

Transport for NSW

Level Crossing Strategy Council - Yearly Report 2015/2016

November 2016



Transport
for NSW

Front Cover – Upgraded level crossing at Victoria Street / Mitchell Highway, Dubbo, NSW

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Glossary

Active Control	Lights, bells, boom gates regulate motorists Lights, bells, booms, and locking swing gates regulate pedestrians
ALCAM	Australian Level Crossing Assessment Model
ARTC	Australian Rail Track Corporation
CRS	The Centre for Road Safety (a branch of the Freight, Strategy and Planning Division of TfNSW)
CRN	Country Regional Network (the part of the NSW Rail Network that is owned by TfNSW).
DDA	The Disability Discrimination Act 1992 (Commonwealth)
IPWEA	Institute of Public Works Engineering Australasia
ITSR	The Independent Transport Safety Regulator
JHR	John Holland Rail
LCCWG	Level Crossing Communication Working Group
LCIP	Level Crossing Improvement Program
LCSC	Level Crossing Strategy Council
LCWG	Level Crossing Working Group
LGNSW	Local Government NSW
NSW Trains	The NSW Government agency that provides passenger train and coach services for regional NSW and outer-metropolitan Sydney
NLCSC	National Level Crossing Safety Committee
ONRSR	The Office of the National Rail Safety Regulator
Passive Control	STOP or GIVE way signs regulate motorists Signs warn pedestrians Pedestrian maze control and signage regulate pedestrians
Red Man	A flashing warning sign of a 'Red Man' warns pedestrians of oncoming trains
RIM	Rail infrastructure manager; a term defined in the Rail Safety National Law (NSW) that refers to, among other things, the person or organisation that has effective control and management of the rail infrastructure of a railway.
RMS	Roads & Maritime Services (and its predecessor, the Roads & Traffic Authority - RTA)
SDP	The Service Delivery and Performance branch of the Infrastructure and Services Division of TfNSW (and its predecessor, the Country Rail Infrastructure Authority - CRIA).
Sydney Trains	The NSW Government agency that provides passenger train services for the Sydney suburban area and is the RIM for the former Railcorp network.
TfNSW	Transport for NSW (and the Department of Transport)

1 Year in review: 2015/16

In 2015/16, RIMs and road managers invested a total of \$16.70 million on level crossing safety initiatives in NSW, \$7.07 million of which was provided through the NSW Level Crossing Improvement Program (LCIP). The LCIP is managed by Transport for NSW (TfNSW) and provides funding to accelerate improvements to level crossings at priority sites across NSW, raise community awareness of level crossing safety issues and promote new technology to improve level crossing safety. It is additional to the funds that rail infrastructure managers (RIMs) and road managers spend on maintaining and upgrading level crossings on their networks.

During 2015/16, 8 LCIP-funded major upgrades of level crossings were commissioned at: Ebert Street Griffith; Yarrandale Road, Dubbo; Mangoola Road, Mangoola; Wheelers Lane Dubbo; Sheraton Road, Dubbo; Victoria Street (Mitchell Highway) Dubbo; Tynans Road, Table Top; and Flagstone Street, Cookamidgera (a 2-year project funded by the 2014/15 LCIP). Development work for upgrades in future years formed a major part of the 2015/16 LCIP, with concept and detailed designs prepared for 5 projects at Cemetery Lane, Whittingham; Middle Folbrook Road, Nundah; Dudauman Street, Stockinbingal; Fry Street, Grafton; Yerong Street, The Rock; and design, procurement and pre-work at Clergate Lane, Clergate.

In addition to infrastructure works, the LCIP also funded other level crossing safety initiatives during the year; including:

- the level crossing safety education campaign, “Don’t rush to the other side”
- four level crossing police enforcement campaigns in regional NSW
- Australian Level Crossing Assessment Model (ALCAM) field assessments and road traffic data collection
- level crossing strategy and policy development.

TfNSW has allocated \$29.2 million (\$7.3 million per annum) for the LCIP between 2014/15 and 2017/18. This allows for the planning and completion of future priority level crossing upgrades.

The following subsections provide an overview of all level crossing improvements delivered by RIMs and road managers in 2015/16 (including LCIP funded projects).

Appendix A: provides a summary of all projects funded under the LCIP in 2015/16 and Appendix B: sets out the expenditure on level crossing upgrades in NSW funded through the LCIP and by RIMs and road managers from 2008/09 to 2015/16.

1.1 Agency level crossing activities

In addition to the LCIP, Sydney Trains, Australian Rail Track Corporation (ARTC), Service Deliver and Performance (SDP) / John Holland Rail (JHR), and NSW Trains implemented their own programs of level crossing safety improvements. Roads and Maritime Services (RMS) and local government also have a role in assessing safety risk at level crossings on State roads.

Sydney Trains

Sydney Trains Capital Level Crossing Upgrade program continued with the construction of the upgrade of the level crossing at School Parade, Clifton, and preliminary design works

continuing for the upgrade of the pedestrian level crossing Bourke Street, East Richmond. Major periodic maintenance was undertaken in 2015/16 to replace a total of 10 swing gate mechanisms at: Princes Highway, Unanderra; Tangara Road, Oak Flats; Pine Road, Fairfield, and Rickaby Road, Clarendon. Two boom mechanisms were replaced at Fairy Road, Windsor. Track reconditioning was carried out at the level crossing at Park Road, Woonona. In total, Sydney Trains spent \$1.96 million on level crossings signalling and track maintenance on its network in 2015/16.

ARTC

During 2015/16, ARTC undertook planning and construction works for 56 sites costing \$3.88 million at level crossings across its network in NSW. These works were undertaken in various geographic regions throughout NSW spanning the west to the east coast and the south through to the north coast. Works included design packages, upgrading road and pedestrian surfaces, improving sighting distances, upgrading active crossing equipment and signage works.

SDP and JHR

SDP and its contracted RIM, JHR, undertook level crossing safety improvements at six sites on the CRN at a cost of \$3.79 million, with works including improvements to train detection systems and signalling technology. This was additional to SDP/JHR's ongoing program of inspecting, maintaining and improving sighting distances at various level crossings through vegetation control, removal of obstructions such as embankments, and signalling upgrades.

NSW Trains

Risks associated with level crossings continued to cause concern for NSW Trains; in particular, the high level of near misses resulting from pedestrian violations at certain locations on the South Coast line. There was one collision with a motor vehicle on the South Coast line, which fortunately did not result in any fatalities.

NSW Trains maintained its active involvement in the community awareness, engineering improvement, and police enforcement elements of the LCIP, supporting the cooperative transport cluster approach to the allocation of resources to improve level crossing safety in NSW. In one case, NSW Trains was instrumental in ensuring that preliminary works were able to proceed on an important level crossing outside Wellington rather than seeing funding diverted to other projects.

NSW Trains has also initiated a closer relationship with RIMs in the regions in which it operates, to develop shared approaches to level crossing-related issues.

2 Level crossings in New South Wales

Under the *Rail Safety National Law (NSW)*, rail and road infrastructure managers have an obligation to manage risks at level crossings. Safety regulatory oversight is provided by the Office of the National Rail Safety Regulator (ONRSR) for railway operations and rail infrastructure and the road/rail interface. Enforcement of road laws is undertaken by the NSW Police Force.

2.1 Level Crossing Strategy Council

The Level Crossing Strategy Council (LCSC) is a NSW interagency forum that coordinates level crossing safety initiatives by RIMs and road managers and other key stakeholders. The LCSC comprises senior executive level representation from:

- Transport for NSW (Chair)
- Roads and Maritime Services
- Country Rail Contracts
- John Holland Rail
- Sydney Trains
- NSW Trains
- Australian Rail Track Corporation
- the Office of the National Rail Safety Regulator
- NSW Police Force
- Local Government NSW.

Guided by the *Strategic Plan for NSW Level Crossings 2010–2020*, the LCSC develops policy, reviews incident and safety trends, monitors new technologies, and oversees the development and delivery of the annual capital works program, and education and awareness campaigns.

The LCSC is supported by the Level Crossing Working Group and Level Crossing Communication Working Group, which comprise officer-level representatives from member agencies. TfNSW provides secretariat support and assistance to the LCSC, LCWG and LCCWG, coordinates the implementation of the LCIP, and manages the application of the ALCAM in NSW.

2.2 Level Crossing Improvement Program

The LCIP was established in 2000 to fund a range of level crossing safety initiatives in NSW. Funding under the LCIP is supplementary to the existing capital and maintenance programs of RIMs and road managers to improve and maintain safety at the level crossings on their networks.

Key elements of the LCIP are: to accelerate engineering upgrades and safety improvements at priority level crossings, education campaigns and police enforcement campaigns in regional NSW, and data collection to ensure accurate information is available on the status of NSW public level crossings.

The projects funded under LCIP each year are developed by TfNSW (Centre for Road Safety), with the assistance of the LCWG, and endorsed by the LCSC. The LCWG

monitors program delivery and promotes collaboration and consultation between delivery agencies. TfNSW is moving to establish the LCIP as three-year program.

A methodology is in place to determine the level crossings eligible for funding under the LCIP and the priorities for improvements. This methodology, commonly known as the LCIP (Infrastructure Works) Eligibility Criteria, was revised in 2013 to ensure available funding is applied effectively to level crossing safety improvements. The 2013 methodology applies to the development of the LCIP between 2014/15 to 2017/18.

In the first instance the methodology, distributes the LCIP funding across the following three categories:

- upgrading level crossings controlled by flashing lights to boom gates and flashing lights (approximately 33.5 per cent of upgrade funding)
- upgrading level crossings controlled by passive signage (e.g. give way or stop sign) to boom gates and flashing lights (approximately 53 per cent of upgrade funding)
- minor works at passively controlled level crossings (approximately 13.5 per cent of upgrade funding).

A prioritisation process is then used to identify the crossings to be upgraded within the first two categories. This process first uses an ALCAM ranking to generate a shortlist of sites. The shortlist is then refined through consultations with relevant stakeholders to nominate sites required for major upgrades. Consultations involve a review of level crossing incident data for NSW and consideration of local knowledge from RIMs and road managers and other relevant stakeholders.

2.3 Program evaluation

In line with central Government requirements for the evaluation and review of Government programs, the LCIP was identified for evaluation in 2014/15. To meet Government expectations and to better understand the economic benefits provided by the LCIP, TfNSW commissioned a business case study and program evaluation.

The business case involved an economic appraisal over a 30-year evaluation period for four types of interventions typical to the LCIP. It was conducted using accepted economic guidelines including those approved by TfNSW and NSW Treasury. It found that each intervention resulted in a positive economic outcome.

The Evaluation involved determining whether the LCIP had demonstrable effects against specifically defined target outcomes over the past four financial years (2010/11 to 2013/14). It found that the LCIP delivered a positive economic benefit, and played a substantial role in fulfilling objectives and targets of the LCSC's *A Strategic Plan for NSW Level Crossings 2010-20*.

The Evaluation is available via the TfNSW website.

2.4 National Level Crossing Safety Committee

The NLCSC was re-established in 2014 as an initiative of the Australasian rail industry as an inter-agency forum to coordinate efforts to improve safety at level crossings. Its terms of reference outline its strategic objectives which are to:

- reduce the likelihood of crashes and near misses at railway crossings

- improve coordination between road and RIMs, governments and other member organisations through maximising knowledge sharing, skills and practice; and
- develop and recommend initiatives to align and coordinate safety mitigation strategies developed by member organisations where it is agreed a national perspective provides safety benefits.

The NLCSC is chaired by the Director-General of the Queensland Department of Transport and Main Roads, and includes representatives from Australasian jurisdictions, government and private rail operators, RIMs, rail industry associations, regulators, and the Australia New Zealand Police Advisory Agency. Its secretariat support function is provided the TrackSAFE Foundation.

In August 2015, the NLCSC established a subcommittee to review its remit and terms of reference, and the *National Railway Level Crossing Safety Strategy 2010-2020*. In April 2016, the Transport and Infrastructure Senior Officials Committee (TISOC) endorsed an approach for the NLCSC to function as an annual workshop with a focus on maximising knowledge-sharing and best practice, and on strategic opportunities such as greater national consistency in data collection/use and technology trials and take up. The NLCSC is to report its progress to TISOC until the end of 2017.

2.5 Level crossing closures

The only means of completely eliminating risk at a level crossing is to close that crossing. The closure of public and private level crossings is pursued, where appropriate, by LCSC member RIMs and road managers.

Thorough inspection and detailed assessment of crossings, including alternative means of access, is considered before closure. Consultation with the relevant local council, adjacent landowners, the community, RMS, emergency services and other rail and road users is also conducted prior to recommending closure. The *Transport Administration Act 1988* (section 99B) provides that level crossings can only be closed with the approval of the Minister for Transport and Infrastructure. Click on the link for more information on the Transport for NSW [Level Crossing Closures Policy](#).

Since 2002, a total of 164 level crossings have been gazetted for closure, most of which are on private property.

In 2015/16 the level crossing at Fern Street, Gerringong on the Sydney Trains network was closed as part of the RMS Princes Highway upgrade project.

2.6 Level crossing incident data

Of the 1,368 public road level crossings in NSW, 393 have active traffic controls; 166 have flashing lights and bells and 227 have flashing lights, bells and boom gates. The majority of other crossings are controlled by “give-way” or “stop” signs.

In 2015/16, no fatalities were recorded resulting from collisions between trains and pedestrians at level crossings in NSW. One fatality was recorded resulting from a collision between a train and a road vehicle. There were six crashes between a train and road vehicle during the year, two at crossings with passive controls, two at crossings with active controls, and two at uncontrolled crossings. Overall, the number of crashes between a train and a road vehicle has decreased over the past 26 years in NSW. Figure 1 through to

Figure 4 show the number of collisions and fatalities at level crossings from 1989/90 to 2015/16.

Figure 1: Train Colliding with Road Vehicle at Level Crossing, 1989/90 to 2015/16 in NSW

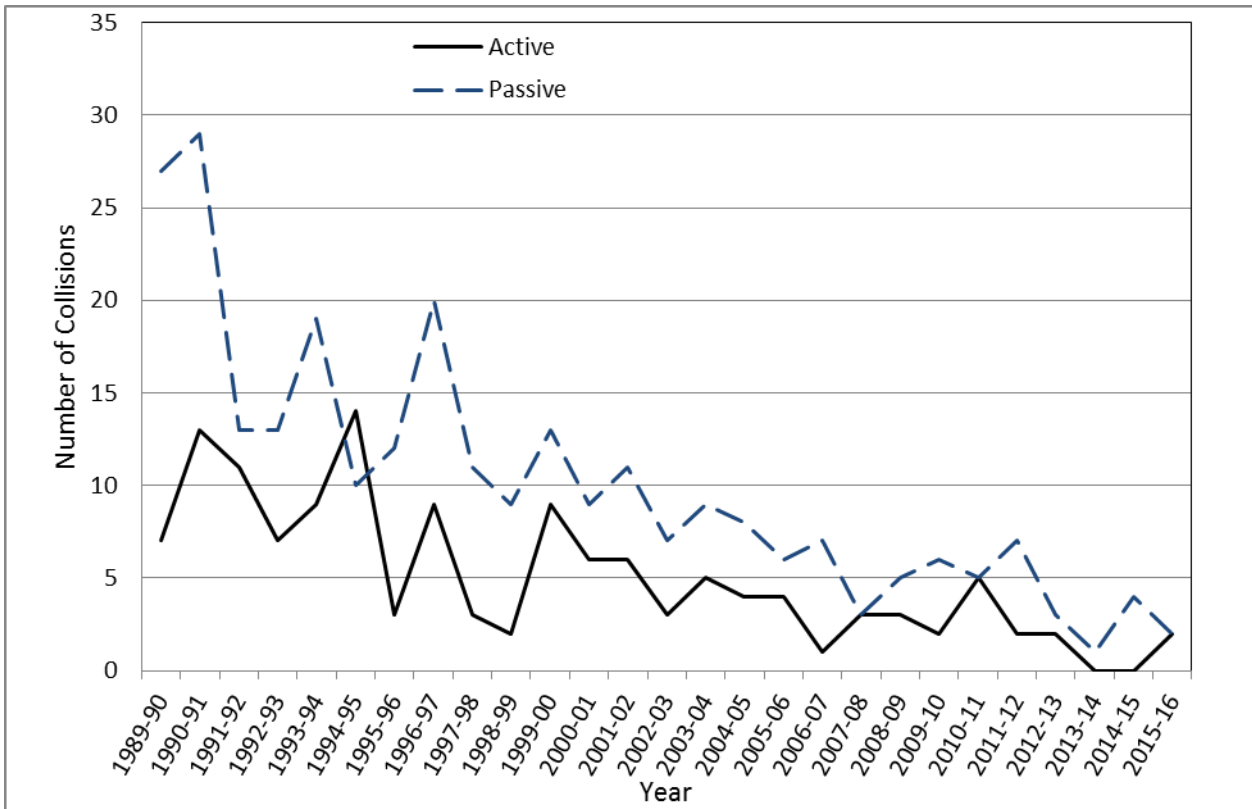


Figure 2: Fatalities: Train Colliding with Road Vehicles at Level Crossing, 1989/90 to 2015/16 in NSW

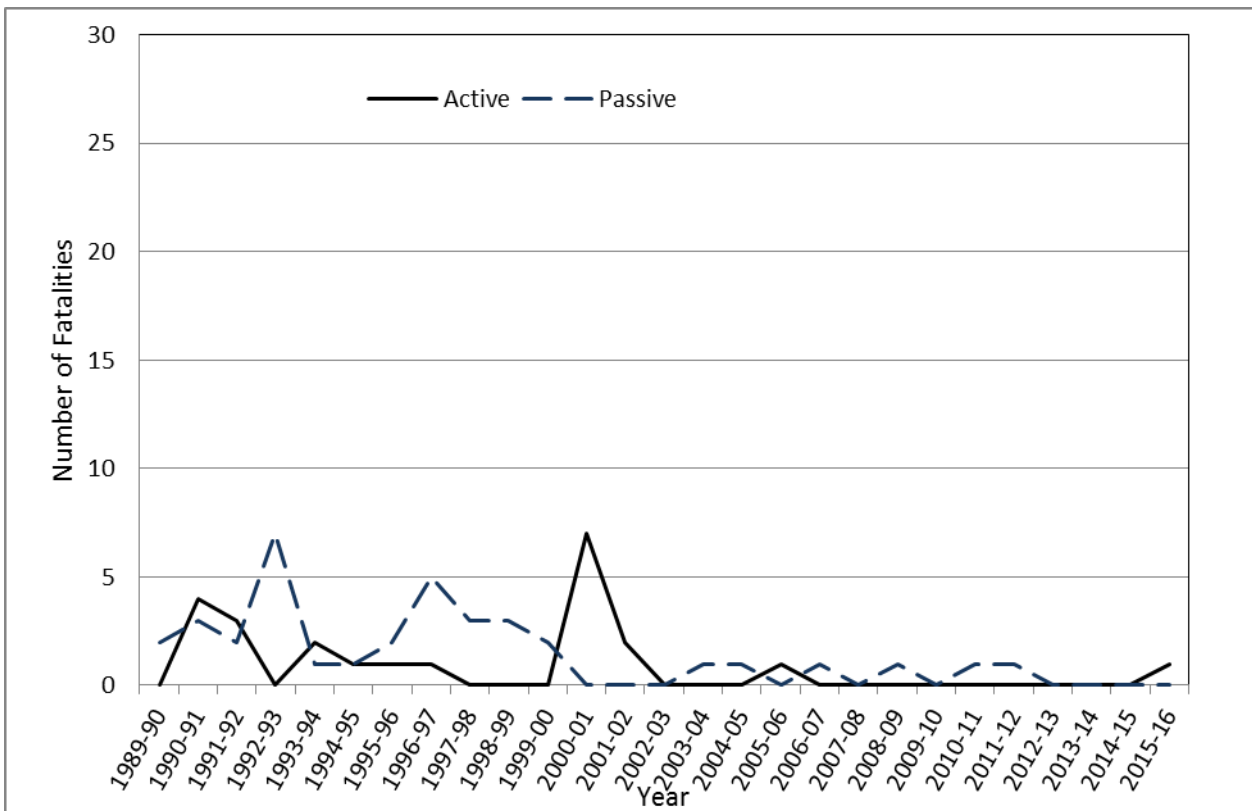


Figure 3: Train Colliding with Person at Level Crossing, 1989/90 to 2015/16 in NSW

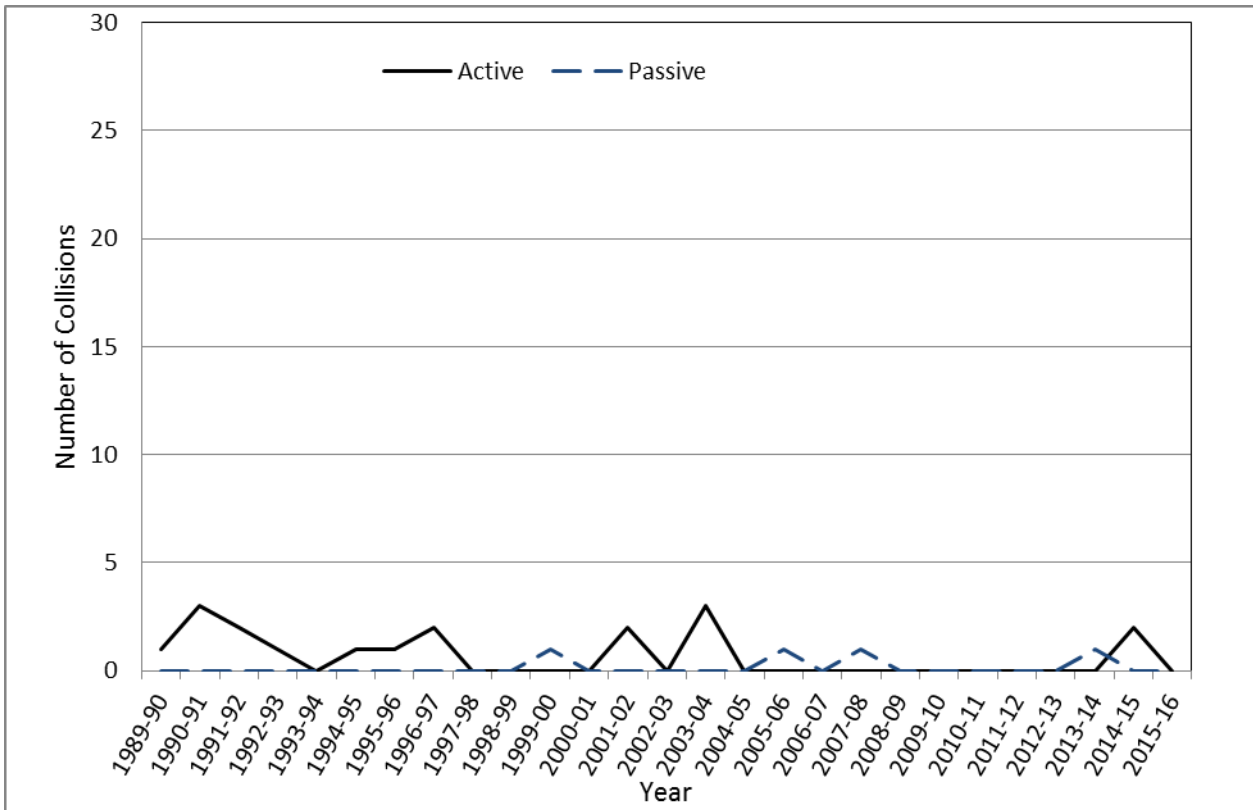
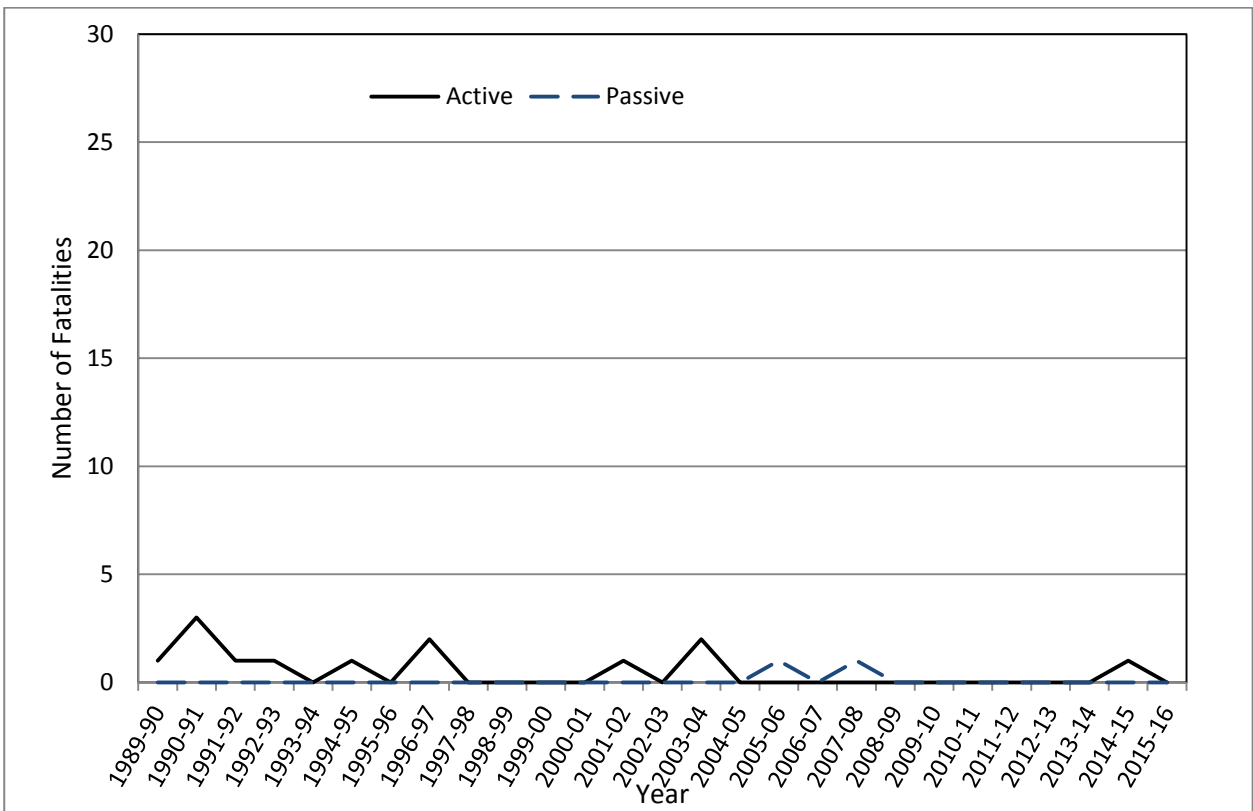


Figure 4: Fatalities: Train Colliding with Person at Level Crossing, 1989/90 to 2015/16 in NSW



3 Level Crossing Improvement Program 2015/16 - infrastructure works

3.1 Major works completed

During 2015/16 eight major construction projects were commissioned across the NSW rail network under the LCIP. These are shown in Table 1 and described in more detail below.

Table 1: LCIP Major Construction Works Completed in 2015/16

Street	Location	Network
Ebert Street	Griffith	CRN
Yarrandale Road	Dubbo	ARTC
Flagstone Street ⁽ⁱ⁾	Cookamidgera	CRN
Mangoola Road	Ulan	ARTC
Wheelers Lane	Dubbo	CRN
Sheraton Road	Dubbo	CRN
Victoria Street / Mitchell Highway	Dubbo	ARTC
Tynans Road	Table Top	ARTC

(i) Funded by the 2014/15 LCIP and commissioned during 2015/16

3.1.1 Ebert Street, Griffith

This passive level crossing was upgraded from stop signs to new high intensity LED flashing lights, bells and retro-reflective boom gates. The upgrade also included new road works, new road and rail signage and line. The upgrade was commissioned on 8 August 2016 at a total cost of \$783,216.

Figure 5: Ebert Street, Griffith



Ebert Street, Griffith (Before)



Ebert Street, Griffith (After)

3.1.2 Yarrandale Road, Dubbo

This passive level crossing was upgraded from stop signs to new high intensity LED flashing lights, bells and retro-reflective boom gates. The upgrade also included new road and rail signage. The upgrade was commissioned on 1 April 2016, at a total cost of \$600,242.

Figure 6: Yarrandale Road, Dubbo



Yarrandale Road, Dubbo (Before)



Yarrandale Road, Dubbo (After)

3.1.3 Flagstone Street, Cookamidgera

This passive level crossing was upgraded from stop signs to new high intensity LED flashing lights, bells and retro-reflective boom gates. The upgrade also included new road and rail signage. The upgrade was funded by the 2014/15 program as an accelerated project and was commissioned on 28 March 2016, at a total cost of \$1.45 million.

Figure 7: Flagstone Street, Cookamidgera



Flagstone Street, Cookamidgera (Before)



Flagstone Street, Cookamidgera (After)

3.1.4 Mangoola Road, Mangoola

This passive level crossing was upgraded from stop signs to new high intensity LED flashing lights, bells and retro-reflective boom gates. The upgrade also included road works, new road and rail signage and line marking. The upgrade was commissioned on 3 June 2016 at a total cost of \$677,941.

Figure 8: Mangoola Road, Mangoola



Mangoola Road, Mangoola (Before)



Mangoola Road, Mangoola (After)

3.1.5 Wheelers Lane, Dubbo

This active level crossing was upgraded from flashing lights and bells to new high intensity LED flashing lights, bells and retro-reflective boom gates. The upgrade also included major road works, new road and rail signage and line marking. The two existing pedestrian crossings were also upgraded to motorised pedestrian swing gates. The upgrade was commissioned on 16 May 2016 at a total cost of \$1.177 million including a contribution of \$937,500 from the LCIP.

Figure 9: Wheelers Lane, Dubbo



Wheelers Lane, Dubbo (Before)



Wheelers Lane, Dubbo (After)

3.1.6 Sheraton Road, Dubbo

This active level crossing was upgraded from flashing lights and bells to new high intensity LED flashing lights, bells and retro-reflective boom gates. The upgrade was commissioned on 16 May 2016 at a total cost of \$593,000.

Figure 10: Sheraton Road, Dubbo



Sheraton Road, Dubbo (Before)



Sheraton Road, Dubbo (After)

3.1.7 Victoria Street / Mitchell Highway, Dubbo

This active level crossing was upgraded from flashing lights and bells to new high intensity LED flashing lights, bells and retro-reflective boom gates. The upgrade was commissioned on 20 June 2016 at a total cost of \$544,922.

Figure 11: Victoria Street / Mitchell Highway, Dubbo



Victoria Street / Mitchell Highway, Dubbo (Before)



Victoria Street / Mitchell Highway, Dubbo (After)

3.1.8 Tynans Road, Table Top

This active level crossing was upgraded from flashing lights and bells to new high intensity LED flashing lights, bells and retro reflective boom gates. The upgrade was commissioned on 7 June 2016 at a total cost of \$685,173.

Figure 12: Tynans Road, Table Top



Tynans Road, Table Top (Before)

Tynans Road, Table Top (After)

3.2 Development work undertaken

Development work for upgrades in future years is a key element of the LCIP. The concept and design work undertaken during 2015/16 is shown in Table 2 below.

Table 2: LCIP Concept and Detailed Designs Completed in 2015/16

Street	Location	Network
Clergate Road	Clergate	CRN
Cemetery Lane	Whittingham	ATRC
Middle Folbrook Road	Nundah	ARTC
Dudauman Street	Stockinbingal	ARTC
Fry Street	Grafton	ARTC
Yerong Street	The Rock	ARTC

3.2.1 Clergate Road, Clergate

The Level Crossing at Clergate Road was approved by the LCSC for upgrade in the 2015/16 financial year. The existing passive level crossing with stop signs will be upgraded to new high intensity LED flashing lights, bells and retro reflective boom gates.

On the 29 October 2015 it was agreed to complete the construction over two financial years due to the limited track possession windows over the financial year.

The LCIP provided a contribution of \$688,000 for civil preparation works and signage design in the 2015/16 financial year. An additional \$500,000 will be contributed in the

2016/17 financial year leading to a total estimated cost of \$1.3 million (including RIM own funding).

3.3 Minor works

In 2015/16, following endorsement by the LCSC, the LCIP minor construction funding was diverted into ALCAM data collection and development to fund a road traffic data collection project in 2015-16.

The aim of the project was to collect road-traffic counts at about 350 level crossings) that had been surveyed using the new ALCAM data-collection template since 2013-14. Data collected covered average daily traffic counts and road vehicle speed.

4 Level Crossing Improvement Program 2015/16 - awareness and enforcement campaigns

4.1 Level crossing awareness and education campaign

The ‘Don’t rush to the other side’ level crossing safety education campaign, which provides a timely reminder to drivers that level crossings should not be approached with complacency, continued to run throughout 2015/16 on behalf of the LCSC.

The campaign targeted both light vehicle drivers who live within 10 kilometres of a level crossing in regional NSW and heavy vehicle drivers. In 2015/16, advertising on petrol pumps in regional locations close to level crossings was introduced for light vehicle drivers for the first time. For heavy vehicle drivers, the messaging continued to be optimised, particularly on the heavy vehicle magazine ads and truck stop posters, to further engage this audience.

The paid advertising campaign was fully integrated and ran across television, outdoor, radio, digital and print (heavy vehicle magazines) media in regional NSW. Radio played a greater role to reach both light and heavy vehicle drivers while in their vehicles.

In 2015/16, there were three periods of paid advertising. These included November 2015 to coincide with harvest season when more trains are operating and more vehicles are on the road, and February 2016 and May/June 2016 during the traditional peaks in level crossing collisions.

During the year, four additional localised radio campaigns and letterbox drops ran to support local Police enforcement operations in: Cobar, Nyngan and Nevertire; Denman; Henty; and Glennies Creek and Ravensworth.

In May 2016, Senior Sergeant Mick Timms, NSW Police Traffic Highway Control Command, was interviewed by a local radio station in the Hunter region to discuss the risks associated with level crossings. This was a new activity to raise awareness about the upcoming enforcement campaign among local drivers, and will be continued in 2016/17.

Campaign tracking research carried out on 2015/16 activity by an independent research agency showed the campaign continues to perform well for light vehicle drivers. However, it is not resonating as strongly with heavy vehicle drivers and is displaying a high level of ‘wear out’.

A summary of the results indicates:

Table 3: Campaign Effectiveness - Advertising Diagnostics

Light Vehicle Drivers	Heavy Vehicle Drivers
<ul style="list-style-type: none"> 56% Recognition 82% Main Message 69% Believability 44% Social Relevance 8% of Light Vehicle Drivers claim they are “getting tired of seeing the ad” (norm 12%). 	<ul style="list-style-type: none"> 64% Recognition 79% Main Message 66% Believability 43% Social Relevance 22% of Heavy Vehicle Drivers claim they are “getting tired of seeing the ad” (norm 12%).

Table 4: Campaign Effectiveness - Behavioural and Attitudinal

Light Vehicle Drivers	Heavy Vehicle Drivers
<ul style="list-style-type: none"> 79% of light vehicle drivers believe it is very dangerous to speed up to make it through a level crossing before the boom gates close. 2% of light vehicle drivers claim that in the past 12 months they have driven through a level crossing without stopping when there was a STOP sign. 2% of light vehicle drivers claim that in the future they will drive through a level crossing when the traffic lights are flashing red but the boom gate is not down. 	<ul style="list-style-type: none"> 63% of heavy vehicle drivers believe it is very dangerous to speed up to make it through a level crossing before the boom gates close. 11% of heavy vehicle drivers claim that in the past 12 months they have driven through a level crossing without stopping when there was a STOP sign. 13% of heavy vehicle drivers claim that in the future they will drive through a level crossing when the traffic lights are flashing red but the boom gate is not down.

To help to continue to raise the profile of level crossings and generate talkability, TfNSW again participated in a number of public relations road-show events featuring the ‘Pearly Gates’ and a crashed car that had been involved at a level crossing incident. The events included:

- Rail Safety Week – August 2015
- AgQuip Field Days – August 2015
- Henty Machinery Field Days – September 2015
- Australian National Field Days – October 2015

Figure 13: 2015 Henty Machinery Field Days



It is proposed to continue the ‘Don’t rush to the other side’ campaign throughout 2016/17 for light vehicle drivers but develop new tailored communications for heavy vehicle drivers to positively shift attitudes and reduce unsafe behaviours at level crossings.

4.2 Level crossing Police enforcement campaign

The joint TfNSW – NSW Police Force Level Crossing Awareness and Enforcement Campaign continued during 2015/16. Four campaigns were held during the reporting year at: Cobar, Nyngan and Nevertire; Denman; Henty; and Glennies Creek and Ravensworth.

NSW Police Force is responsible for the enforcement of the *Road Rules 2014* including level crossing offences. Legal actions (Table 5) for level crossing offences (driving) have

now been trending upwards for five years due a heightened awareness of level crossing safety brought about through the Level Crossing Awareness and Enforcement Campaign.

More than 400 penalty notices were issued to motorists for traffic offences at level crossings for the second consecutive reporting year. Sites targeted during the Level Crossing Awareness and Enforcement Campaign contributed to about 20 per cent of total penalty notices issued.

Table 5: NSW Police Level Crossing Legal Actions between 2010/11 and 2015

Financial Year	Legal Actions
2010/11	219
2011/12	281
2012/13	306
2013/14	371
2014/15	488
2015/16	414

Figure 14: Police enforcement Hunter Valley



In June 2016, Senior Sergeant Timms attended the 2016 Global Level Crossing Symposium (GLXS2016) in Helsinki, Finland. GLX2016 was attended by delegates from North and South America, Europe, Africa and Australia.

Senior Sergeant Timms also presented a paper on the Level Crossing Awareness and Enforcement campaign to the 2015 Australasian Road Safety Conference held last October on the Gold Coast.

5 Level Crossing Improvement Program 2015/16 - ALCAM development and data collection

ALCAM is used to assess potential risks at level crossings and to assist in the prioritisation of safety improvements at level crossings according to their comparative safety risks. ALCAM is currently applied across Australia and in New Zealand, and is overseen by the National ALCAM Committee.

5.1 National ALCAM Committee

The National ALCAM Committee comprises representatives of all Australian states and territories, and New Zealand. The committee's role is to manage development of ALCAM and to ensure consistency in its application. TfNSW represents NSW on the National ALCAM Committee.

TISOC considered a number of recommendations from the National ALCAM Committee regarding the continuity of resourcing and consistent application of the ALCAM at its April 2016 meeting in Darwin. In summary, TISOC:

- **endorsed** the support for the ALCAM system through the provision of continued in-kind effort by subject matter experts from the responsible agencies within each state/territory.
- **agreed** to support a commitment to continuity of funding for the maintenance and hosting of the ALCAM software system by jurisdictions based on the current cost sharing arrangement.
- **supported** the consistent application of ALCAM assessments within jurisdictions and across state/territory borders so as to maintain the integrity of the risk model's ratings and the level crossing prioritisation process.

Throughout the year, there was ongoing support and maintenance/enhancements of the online Level Crossing Management System (LXM) database by the National ALCAM Committee to ensure the system operates in a satisfactory condition and users are given adequate technical support in a timely manner.

Training and assessment materials for the ALCAM and LXM are currently being developed by the National ALCAM Committee. This development work is scheduled to be completed in 2016/17.

5.2 NSW ALCAM data collection

Details on traffic controls, level crossing characteristics and other related risks are currently collected on all public level crossings on a cyclical basis over a five-year period in NSW. These details are loaded into the ALCAM database to update the characteristics and risk profiles for level crossings in NSW.

In 2015/16, the LCIP funded two streams of data collection projects in NSW. These included ALCAM field assessments at 181 road and pedestrian level crossings on the CRN and the ARTC network by using the updated road crossing survey form and a newly developed pedestrian crossing template, as well as road traffic data collection (including type, volume and speed of vehicles traversing a level crossing) at 303 level crossings in NSW.

6 Level Crossing Improvement Program 2015/16 – new technology and Research

6.1 Australasian Centre for Rail Innovation

The Australasian Centre for Rail Innovation (ACRI) is a not-for-profit organisation established to provide professional, independent applied research, strategic and economic analysis and innovative solutions for the Australasian rail industry and the broader transport sector.

In the first 24 months of operation, ACRI delivered 17 research projects into a variety of subject categories, broadly split into working groups focusing on heavy haul, passenger/freight and level crossing, to reflect the subject focus of each group. In the ACRI Level Crossing Research Program, the principle area of interest is safety; both for public road users and pedestrians, and rail workers and operators. With up to 40 deaths a year at level crossings, Australia has work to do to improve safety in all aspects of level crossing operation.

6.2 Heavy Vehicle Drivers Behavioural Research

In 2015/16, TfNSW contributed \$63,000 to analysing heavy vehicle drivers' perceptions, behaviours and attitudes towards level crossings, quantifying specific risk factors hypothesised in previous research, and profiled heavy vehicle drivers to help support campaign messaging and focus. Heavy vehicle drivers are over-represented in level crossing incidents; while 15% of level crossing incidents involve heavy vehicles, they make up only 2% of registrations. The research included 284 heavy vehicle drivers 67% of whom had driven through a hotspot in the previous month, and included a range of vehicles from road trains to buses.

The results of the research suggest four priorities: addressing driver misconceptions, over-confidence and under-estimation of risk, focused educational activity, and other interventions with early career drivers. As discussed in Section 4.1, TfNSW is will be developing a level crossing safety education campaign focused on heavy vehicle drivers.

7 LCSC agency level crossing initiatives

7.1 Sydney Trains level crossing initiatives

7.1.1 Major works

School Parade, Clifton

Construction work totalling \$832,000 continued in 2015/16 for the upgrade of the active level crossing at School Parade, Clifton. The scope of the project is to upgrade the existing flashing lights and bells to new high intensity LED flashing lights, bells and retro-reflective boom gates. Commissioning is scheduled in 2016/17.

Figure 15: Existing level crossing at School Parade, Clifton



7.1.2 Design works

In 2015/16 Sydney Trains undertook design work for a site, as detailed in Table 6 below.

Table 6: Sydney Trains Design Works in 2015/16

Name and Location	Scope of Works
Bourke Street, East Richmond	Installation of: DDA compliant pedestrian swing gates Backup power supply Improvements to road width, kerbs and road medians.

7.1.3 Minor works

In 2015/16 Sydney Trains funded minor works totalling \$806,000 at the pedestrian and road level crossing locations shown in Table 7 below.

Table 7: Sydney Trains Minor Works in 2015/16

Name and Location	Scope of Works
Princes Highway, Unanderra	Swing Gates replaced
Tangara Road, Oak Flats	2 Swing Gates replaced
Pine Road, Fairfield	2 Swing Gates replaced
Rickaby Road, Clarendon	2 Swing Gates replaced
Fairy Road, Windsor	2 Boom mechanisms replaced
Park Road, Woonona	Track reconditioning

7.2 ARTC level crossing initiatives

During 2015/16 ARTC undertook work to the value of \$3.88 million across its network in NSW, as shown in Table 8, for road and pedestrian crossings.

Table 8– ARTC Level Crossing Projects in 2015/16

LOCATION	COST	SITES	PROJECT SCOPE
Stroud Road to Kendall	\$70,000	8	Upgrade track panel to steel, tamp, improve drainage, upgrade signage, install delineators and non-frangibles to standard
Kerewong to Wauchope	\$115,000	1	Design
Martins Creek to Kilbride	\$100,000	1	Upgrade bitumen track panel to rubber
Kilbride to Berrico	\$150,000	3	Sighting distance improvement including vegetation removal and cutting works
Goobang Junction to Troy Junction	\$90,000	2	Upgrade level crossings to steel panel, upgrade level crossing surface, improve drainage, flangeways and road surface
Troy Junction - Merrygoen	\$115,000	2	Upgrade level crossing to steel panel, upgrade level crossing to concrete panel, upgrade level crossing surface, improve drainage, flangeways and road surface
Merrygoen - Gulgong	\$65,000	2	Upgrade level crossings to steel panel, upgrade level crossing surface, improve drainage, flangeways and road surface
Merrygoen to Gap	\$375,000	5	Upgrade level crossings to steel panel, upgrade level crossing surface, improve drainage, flangeways and road surface , upgrade to axle counter system in place of DC track circuits
Whittingham to Camberwell Jct	\$373,000	1	Recondition both tracks, improve drainage and road surface, new access gate
Dartbrook Junction to Murulla (Bickham Coal)	\$325,000	2	Recondition track, improve drainage and road surface, install rubber panels
Murulla to Willow Tree	\$1,000,000	4	Recondition track, improve drainage and road surface, install rubber panels
Anvill Hill to Sandy Hollow Junction	\$35,000	2	Re-grading of level crossing approaches, vegetation removal, installation of new drainage and guard rails

Sandy Hollow Jct To Wilpinjong	\$250,000	1	Ballast replacement and track resurfacing, installation of new sub-surface drainage, improve cess drainage and road surface, installation of new rubber panels
Ulan to Gulgong	\$120,000	6	Upgrade level crossing with steel panel
Narrabri to Moree	\$80,000	1	Upgrade level crossing to concrete surface, reconditioning, re-sleepering, re-railing and improve drainage
Main South (Mittagong)	\$55,000	1	Renewal of pedestrian footway
Main South (North Goulburn)	\$32,000	1	Road level crossing surface and related asset restoration
Main South (Cootamundra and Culcairn)	\$252,000	3	Boom gate mechanism and associated component renewal
Main South (Bethungra)	\$21,000	1	Road level crossing surface and related asset restoration
Main South (Exeter)	\$42,00	1	Boom gate mechanism and associated component renewal
Parkes to Cootamundra	\$11,000	2	Road level crossing and related asset restoration
Parkes to Cootamundra	\$42,000	1	Road level crossing and related asset restoration
Parkes to Cootamundra	\$116,000	1	Road level crossing and related asset restoration
Parkes to Cootamundra	\$10,000	1	Road level crossing and related asset restoration
Parkes to Cootamundra	\$6,000	1	Road level crossing and related asset restoration
Ivanhoe to Broken Hill	\$18,000	1	Road level crossing and related asset restoration
Ivanhoe to Broken Hill	\$14,000	1	Road level crossing and related asset restoration
Total	\$3,882,000		

7.3 SDP and JHR level crossing initiatives

SDP and JHR continued to improve level crossing safety on the CRN with signalling upgrades to ensure compliance with standards and improved signalling technology.

Table 9 - SDP and JHR Level Crossing Projects in 2015/16

Location	Cost	Sites	Project Scope
Barleyfields Road, Uralla	\$663,000	1	Replacement of life expired assets at active level crossing with new Type F lights and introduce axle counter detection.
Loftus Street, Barmedman Maitland Street, West Wyalong Mid Western Hwy, West Wyalong	\$1,366,000	3	Replacement of life expired assets at active level crossings and introduction axle counter detection. Upgrade of signage to AS1742.7.
Ulong Street, Griffith	\$821,000	1	Replacement of life expired assets at active level crossing with new Type F lights and introduction of axle counter detection.
Kanaley Square, Junee	\$936,000	1	Replacement of life expired assets at active level crossing, sighting signals and introduction of axle counter detection.
Total	\$3,786,000	6	

8 Interface agreements

The *Rail Safety National Law* (NSW) requires RIMs and road managers to identify and assess risks to safety at level crossings and to enter into interface agreements to manage those risks. RIMs and road managers are working to meet these obligations and are currently negotiating interface agreements.

RMS

In 2015/16 RMS worked with local government and RIMs to progress the execution of interface agreements. As at the end of 2015/16 RMS had executed all interface agreements co-signed by councils and RIMs, finalising agreement on 29 of the 80 agreements to which RMS is party across the State. RMS is now working to update safety management plans for all rail/road interfaces on the State road network.

Sydney Trains

In 2015/16, Sydney Trains worked with 41 road managers to facilitate the development of interface agreements. Sydney Trains has 2 outstanding interface agreements with councils that have yet to enter into agreements for the level crossings on their road networks. Discussions with ONRSR on this issue are continuing.

ARTC

Progress with road managers was slow in 2015/16. An additional 7 interface agreements were entered into bringing the total in place to 14.

ARTC is still working with Sydney Trains on an interface agreement covering passenger access at stations, and for structures managed by Sydney Trains that pass over or under the ARTC rail corridor.

In 2015/16 ARTC reviewed the requirements placed on road managers when working in the rail corridor. This resulted in ARTC permanently exempting road manager staff requiring track safety awareness when working in the ARTC rail corridor provided: (1) the road manager had entered into an interface agreement with ARTC, and (2) had a rail protection officer on site for the duration of the works. Despite these concessions, the main bottleneck with signoff appears to be the requirements placed on road managers for accessing the rail corridor.

LGNSW assisted ARTC and other RIMs to work with road managers towards finalisation. ONRSR has also been active in engaging with road managers to progress interface agreements.

SDP and JHR

JHR is obliged to enter into interface agreements with 92 public road managers on the CRN. Two have been entered into, 44 require risk assessments before they can be executed, and a further 46 are awaiting other party signature before they can be executed.

JHR is also obliged to enter into interface agreements with approximately 520 private road managers. Of these, 18 have been entered into while most private road managers are seeking further documentation to assist with legal clarification on accessing their property.

9 Funding for level crossings in NSW

Table 10 provides a summary of the total expenditure on level crossing safety improvements in NSW since 2003/04.

Table 10: Funding for Level crossing safety improvements in NSW from 2003/04 to 2015/16

Year	Program / Agency	Expenditure (\$ millions)	Total (\$ millions)
2003/04	CRIA	2.00	5.00
	LCIP	3.00	
2004/05	LCIP	5.00	5.00
2005/06	RailCorp	1.30	7.30
	LCIP	6.00	
2006/07	RailCorp	2.40	11.33
	ARTC	1.65	
	CRIA	0.28	
	LCIP	7.00	
2007/08	RailCorp	2.65	18.49
	ARTC	6.90	
	CRIA	1.94	
	LCIP	7.00	
2008/09	RailCorp	2.81	18.03
	ARTC	2.47	
	CRIA	4.53	
	RTA	2.94	
	LCIP	5.28	
2009/10	RailCorp	3.27	59.77
	ARTC ¹	42.77	
	CRIA	3.87	
	RTA	3.30	
	LCIP	6.57	
2010/11	RailCorp	3.60	15.94
	ARTC	1.65	
	CRIA	3.37	
	LCIP ²	7.33	
2011/12	RailCorp	3.20	42.69
	ARTC	29.21	
	CRIA	2.88	
	LCIP ³	7.40	

¹ One-off funding for the Boom Gates for Rail Crossings Program was provided as part of the Commonwealth Government's Nation Building Program.

² Includes \$2 million funding provided from the former RTA.

³ Includes \$2.5 million provided by RailCorp and \$4.8 million provided by RMS

Year	Program / Agency	Expenditure (\$ millions)	Total (\$ millions)
2012/13	RailCorp	1.90	24.65
	ARTC	12.90	
	SDP	1.04	
	RMS	1.30	
	LCIP ⁴	7.51	
2013/14	Sydney Trains	1.80	20.85
	ARTC	8.17	
	SDP	2.82	
	RMS	0.46	
	LCIP ⁵	7.60	
2014/15	Sydney Trains	2.78	19.62
	ARTC	5.36	
	SDP	1.16	
	RMS	3.05	
	LCIP ⁶	7.27	
2015/16	Sydney Trains	1.96	16.70
	ARTC	3.88	
	SDP	3.79	
	RMS	0.00	
	LCIP	7.07	

⁴ Includes \$2.5 million provided by RailCorp and \$5.0 million provided by RMS

⁵ Includes \$2.5 million provided by RailCorp and \$5.0 million provided by RMS

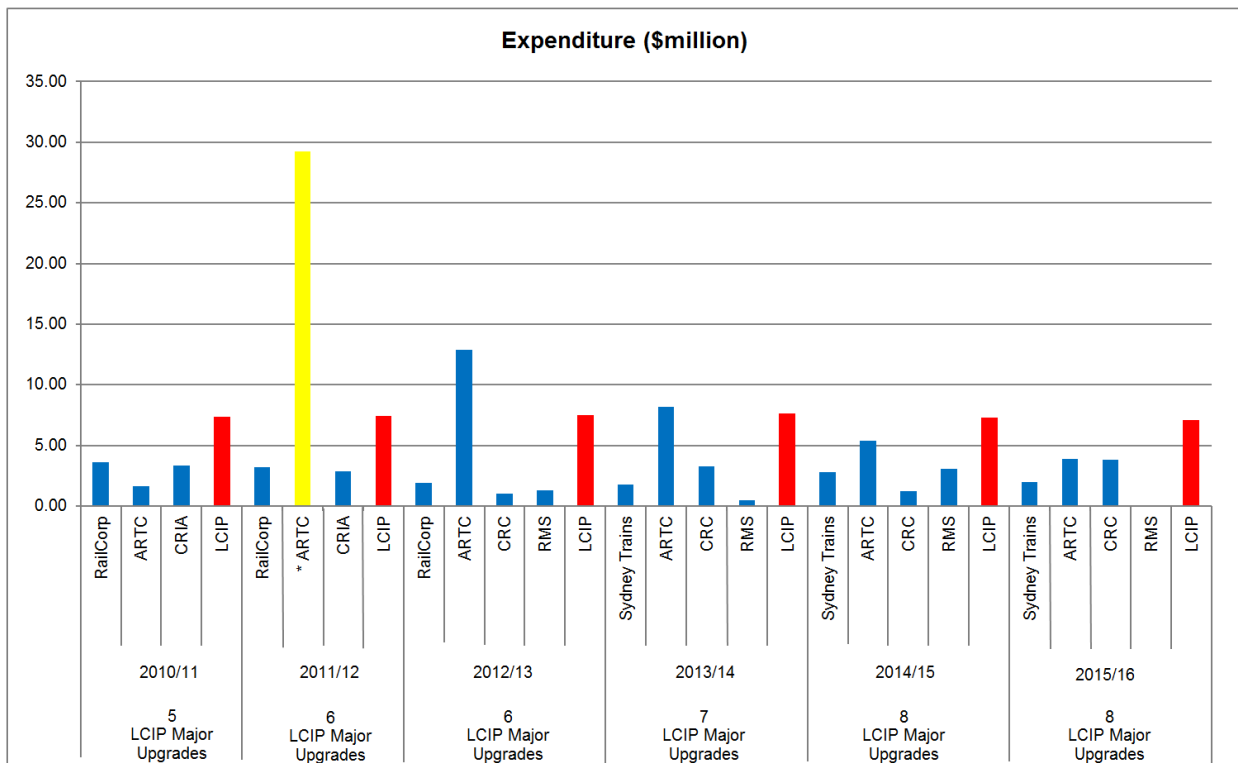
⁶ Includes \$2.5 million provided by RailCorp and \$5.0 million provided by RMS

Appendix A: Total LCIP 2015/16 expenditure

Table 11: Appendix A Total LCIP 2015/16 Expenditure

Street	Location	Cost
Construction Projects		
Ebert Street	Griffith	\$596,596
Yarrandale Road	Dubbo	\$600,242
Mangoola Road	Mangoola	\$677,941
Wheelers Lane	Dubbo	\$890,353
Sheraton Road	Dubbo	\$593,000
Victoria Street / Mitchell Highway	Dubbo	\$544,922
Tynans Road	Table Top	\$685,173
	Total	\$4,588,227
Concept & Detailed Design		
Cemetery Lane	Whittingham	\$80,000
Middle Folbrook Road	Nundah	\$90,000
Dudauman Street	Stockinbingal	\$124,000
Fry Street	Grafton	\$88,000
Yerong Street	The Rock	\$40,000
	Total	\$422,000
Accelerated Projects		
Clergate Lane	Clergate	\$688,000
	Total	\$688,000
Other Level Crossing Initiatives		
Level Crossing Awareness and Enforcement Campaign		\$808,000
ALCAM Development & Data Collection		\$384,000
Level Crossing Policy and Strategy Development		\$121,000
Assessment & Trial of New Technology		\$63,000
	Total	\$1,376,000
	Grand Total	\$7,074,227

Appendix B: Expenditure on level crossing upgrades in NSW funded through the LCIP and by RIMs and road managers 2010/11 – 2015/16



Note: * – ■ During 2011/12, ARTC undertook works in excess of \$29 million to enhance or eliminate level crossings across its network in NSW. This included \$23 million spent on two major grade separation projects as part of the Maitland to Minimbah Third Track and other safety improvements within the network.