing Strategy Council has a coordinating role and can encourage the adoption of corridor strategies, responsibility for development and implementation of a specific corridor strategy rests with the relevant network manager.

As outlined in the March LCSC submission to StaySafe, RIC has developed a corridor management approach for the rail line between Werris Creek and Moree. A component of this strategy was the successful negotiation for mining companies to provide $2.4 million for level crossing upgrades on the Gap-Narrabri corridor and for $0.6 million from the owners of the new Narrabri Mine to upgrade the level crossing at that location.

Implementation of a corridor strategy between Cootamundra and Albury on the ARTC network commenced in 2006. Since then five level crossings have been closed and designs prepared for upgrades to three level crossings to be constructed in 2008/09. During 2007/08 it proved more difficult to achieve consensus on the issue of providing acceptable level crossing safety for the broader community while meeting the access needs of the local community.

In response to concerns raised by local councils about this corridor strategy the Chair of the Level-Crossing Strategy Council (Director-General, Ministry of Transport), the ARTC Chief Executive and the Roads and Traffic Authority, Road Network Manager met with Councils in Wagga Wagga on Thursday 12 February 2009 to discuss a way forward.

The ARTC CEO provided a broad overview of ARTC plans for the Sydney – Melbourne rail line, which could involve such measures as, for example, upgrading or closing level crossings along the line. ARTC also clarified that it is not pursuing a "closed corridor" approach (i.e. eliminating all level crossings).

ARTC agreed to provide Councils' strategic planners with its plans for the corridor, and to work with Councils and the RTA on level-crossing safety; perhaps by means of a formal agreement with Councils and the RTA if feasible.

Question

Related to this recommendation is the issue of speed limits on roads approaching railway level crossings. *V/Line* (the Victorian passenger rail service) has proposed lowering road speed limits to 80km/h at crossings with active protection, and lower for crossings with passive protection. Recently, an 80km/h (road) speed limit was introduced on high-speed arterial approaches to railway level crossings in rural areas.
  a)   What is the Council's opinion of imposing maximum speed limits of 80km/h on roads approaching railway level crossings?

Response

RTA has advised that rather than establishing a blanket speed limit, the maximum speed of road vehicles will continue to be determined on a case-by-case basis using a risk management approach. Risk assessments may result in different speeds being determined as appropriate for different circumstances.

The RTA is aware that Victoria introduced 80 km/h speed limits on the approach to level crossings in rural areas. The RTA will review the results of the impact of this measure in improving safety prior to a decision on whether to take a similar approach in New South Wales.

Question

Recent research has suggested that the introduction of photo/video enforcement together with boom barriers could potentially reduce level crossing crashes by up to 75%. Photo enforcement installations along the Los Angeles Metro Blue Line light rail system have resulted in violation reductions between 78-92%; similar results in Florida and Michigan yielded violation reductions of 60% and 50% respectively.
  a)   Has any consideration been given to the implementation of such devices in NSW?

Response

The use of camera technology at every railway level crossing is not possible in NSW at this stage. The most likely application for this type of technology is only at active controlled (those with flashing red lights) level crossings.

The implementation of technologies similar to existing red light cameras and/or providing photo/video images at railway level crossings is not possible under current NSW Road Transport legislation and under current rail signal design standards.

The RTA will assess the safety benefits arising from the trial currently being conducted by Public Transport Authority in Perth, Western Australia on the use of camera technology at railway level crossings.

The introduction of an enforcement camera at railway level crossings in NSW would require the following tasks (not an exhaustive list):

- Review and changes to the current NSW Road Transport legislation including the Road Transport (Safety and Traffic Management) Act 1999 and Road Rules 2008. Due to the nature of the rail signals a new section may be required in the Act, similar to that incorporated for bus lane camera enforcement.
- A resolution of the camera specifications and sourcing of appropriate technology.
- Discussion, agreement and integration of the new legislation and technology into rail agency and NSW Police systems, processes and procedures.

Question

Reference is made to research being undertaken by the Rail CRC, and, at various other points in the submission, to trials being undertaken in Victoria, for which NSW is awaiting the results.

a) What kind of coordination is taking place with other States to ensure that no duplication is occurring and different jurisdictions are not trialling the same technologies?

Response

In February 2008 the Australian Transport Council agreed to progress the development of a National Transport Policy, which is being progressed through a number of Working Groups, with transport safety matters being dealt with by the Safety and Security Working Group. Under this Group a Rail Level Crossing Group has been established to deal with level crossing matters requiring national attention. It has representation from each state and territory and the road and rail industries and will provide guidance advice and direction to the ATC on national level crossing policy and initiatives.

In undertaking its work the Group has identified the need to develop a framework for coordinated national implementation of initiatives and so will be well positioned to ensure unnecessary duplication of effort by jurisdictions does not occur.

Question

The recent report of the Victorian Parliament's Road Safety Committee identified an array of new and developing technologies that could potentially deliver safety improvements at railway level crossings. (These include radar systems; axel/wheel counting systems; solar powered lighting at crossings; intelligent transport systems (radio transponders, break-in radio, GPS, digital mapping, active advance warning signs, in-pavement lighting, and adaptive cruise control); dedicated short-range radio communication systems (vehicle and train control systems); obstacle detection systems; intelligent road studs)).

a) Apart from grade crossing predictors, magnetic gate latches and high intensity LED light technology, what technologies are currently being trialled in NSW?

Response

As outlined in the March LCSC submission to the Committee, the ARTC is developing a low cost level crossing protection system that can be installed where full active lights and bells protection, grade separation or level crossing closure are not viable. This new type of protection is most suited to private level crossings.

Question

According to Sinclair Knight Merz, GPS has the potential benefit of being low-cost, which may allow it to be implemented in locations which are not economical to upgrade with conventional technologies.

a) Currently a solar powered GPS system is in use at Zig Zag Railway. What are the results of this trial, and will this technology be implemented elsewhere?

b) Has concern for liability delayed the adoption of new technologies at railway level crossings in NSW?

Response

Recent informal advice to the Ministry from the Zig Zag Railway is that they have had initial discussions with Sinclair Knight Merz about the trial of a solar powered GPS system and that they are open to undertaking a trial of this technology. However, they advise no such trial is underway or planned at this point.

Question

The LCSC response to this recommendation states that the safety benefits of this recommendation are not yet proven.

a) Is this because they have been tested, and deemed not to result in any significant safety improvements, or because they have not been trialled?

b) When is completion of the Victorian trial expected?

Response

The use of traffic lights at level crossings has not as yet been trialled. Victoria is however planning such a trial, to be undertaken by VicRoads. As a first step Public Transport Safety Victoria (PTSV) has asked that the safety benefit of traffic lights at level crossings be

demonstrated and VicRoads intends to do this through a simulation exercise managed by Monash University. The trial of the traffic lights will only proceed if PTSV is satisfied that they represent a significant safety improvement. The simulation exercise is due to begin by June 2009.

Question

The initial response stated that this recommendation was 'being implemented at new installations where practicable'.

    a)   Does the reference to 'new installations' refer to new railway level crossings or upgraded existing crossings?

Response

The advice refers to upgraded existing crossings.

Question

Without pre-empting the outcome of the review of the RTA Road Design Guidelines regarding the use of concrete median strips currently underway, what do you anticipate the outcome to be?

Response

The RTA Road Design Guidelines are under review. The Level Crossing Strategy Council will provide Staysafe with the results of the review once available.

Question

Was there a trial carried out prior to the installation of the barriers?

Response

Concrete medians have been used by road authorities for some time as a tool to manage access and separate opposing traffic flows. Their use at level crossings is to improve safety by discouraging inappropriate motor driver behaviour whilst the boom gates are lowered. Provision of medians is considered an appropriate tool to manage traffic flow at railway level crossings. The review has been instigated to ensure a consistent warrant and safe design practice by road authorities when considering the application of this device in the different road environments.

Question

The revised *AS 1742.7* provides more detail on sight distance requirements at passive control crossings.

   a)   How confident are you that these provisions make adequate allowances for the stopping and sight distance requirements of heavy vehicles?

Response

The Australian Standard for sighting distance provides a solid basis for the assessment of appropriate sighting allowances at passive level crossings. However, it is important to note that the application of the standard needs to be done in conjunction with a risk assessment at each crossing to ensure that any site specific risks are considered. It should also be noted that no technical standard can cater for the specific characteristics or behaviours of individual car drivers.

Question

The response to this recommendation states that RailCorp, the RIC, the ARTC and the NSW Police all have arrangements in place to support staff attending incidents.

   a)   Has sufficient attention been paid to best practice procedures, optimal training programs and improvements to staff support in meeting obligations for OH&S?

   b)   Is the review of these arrangements to be undertaken by WorkCover?

Response

Advice has been given indicating that each transport agency has established arrangements for and provides an appropriate level of support to staff who attend level crossing incidents. The Level Crossing Strategy Council will discuss these agency support arrangements with WorkCover.

Question

The most recent response from the LCSC refers to post-campaign surveys that measured audience recollection and recognition of the campaign.

   a)   Has any evaluation been undertaken as to whether the Education Campaign achieved its stated objectives (as listed in the 2006) response?

Response

To ensure that motorist awareness community education material has currency and relevance to the rural community of NSW, the RTA undertook evaluation of three railway level crossing community education material options. These were:

- Current community education material – *STOP. OR GET STOPPED IN YOUR TRACKS*
- National community education material developed for 2008 – *Some things are worth waiting for*
- New, potential NSW community education material – *Don't put lives on the line.*

Focus groups were conducted in areas that indicated a history of higher rail/road incident levels with groups that suggested higher risk profiles. It was also a requirement that participants had used a railway level crossing at least three times a week.

The aim of this research was to ensure that community education material for the campaign going forward:
- Had a message that was relevant and created an impact
- Indicated the importance of obeying rules at railway level crossings
- Supported the idea of the stopping limitations of trains and the inherent danger
- Encouraged safe railway level crossing behaviour as a means of self-preservation.

The research suggested enhancements to the current campaign which will be implemented for the 2009/10 campaign.

With the recognition at a national level of the importance of railway level crossings as an issue, NSW led the Behavioural Communications Group research of the community knowledge of and behaviour around railway level crossings. The objectives of this research were to:
- Measure awareness of rules and risks associated with railway level crossings.
- Gauge levels of self reported risky behaviour
- Assess awareness and perceived likelihood of punitive measures and
- Measure familiarity with information sources about railway level crossings.

This research, the first ever on an Australia-wide basis, provided insight into informing the development of the national community education material.

Question
What strategies will the RTA/NSWPF use to improve enforcement of traffic regulations at railway level crossings?

Response
Enforcement of traffic regulations at active and passive railway level crossings will be improved through:
- Discussion between RTA and NSW Police on enforcement issues, challenges and requirements to effectively enforce traffic regulations at railway level crossings;
- In consultation with the Level Crossing Strategy Council, NSW Police will determine circumstances where its enforcement effort will be best utilised to lead to the highest safety benefits and use of resources; an
- RTA will liaise with Level Crossing Strategy Council and NSW Police to implement measures and enforcement campaigns on the road network.

Appendix 5 – List of Witnesses
Friday, 6 March 2009

Mr Brian McNaught
General Manager Rail Compliance, Asciano

Mr Kevin Taylor
General Manager, Rail Industry Safety & Standards Board (RISSB)

Ms Emma Pettiford
Level Crossing Project Officer, Rail Industry Safety & Standards Board (RISSB)

Level Crossing Strategy Council (LCSC)

Mr Jim Glasson
Director General, Ministry of Transport

Ms Carolyn Walsh
Chief Executive, Independent Transport Safety & Reliability Regulator (ITSRR)

Mr Tim Ryan
General Manager, North-South Corridor, Australian Rail Track Corporation (ARTC)

Mr Gordon Farrelly
A/g General Manager, Traffic Management, Roads & Traffic Authority (RTA)