

Level Crossing Strategy Council Yearly Report 2018-19



Front cover: Getting to know our customers in regional communities at Harvest season is a central part of our efforts to make level crossings safer, and an important part of Towards Zero

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Glossary

Active Control	Lights, bells, boom gates regulate motorists Lights, bells, booms, and locking swing gates regulate pedestrians
ACRI	Australasian Centre for Rail Innovation
ALCAM	Australian Level Crossing Assessment Model
ARTC	Australian Rail Track Corporation
CRC	Country Rail Contracts (a branch of TfNSW (Regional and Outer Metropolitan))
CRSMS	The Centres for Road Safety and Maritime Safety (a branch of TfNSW, Safety, Environment and Regulation)
CRN	Country Regional Network (the part of the NSW rail network owned by RailCorp excluding any part under an ARTC lease or licence)
DDA	The <i>Disability Discrimination Act 1992</i> (Commonwealth)
Interconnected level crossing	A level crossing with active controls that are interconnected with a signalised road intersection to mitigate road vehicle queuing over the level crossing
IPWEA	Institute of Public Works Engineering Australasia
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 TrainLink	The NSW Government agency [constituted as NSW Trains] that provides passenger train and coach services for regional NSW and outer-metropolitan Sydney
NLCSC	National Level Crossing Safety Committee
ONRSR¹	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
RSNL	The <i>Rail Safety National Law</i> (NSW)
Red man	A flashing warning sign of a 'red man' that warns pedestrians of oncoming trains
RIM	Rail infrastructure manager; a term defined in the RSNL that refers to, among other things, the person or organisation that has effective control and management of the rail infrastructure of a railway
Roads and Maritime or RMS	Roads and Maritime Services
Sydney Trains	The NSW Government agency that provides passenger train services for the Sydney suburban area and is the RIM for the Greater Sydney metropolitan rail network
TfNSW	Transport for NSW (and the Department of Transport)

¹ Legislation to abolish the NSW Independent Transport Safety Regulator took effect on 31 March 2017 completing the transfer of NSW rail safety regulation to ONRSR

Executive Summary

1 Year in review: 2018-19

In 2018-19, Rail infrastructure managers (RIMs) and road managers invested \$21.57 million on safer level crossings initiatives in NSW of which \$7.57 million was allocated through the NSW Level Crossing Improvement Program (LCIP). Transport for NSW (TfNSW) manages the LCIP, which provides funding to accelerate improvements to priority level crossings across NSW, raise community awareness of level crossing safety issues and promote new technology to improve level crossing safety. LCIP funding is additional to the funds RIMs and road managers spend on maintaining and upgrading level crossings on their networks.

Four major upgrades of level crossings were commissioned in 2018-19 through the LCIP: Old Gostwyck Road, Armidale; Limbri Road, Kootingal; Hoskinstown Road, Bungendore; and Brewongle Lane, Brewongle.

Development work to the value of \$2.29 million for upgrades in future years formed part of the 2018-19 LCIP with designs and development upgrade works for projects at:

- Murrays Flat Road, Towrang
- Mills Road, Towrang
- Ulan Road, Wollar
- Wirrinya Road - Back Marsden Road, Wirrinya
- Jerrawa Road, Jerrawa
- Harefield Road, Harefield
- Newell Highway, Tichborne
- Newell Highway, Welcome

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 awareness and enforcement campaigns in regional NSW
- Australian Level Crossing Assessment Model (ALCAM) field assessments and road traffic data collection
- level crossing strategy and policy development.

The TfNSW Transport Infrastructure Plan provides \$7.3 million LCIP funding a year to 2025-26. This translates to a \$29.2 million LCIP allocation from 2015-16 to 2018-19, which enables the planning and completion of future priority level crossing upgrades.

In June 2017 the LCIP converted to a 3-year rolling program to provide RIMs and local government with improved long-term planning and consultation capacity in design and delivery for both LCIP and agency-funded level crossing upgrade projects. This also gives communities greater certainty in managing disruption while works are underway.

This report provides a consolidated overview of level crossing improvements delivered by RIMs and road managers in 2018-19 (including LCIP funded projects).

Appendix A: provides a summary of all projects funded under the LCIP in 2018-19.

Appendix B: sets out the expenditure on level crossing upgrades in NSW funded through the LCIP and by RIMs and road managers from 2011-12 to 2018-19.

1.1 Agency level crossing initiatives

In addition to the LCIP, Country Rail Contracts, Australian Rail Track Corporation, John Holland Rail, Roads and Maritime, Sydney Trains and NSW TrainLink implemented their own programs for safer level crossings. Local government also has a role in assessing the safety risk at level crossings on local council roads.

Australian Rail Track Corporation

During 2018-19, ARTC planned and delivered level crossing safety initiatives to the value of \$3,873,335 across various geographic regions over its NSW network. Initiatives included minor works covering:

- road surface renewals, improvements and associated works
- sighting distance improvements including road approach realignment
- pedestrian level crossing renewals

Details of ARTC level crossing safety initiatives are shown in table 6 on page 24.

Country Regional Network (JHR–TfNSW)

JHR and TfNSW continued to improve level crossing safety on the Country Regional Network with improvements totalling \$10.82 million (including a \$2.72 million contribution from the LCIP). These improvements included: design works, civil road surface upgrades, an upgrade to a level crossing detection system, and the replacement of life-expired equipment.

As the contracted RIM for the CRN, JHR has a statutory obligation to manage the risk at the level crossings on the network so far as is reasonably practicable. In pursuing this obligation, JHR formed a Level Crossing Safety Sub-Committee with the task of ensuring level crossing safety is given the required level of governance and exposure within its business and provides the JHR business with the required level of risk management assurance. The Committee has a charter with objectives and nominated membership who meet regularly and abide by mandatory behaviours.

Details of CRN level crossing safety initiatives are shown in table 7 on page 25.

NSW TrainLink

NSW TrainLink is a rolling stock operator and does not operate or maintain level crossings. It works constructively through the LCSC and other level crossing safety forums to deliver safer level crossings in NSW. This includes planning for the LCIP, and the cooperative approach to the allocation of resources.

NSW TrainLink participated in a range of initiatives in 2018-19 to support safer level crossings. These initiatives included:

- schools programs to educate students at 24 schools between Bulli and Kiama on safety at level crossings
- community engagement events at Woonona (February 2018) and Manildra where NSW TrainLink engaged with members of the community and the Police to raise awareness of safety at level crossings. This also provided an opportunity to highlight rail infrastructure issues to relevant rail infrastructure managers
- businesses close to level crossings on the South Coast line were approached to engage on level crossing safety through sharing safety information, flyers, and similar materials.

Roads and Maritime

In 2017-18 and 2018-19 Roads and Maritime completed safety management plans for all state road at-grade interfaces in complying with obligations under the RSNL. This work led to safety management plans completed at all 100 state-road at-grade road-rail interfaces at a cost of \$482,609.

Stakeholder consultation for the project included key teams from the regions, other TfNSW teams, the Level Crossing Strategy Council and the Level Crossing Working Group. The regions reviewed the findings of completed safety management plans using the Guideline: '[Evaluate: Applying the railway crossing cause consequence bow tie models](#)'. This initial review categorised the risk rankings allowing for the progression of risk mitigation.

Roads and Maritime regions consult with the relevant rail infrastructure manager/s in the mitigation of the identified risks. Details of Roads and Maritime level crossing safety initiatives are shown in table 8 on page 26.

Sydney Trains

Sydney Trains undertook a program of level crossing improvements across the network during 2018-19. Improvements included upgrade of signalling, the renewal of pedestrian gate motors and level crossing batteries.

Sydney Trains also delivered design and development upgrade works for key safety initiatives to the value of \$1.55 million at: Bourke Street, East Richmond; St James Road, Adamstown; Rawson Road, Woy Woy and Harley Hill Road, Berry. Sydney Trains worked closely with local government to renew the road markings at the level crossings at Garfield Road, Riverstone, and Pine Road, Fairfield, and to upgrade the signage at the level crossing at Rawson Road, Woy Woy.

Sydney Trains provided critical support to the TfNSW and Roads and Maritime on a key national initiative to review and test the operation of all NSW level crossings interconnected with traffic signals.

Sydney Trains initiatives are shown in table 9 on page 27.

2 Level crossings in New South Wales

Under the *Rail Safety National Law* (NSW), RIMs and road 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. The NSW Police Force enforces the *Road Rules 2014* (NSW).

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, road managers and other key stakeholders. The LCSC is chaired by TfNSW and comprises executive representation from:

- TfNSW (Centres for Road Safety and Maritime Safety, Country Rail Contracts, Customer Strategy and Technology)
- Roads and Maritime
- Australian Rail Track Corporation
- John Holland Rail
- Local Government NSW
- NSW Police Force
- NSW TrainLink
- Sydney Trains

The Office of the National Rail Safety Regulator also attends the LCSC to provide a national perspective in discussions on rail safety related issues, and to offer independent comment/advice on level crossing safety strategy and policy. ONRSR does not have an endorsement or approval function in LCSC deliberations.

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 (LCWG), the Level Crossing Communication Working Group (LCCWG), 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: 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 (Centres for Road Safety and Maritime 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. In April 2017, the LCSC endorsed an approach to establish the

LCIP as a 3-year program to commence from the 2017-18 financial year.

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 and further reviewed in 2019 to ensure available funding is applied effectively to level crossing safety improvements. The methodology continues to apply to the development of the LCIP through 2022-23.

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
- upgrading level crossings controlled by passive signage (e.g. give way or stop sign) to boom gates and flashing lights
- minor works at passively controlled level crossings.

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 National Level Crossing Safety Committee

The National Level Crossing Safety Committee (NLCSC) is an initiative of the Australasian rail industry. It operates as an inter-agency forum to coordinate national efforts for safer level crossings and reports to the Transport and Infrastructure Senior Officials Committee (TISOC). Its focus is 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 strategic objectives of the NLCSC are to:

- reduce the likelihood of crashes and near misses at railway crossings
- improve coordination between road and RIM, governments and other member organisations through maximising knowledge-sharing, skills and practice
- 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 by the TrackSAFE Foundation.

2.4 Level crossing closures

The only means of completely eliminating risk at a level crossing is to close the 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 (such as grade-separations), is considered before closure. Consultation with the

relevant local council, adjacent landowners, the community, Roads and Maritime, 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 Roads or the Minister for Regional Transport and Roads. The TfNSW [Level Crossing Closures Policy](#) provides more information on level crossing closures.

Since 2002, a total of 165 level crossings have been gazetted for closure, most of which were on private property.

2.5 Level crossing incident data

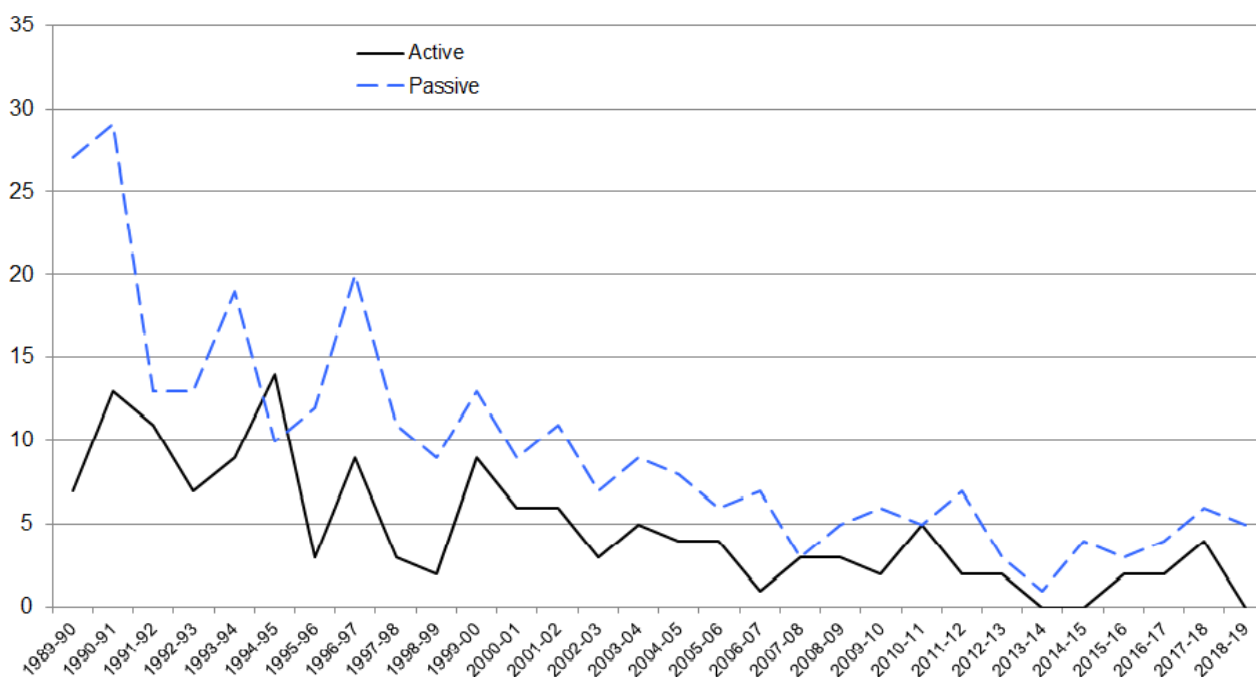
Of the 1,363 public road level crossings in NSW, 412 have active traffic controls; 163 have flashing lights and bells and 249 have flashing lights, bells and boom gates. The majority of other crossings are controlled by “give-way” or “stop” signs.

There have been five collisions between a road vehicle and a train in NSW in 2018-19. All collisions have involved light vehicles at passive crossings controlled by stop signs in regional areas. These collisions have resulted in three fatalities and one serious injury.

While the number of collisions between a road vehicle and a train is lower than the previous year, which is consistent with the downward trend over the past 30 years, there was an increase in the number of fatalities as a result of those collisions.

Figure 1 through to figure 4 show the number of collisions and fatalities at level crossings from 1989-90 to 2018-19.

Figure 1: Train colliding with road vehicle at level crossing in NSW 1989-90 to 2018-19²



² There was also a collision between a train and a road vehicle at an uncontrolled level crossing in 2015-16, which is not included in the results shown in figure 1

Figure 2: Fatalities: train colliding with road vehicles at level crossings in NSW - 1989-90 to 2018-19

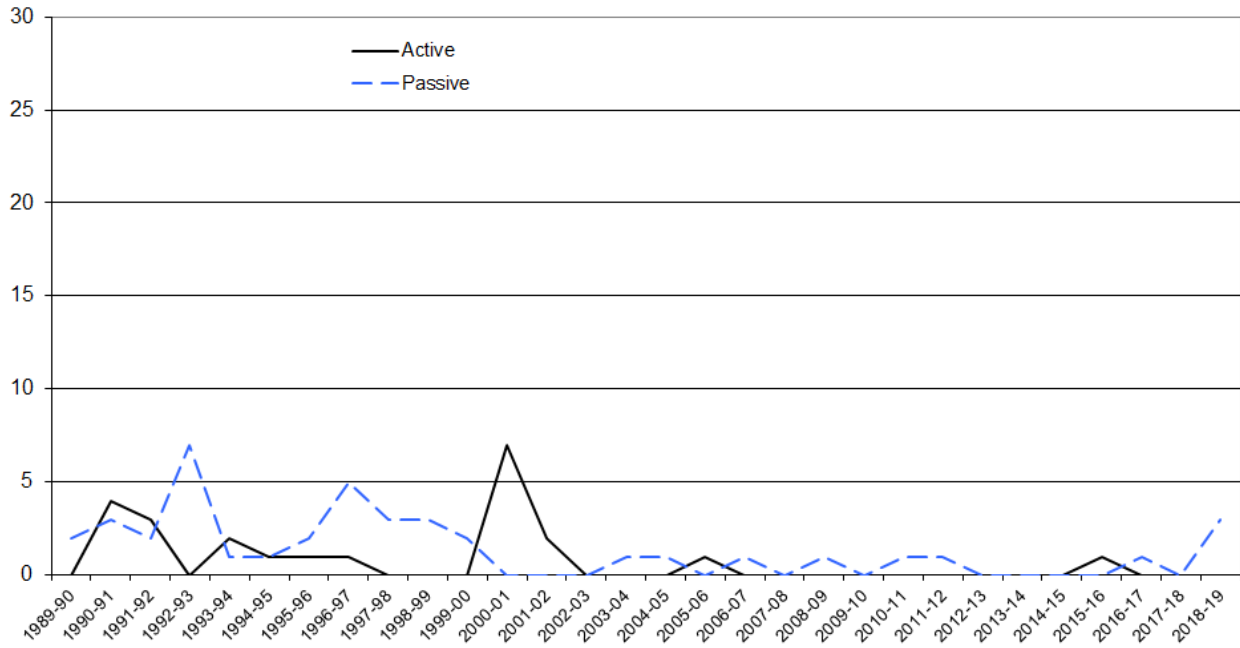


Figure 3: Train colliding with person at level crossings in NSW - 1989-90 to 2018-19

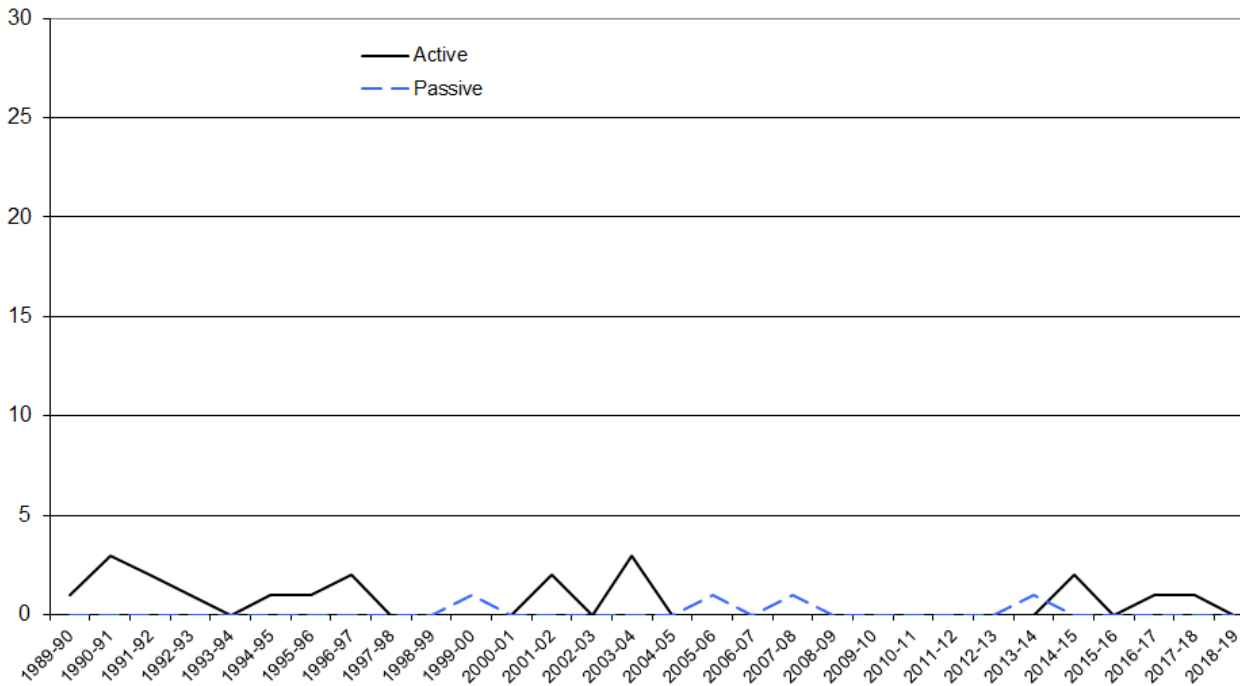
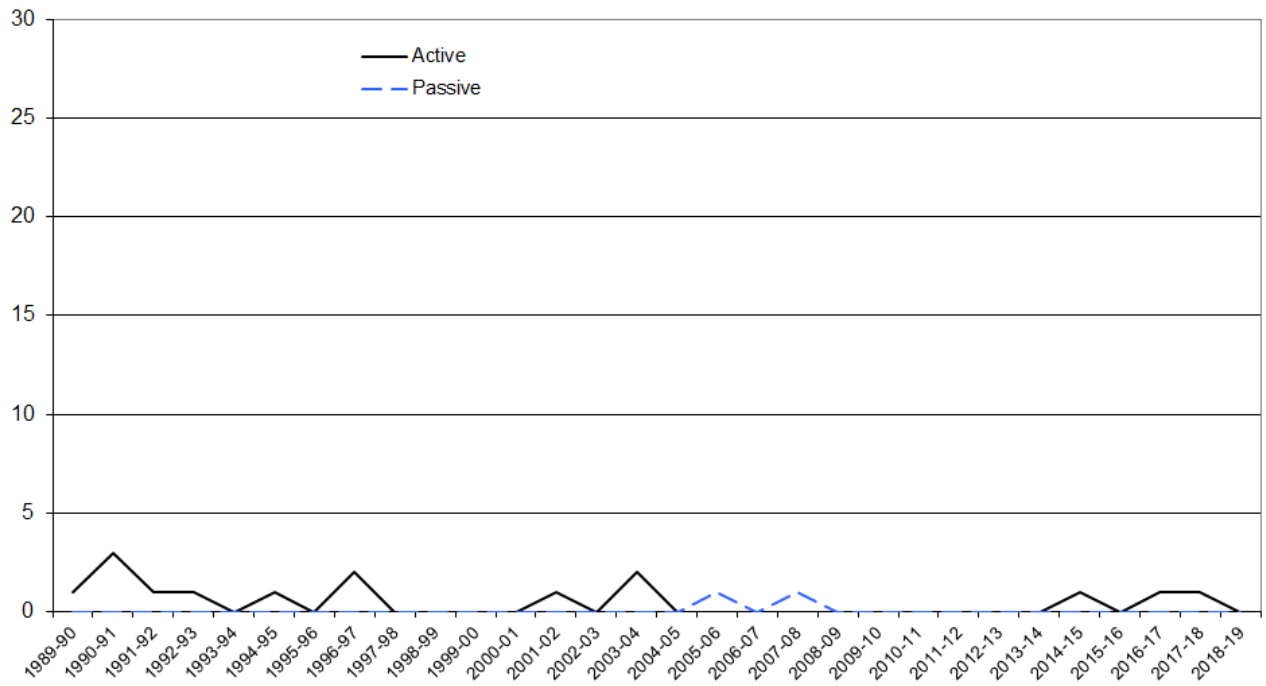


Figure 4: Fatalities: train colliding with person at level crossings in NSW - 1989-90 to 2018-19



Level Crossing Improvement Program 2018-19

3 Infrastructure works

3.1 Major works completed

During 2018-19 four major construction projects were commissioned across the NSW rail network under the LCIP. These are shown in table 1 and described in detail below.

Table 1: LCIP Major Construction Works Completed in 2018-19

Location	Electorate	Network
Old Gostwyck Road, Armidale	Northern Tablelands	CRN
Limbri Road, Kootingal	Tamworth	CRN
Hoskinstown Road, Bungendore	Monaro	CRN
Brewongle Lane, Brewongle	Bathurst	CRN
Total (4)		

3.1.1 Old Gostwyck Road, Armidale

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 resurfacing of the road close to and across the crossing with new road and rail signage. The upgrade was commissioned on 19 November 2018 at a total cost of \$900,000, funded by the LCIP.

Figure 5: Old Gostwyck Road, Armidale



Old Gostwyck Road, Armidale (Before)



Old Gostwyck Road, Armidale (After)

3.1.2 Limbri Road, Kootingal

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 resurfacing of the road close to and across the crossing with new road and rail signage. The upgrade was commissioned on 16 December 2018 at a total cost of \$1,185,000 including an LCIP contribution of \$900,000.

Figure 6: Limbri Road, Kootingal



Limbri Road, Kootingal (Before)



Limbri Road, Kootingal (After)

3.1.3 Hoskinstown Road, Bungendore

This active level crossing was upgraded from flashing lights 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 9 February 2019 at a total cost of \$789,000 including an LCIP contribution of \$688,000.

Figure 7: Hoskinstown Road, Bungendore



Hoskinstown Road, Bungendore (Before)



Hoskinstown Road, Bungendore (After)

3.1.4 Brewongle Lane, Brewongle

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 road works, new road and rail signage, line marking and a level crossing equipment building. The upgrade was commissioned on 31 July 2019 at a total cost of \$745,000, including an LCIP contribution of \$688,000.

Figure 8: Brewongle Lane, Brewongle



Brewongle Lane, Brewongle (Before)



Brewongle Lane, Brewongle (After)

3.2 Development work

Development work for eight upgrades in future years is a key element of the LCIP. In 2018-19 the LCIP provided \$2,288,000 for the concept and design work, and early procurement of signalling equipment at the level crossings shown in table 2 below.

Table 2: LCIP Development work in 2018-19

Location	Electorate	Network	Cost
Murrays Flat Road, Towrang	Goulburn	ARTC	\$264,000
Mills Road, Towrang	Goulburn	ARTC	\$290,000
Ulan Road, Wollar	Upper Hunter	ARTC	\$259,000
Wirrinya Road - Back Marsden Road, Wirrinya	Dubbo	ARTC	\$312,000
Jerrawa Road, Jerrawa	Upper Hunter	ARTC	\$377,000
Harefield Road, Harefield	Cootamundra	ARTC	\$255,000
Newell Highway, Tichborne	Dubbo	ARTC	\$256,000
Newell Highway, Welcome	Dubbo	ARTC	\$275,000
Total (8)			\$2,288,000

4 Education and awareness

4.1 Level crossing safety education campaigns

Don't rush to the other side



The '*Don't rush to the other side*' level crossing safety education campaign provides a timely reminder to drivers that level crossings should not be approached with complacency. The campaign continued throughout 2018-19 and focussed on light vehicle drivers who live within 10 kilometres of a level crossing in regional NSW. The paid advertising campaign was fully integrated and ran across television, cinema, outdoor billboards, radio, digital, and social media.

The social media content features two train drivers from NSW TrainLink being interviewed about their personal experiences with level crossings and the need for motorists to be aware and always obey the signs and signals. This content continued to receive a positive response with the majority of comments on the posts endorsing the key messages promoted in the videos. A video compilation of the extended train drivers' stories were showcased at key Field Days events in 2018-19 to further engage with attendees and encourage them to be mindful when they next approach a level crossing.

In addition, new social media content was developed in 2018 with a series of animations targeting both light vehicle and heavy vehicle drivers. The animations highlight the risks at level crossings and the need for drivers to always obey the signs and signals. They were distributed across TfNSW and key stakeholder social media channels and are now included as part of the campaign social content. Early indications show positive audience engagement with content, with the heavy vehicle creative showing a high engagement with heavy vehicle audiences.

There were three periods of paid advertising in 2018-19: November 2018, to coincide with harvest season when more trains are operating and more vehicles are on the road, February 2019 and May/June 2019 during the traditional peaks in level crossing collisions.

TfNSW ran four localised radio campaigns and letterbox drops to inform residents of upcoming local Police enforcement operations at level crossings, and remind them of the penalties for disobeying the road rules (see section 4.2). To complement this, Senior Sergeant Mick Timms, NSW Police Traffic Highway Patrol Command, was interviewed by local radio stations in these areas to discuss the risks associated with level crossings.

Campaign tracking research carried out during 2018-19 activity by an independent research agency showed the campaign continues to perform well for light vehicle drivers. Summary of the results are set out in table 3 on page 17.

Table 3: Campaign effectiveness – advertising diagnostics and outcomes

Light Vehicle Drivers	
Advertising diagnostics:	
<ul style="list-style-type: none"> • Campaign recognition remains consistent at 60% • Strong message take-out: <ul style="list-style-type: none"> ○ dangerous behaviour at level crossings can lead to negative consequences (85%) ○ I should always look and obey the road signs and signals when approaching a level crossing (81%) • Believability continues to be high at 80% • After seeing the ad, 54% of light vehicle drivers would tell their family and friends to be careful and always obey the signs and signals at level crossings 	
Outcomes	
Had seen the campaign	Had not seen the campaign
Past behaviours	
<ul style="list-style-type: none"> • Never driven through a level crossing when the traffic lights were flashing red but the boom gate was not down in the past 12 months 	
80%	76%
<ul style="list-style-type: none"> • Never driven around the boom gate to get through a level crossing in the past 12 months 	
83%	79%
Never ignored the signs or signals at a level crossing in the past 12 months	
84%	81%
Future intentions	
<ul style="list-style-type: none"> • Will never drive through a level crossing when the traffic lights are flashing red but the boom gate is not down in the next 12 months 	
86%	82%
Will never drive around a boom gate to get through a level crossing in the next 12 months	
90%	84%
Will never ignore the signs or signals at a level crossing in the next 12 months	
86%	86%
Attitudes	
Believe it is extremely important to always obey the signs and signals at level crossings	
89%	83%

Harvest season

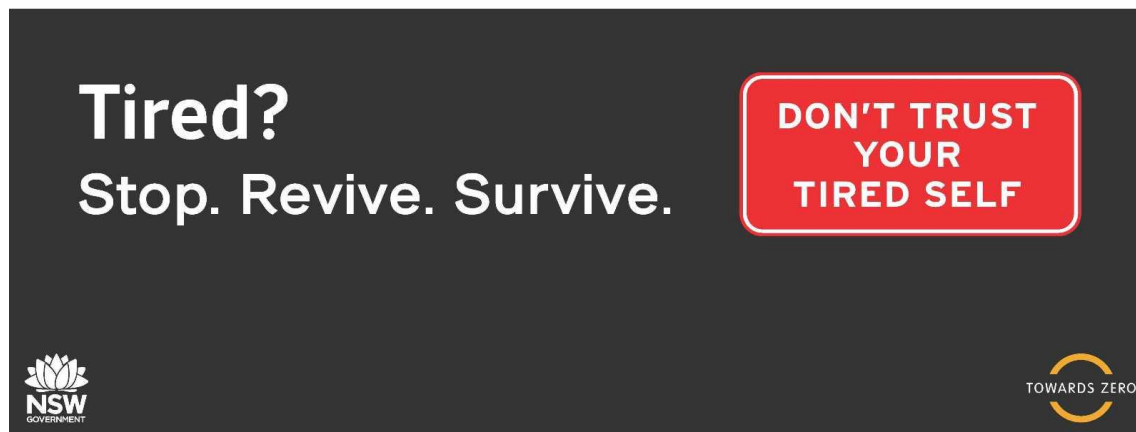
The annual grain harvest involves a large number of oversize, heavy farming machinery being transported along some of the major transport routes in western NSW and the movement of grain to and from grain receival sites, which often operate 24 hours a day in peak periods. Harvest coincides with school holiday periods in October and December-January, and times when a large number of 'grey nomads' are travelling south.

The mix of farm machinery, grain trucks and other traffic along major freight/travel routes is a significant concern for regional communities. The threat of bad weather, rapidly ripening crops and machinery and contractor costs give farmers a tight window for harvest. Many fatigued drivers are on the road after completing long workdays operating machinery, performing other on-farm activities, and then driving grain to silos.

Western Region undertook annual behavioural road safety campaigns focussed on farmers, truck drivers, grain receival site staff, rail operators, and the general travelling public during the grain harvest season. The region covers most of the Queensland and South Australian border areas and incorporates a vast array of agricultural areas with crops including cotton, wheat, barley and sorghum.

Harvest is now a key area of focus for level crossing safety education and awareness in NSW. Western Region continued to support grain receival sites during the financial year with campaign material for harvest season focussed mainly on driver fatigue. A key initiative was to install permanent signage (as shown in figure 9 below) at the highest flow receival sites (GrainCorp and GrainFlow).

Figure 9: Permanent level crossing safety message at grain receival sites



Regional Field Days

To raise the profile of level crossings and generate discussion, TfNSW again participated in three public engagement exhibitions featuring the 'Pearly Gates' campaign message and a car that had been involved in a level crossing crash. The events included:

- AgQuip Field Days, Gunnedah – August 2018
- Henty Machinery Field Days, Henty – September 2018
- Australian National Field Days, Borenore – October 2018

Figure 10: 2018 Australian National Field Days, Borenore



Figure 11: 2018 AgQuip Field Days, Gunnedah



4.2 Level crossing awareness and enforcement campaigns

NSW Police enforces the *Road Rules 2014* (NSW) including level crossing offences. The level crossing awareness and enforcement campaigns involve a highly visible police presence focussed on unsafe driver behaviour around the level crossings involved. This aims to raise driver awareness of the safety risks at level crossings and of the need to comply with the road rules.

Research showed non-compliance with level crossing controls was found to decrease by 77 per cent at level crossings where enforcement campaigns were run.

Four joint TfNSW – NSW Police level crossing awareness and enforcement campaigns were conducted during 2018-19 as shown in table 4 below.

Table 4: Level crossing awareness and enforcement campaigns in 2018-19

Location	Electorate	Region	Period
Dubbo	Dubbo	Orana	October 2018
Gurley, Narrabri	Northern Tablelands	North West	November 2018
Tamworth	Tamworth	North West	March 2019
Paterson, Oakhampton Kurri Kurri, Kearsley	Cessnock, Maitland Upper Hunter	Hunter	June 2019
Total (4)			

A key area of focus for police in 2018-19 was the speed of vehicles on the approaches to active level crossings, particularly those with curved road approaches. This reflects the importance of addressing the potential for high-consequence level crossing crashes where speed is a contributing factor. Level crossing awareness and enforcement campaigns are central to the task of making level crossings safer, and an important part of Towards Zero

Figure 12 Media launch of level crossing awareness and enforcement campaign in Tamworth. Senior Sergeant Mick Timms (standing), NSW TrainLink XPLORER service on level crossing at Brisbane Street Tamworth



Figure 13: (L) boom gates coming down on small truck stopped near tracks and (R) station wagon with boom gates lowered on its roof queued back over tracks



Source: NSW Police and JHR as part of media event at Tamworth on 18 March 2019

The Hunter Region campaign included the level crossing at Mitchell Avenue, Kurri Kurri, which came to the notice of Police in 2017-18, following two crashes between trains and road vehicles during a seven-month period. Police from Traffic and Highway Patrol

Command met on site with stakeholders from South Maitland Railways (SMR – the RIM for the line), Cessnock City Council and Pacific National, which operates trains on the line.

This is a passive level crossing (stop signs) used by some 3,000 vehicles a day including heavy vehicles. While police were on site, several school buses were observed using the level crossing, despite there being a grade separated crossing only minutes away.

The site visit took a safe systems approach and considered recent crash history to implement short term, cost-effective improvements to the level crossing. As a result of the discussions, SMR worked with the council to install upgraded signage and thematic line markings at the site. Police enforcement has also increased since the signage upgrade.

Figure 14 Level crossing at Mitchell Avenue, Kurri Kurri showing (L) signage in mid-2018 and (R) in May 2019 after upgrades to signs, thematic line markings and vegetation control

Mitchell Avenue Kurri Kurri (mid-2018)



Mitchell Avenue Kurri Kurri (May 2019)



Legal actions for level crossing offences (driving) have been trending upwards since 2010 due to a heightened awareness of level crossing safety brought about through the campaign. As shown in table 5 below, 464 penalty notices were issued to motorists for traffic offences at level crossings in 2018-19.

Table 5: NSW Police level crossing legal actions between 2010-11 and 2018-19

Financial Year	Legal Actions
2010-11	219
2011-12	281
2012-13	306
2013-14	371
2014-15	488
2015-16	414
2016-17	414
2017-18	502
2018-19	464

5 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 the development of ALCAM and to ensure consistency in its application. TfNSW represents NSW on the committee.

During 2018-19, the National ALCAM Committee conducted a review of its governance and legal status to ensure the continued effective and efficient development of ALCAM. The review considered a number of governance options for ALCAM operations into the future and evaluated how each option aligns with ALCAM strategic requirements. The review was completed with a preferred option selected by the committee. Once approved by member jurisdictions, the National ALCAM Committee will seek endorsement of the preferred option by the Transport and Infrastructure Senior Officials' Committee.

The National ALCAM Committee also made some progress in finalising the ALCAM field data collection training package. In July 2018, TfNSW successfully delivered a pilot training course to identify improvements to the training and assessment materials. Based on the course outcomes and feedback from other stakeholders, the committee recommended further refinement of the training materials including the ALCAM Crossing Assessment Handbook for completion in 2019-20.

Throughout the year, the committee provided ongoing support and maintenance enhancements to the online Level Crossing Management System (LXM) database to ensure it operates correctly, and users are given adequate and timely technical support.

5.2 NSW ALCAM data collection

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

In 2018-19, the LCIP funded ALCAM field assessments at 138 road and pedestrian level crossings in NSW involving:

- 123 crossings on the ARTC network
- 6 crossings on the Pacific National Port Kembla network
- 9 crossing on the South Maitland Railways network

TfNSW engaged Spinal Cord Injury Australia (SCIA) to enter the survey data collected from field assessments into the ALCAM LXM database. SCIA is a not-for-profit organisation working for people with spinal cord injury.

6 New technology and research

6.1 Australasian Centre for Rail Innovation

ACRI approach

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

Since 2014, ACRI has completed 32 projects with outcomes including most recently:

- collated and disseminated knowledge on present practices and initiatives to reduce trespass and prevent suicide/self-harm on urban rail networks
- improved the understanding of incident causation and risk mitigation at remote level crossings
- developed an end of train prototype, which is now under further participant customisation for remote emergency activation as a derailment countermeasure
- validated in-ground LED effectiveness for visual and audio distracted pedestrians at pedestrian level crossings using eye-tracking
- identified a range of rail flange gap filler products for use at pedestrian level crossings

ACRI's program of memorandums of understanding and co-operation with Australian and overseas rail and logistics bodies enable joint projects and sharing information with participants about current and past research. ACRI agreements include the UK Rail Safety Standard Board, the US Federal Railroad Administration, and Transport for Canada.

The regular dialogue between ACRI and these entities has resulted in sharing of research program details, provision of reports and expertise contacts to inform ACRI research, facilitation of meetings with Australian contacts, and importantly discussions towards joint projects. In the case of the Rail Safety and Standards Board, a joint project on innovations to advance the experience of rail passengers with a disability is now underway and talks continue on a potential tri-lateral project relating to level crossings and trespass with the Federal Railroad Administration and Transport Canada.

ACRI also continues to provide advisory oversight of the [Rail Knowledge Bank](#). This freely accessible online resource of over 15,000 items celebrates 10 years of operation in 2020. Funded by federal, state and territory governments through the National Interest Services program, it now attracts over 200,000 visits a year, the majority of which are from Australia. It is the online home for the archive of papers and presentations of the major Australasian rail conferences, including CORE and AusRAIL.

ACRI is also now content manager of the National Level Crossing Safety Committee (NLCSC) *Level Crossing Safety Interventions Register*, providing an access point to technologies and engineering interventions with known trials and evaluations. The Register is soon to be hosted on the ACRI website.

ACRI Level Crossing Work Program

The safety of motorists, pedestrians, rail workers and operators is the principal area of focus in the ACRI level crossing work program with research across the engineering and human factors disciplines.

Research projects in progress and development include:

- Evaluating retro-reflective screens to aid conspicuity of tabletop carriages at passive level crossings
- A human factors framework for testing and implementing new level crossing warnings
- Evaluation of rail flange gap fillers at pedestrian level crossings
- Investigating the use of train horns at level crossings
- Evaluating safety measures and behaviours at level crossings along maintained but non-operational rail corridors
- Sighting distance estimation tool and guideline to cover private (occupation) crossings

Safety initiatives

7 Agency safer level crossings initiatives

7.1 ARTC initiatives

Infrastructure works

During 2018-19 ARTC undertook level crossing safety initiatives to the value of \$3,873,335 across its network in NSW as shown in table 6 below.

Table 6: ARTC initiatives in 2018-19

Line section	Cost	Sites	Project Scope
Cootamundra to Junee	\$455,000	1	Level crossing surface improvements and associated works
Junee to The Rock	\$317,000	1	Level crossing surface improvements and associated works
The Rock to Albury	\$118,000	1	Level crossing surface improvements and associated works
Unanderra to Moss Vale Junction	\$150,000	1	Level crossing surface improvements and associated works
Sydney - Albury	\$82,000	5	Level crossing sighting distance works
Goobang Junction to Troy Junction	\$198,308	7	Road Level Crossing road surface improvements, Pedestrian accesses improvements and associated works
Troy Junction - Merrygoen	\$60,329	2	Level Crossing road alignment and related sighting improvements and associated works
Merrygoen - Gulgong	\$274,955	15	Level crossing surface improvements and associated works
Merrygoen - Gap	\$171,173	2	Level crossing sighting distance development and improvement works
Muswellbrook - Sandy Hollow	\$1,030,430	3	Level crossing surface renewals, rehabilitation and road realignment works, signage and line marking works
Telarah to Stratford Jct	\$432,850	4	Signage upgrade, monitoring upgrade, track alignment improvement, crossing surface upgrade and road approach upgrade.
Stratford Jct to Kundabung	\$55,000	1	Sighting distance improvements
Kundabung to Lawrence Rd	\$136,000	1	Level crossing surface improvements and associated works
Lawrence Rd to Qld Border	\$201,790	3	Track alignment improvement, road approach upgrade and sighting distance improvements
Qld Border to Acacia Ridge	\$190,500	2	Track alignment improvement and sighting distance improvements
Total	\$3,873,335	49	

Community Participation

ARTC regularly participated in local community events and Field Days events across NSW to promote rail safety to the wider community. Events in 2018-19 included: Hunter Valley Steamfest Maitland; AgQuip Field Days, Gunnedah; and Henty Machinery Field Days.

ARTC established stalls for the community to come and chat with rail professionals about the industry and encourage safe behaviour at level crossings. The events also featured a face-painter to attract families to the displays where children completed rail safety activities

including colouring in contests and interactive quizzes. Engaging safety videos playing on a number of television screens reinforced the key safety message.

School Safety Visits

In 2018-19 ARTC ramped up efforts to promote rail safety by building relationships with schools neighbouring the network. Through a Junior Landcare Grants program, ARTC donated over \$30,000 to 29 schools in regional NSW to help with their school Landcare projects. This provided an opportunity to invite schools to participate in a rail safety presentation from expert staff. This enabled a key focus on primary school children to establish safe behaviour around the railways from a young age.

Presentations were given at a number of schools in NSW. These were generally presented by ARTC staff in high-vis uniform talking with students about rail safety behaviours, followed by playing some engaging TrackSAFE Rail Safety Week videos.

7.2 CRN initiatives

JHR and CRC continued to improve level crossing safety on the CRN with improvements of \$8,099,000 set out in table 7 below. These improvements included civil road surface upgrades, passive to active signalling upgrades, replacement of life-expired equipment, the removal/replacement of signage on non-operational lines to reflect actual conditions to standard, and other minor works.

Table 7: CRN initiatives in 2018-19

Location	Cost	Project Scope
Various 3 locations	\$130,000	level crossing designs
Various 13 locations	\$4,293,000	Level crossing civil road surface upgrades
West Tamworth to Armidale, Uralla Walcha Rd (Thunderbolts Way)	\$1,197,000	Level crossing upgrade (signals) upgrade to axle counter train detection
Old Junee Temora St	\$2,036,000	LX Control, signalling system upgrades, replacement of life-expired equipment & hut
Sub total	\$7,656,000	
JHR and CRC contribution to LCIP projects		
Project	Contribution	Total project cost
Limbri Road, Kootingal	\$285,000	\$1,185,000
Hoskinstown Road, Bungendore	\$101,000	\$789,000
Brewongle Lane, Brewongle	\$57,000	\$745,000
Sub total	\$443,000	\$2,719,000
Total CRN initiatives	\$8,099,000	\$10,818,000

7.3 NSW TrainLink initiatives

NSW TrainLink is a rolling stock operator and does not operate or maintain level crossings. It works constructively through the LCSC, LCWG, LCCWG and other level crossing safety forums to make level crossings safer in NSW. This includes planning for the LCIP, and the cooperative approach to the allocation of resources.

In 2018-19 NSW TrainLink worked with ARTC to trial Track Circuit Actuators on the north-west to have better circuitry connectivity and improved safety at level crossings. This would also improve reliability as speeds increase.

Engaging the community

NSW TrainLink played a key collaborative role to support regional Field Days exhibitions at AgQuip Field Days, Gunnedah, Henty Machinery Field Days and Australian National Field Days, Borenore (near Orange). NSW TrainLink also engaged with the community and the Police to raise awareness of level crossing safety at regional events in Mudgee, Orange, Dubbo, Parkes, Manildra, Bathurst, Woonona, Woy Woy and Warnervale.

A successful engagement exercise followed a near miss at a passive level crossing at Galls Lane, Berry at the entrance to a private property. NSW TrainLink worked with the property owner and a co-located business on solutions to prevent near misses and to minimise the psychological impact on train crews. Outcomes included potential signage and road marking improvements, and highlighting the safety risk to customers.

NSW TrainLink participated in Rail Safety Week in August 2018, principally with platform and train awareness activities at Woonona, Bellambi, Waterfall and Woy Woy, which focussed primarily on internal communications.

Engaging NSW TrainLink people

NSW TrainLink continued to work with train crews on the importance of reporting incidents at level crossings and with local shift managers to investigate incidents and consider appropriate controls. This encourages and promotes an active reporting culture, and saw an increased focus to report incidents at level crossing hotspots on the South Coast, particularly by the Rail Customer Service Centre in Wollongong.

NSW TrainLink drivers' feedback on near misses at the level crossing at Brewongle Lane, Brewongle was given to the LCWG and JHR's response was shared back to drivers.

School Program

On-going education of students around safety at level crossings continued in 2018-19 as part of the NSW TrainLink School Program, which focussed on 25 schools across the South Coast. More schools around the network were incorporated in the program, including two schools in Fassifern and primary schools in Lithgow, Springwood, Katoomba and Blackheath. An awareness campaign was organised following the death of a teenager who was hit by a train at Fassifern Station in August 2018.

7.4 Roads and Maritime initiatives

Roads and Maritime completed safety management plans at all 100 state-road at-grade road-rail interfaces.

Table 8 Roads and Maritime initiatives in 2018-19

Initiative	
Completion of safety management plans for 100 level crossings on state roads	\$482,609
Total	\$482,609

7.5 Sydney Trains initiatives

Sydney Trains continued to improve the safety of the level crossings on its network during 2018-19 with key infrastructure improvement initiatives shown in table 9 below.

Table 9: Sydney Trains initiatives in 2018-19

Location	Cost	Project Scope
Bellambi Lane, Bellambi	\$46,000	Upgrade of gate delay timers to current standards
Bourke Street, East Richmond	\$300,000	Detailed design for upgrade of existing Sydney-side pedestrian crossing and installation of a country-side pedestrian crossing
Harley Hill Road, Berry	\$500,000	Development of concept to upgrade passive level crossing to active.
Rawson Road, Woy Woy	\$200,000	Initial development of options to upgrade level crossing to improve overall safety
St James Road, Adamstown	\$500,000	Concept design of converting the level crossing to an automatic mode and the installation of an interface with the traffic signals at the intersection
Total	\$1,546,000	

8 Interface agreements

Context

The RSNL 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 for the level crossings on their networks. Interface agreements have been a long-standing requirement since the introduction of the Model Law in 2006, and continued through the RSNL.

Progress

The number of outstanding interface agreements across Australia is slowly improving. In 2018-19, RIMs in NSW have actively pursued the negotiation of these agreements with government and local authorities, with ONRSR continuing to support RIMs to resolve issues that were preventing agreements from being finalised. Efforts in 2017-18 to resolve issues with Central NSW Councils (Centroc) have resulted in completed agreements being progressed across NSW in 2018-19, and there are now only two Centroc councils with agreements still outstanding.

As at 30 June 2019, 71 (40%) interface agreements across NSW remain outstanding; down from 88 (48%) at the time in 2018. As many of these are tripartite agreements (involving a local council, Roads and Maritime and a RIM, or a local council and two RIMs), the 71 outstanding agreements are with 45 individual road managers.

Table 10 below shows a breakdown of interface agreements required in NSW and the number outstanding as at 30 June 2019.

Table 10: Outstanding interface agreements in NSW as at 30 June 2019

Summary of interface agreement implementation	
Agreements required in NSW	181
Agreements outstanding in NSW	71 (40%)
Road manager	Agreements outstanding
Roads and Maritime and local councils (including tripartite agreements)	71
45 individual road managers have outstanding agreements comprising:	
• 19 councils with one agreement outstanding	19
• 26 councils with two agreements outstanding	52

Funding

9 Funding for level crossings in NSW

Table 11 provides a summary of the total expenditure on level crossing safety improvements in NSW since 2003-04.

Table 11: Funding for Level crossing safety improvements in NSW from 2003-04 to 2018-19

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 ³	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 ⁴	7.33	
2011-12	RailCorp	3.20	42.69
	ARTC	29.21	
	CRIA	2.88	
	LCIP ⁵	7.40	

³ One-off funding for the Boom Gates for Rail Crossings Program was provided as part of the Commonwealth Government's Nation Building Program.

⁴ Includes \$2 million funding provided from the former RTA.

⁵ 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	
	CRN	1.04	
	RMS	1.30	
	LCIP ⁶	7.51	
2013-14	Sydney Trains	1.80	20.85
	ARTC	8.17	
	CRN	2.82	
	RMS	0.46	
	LCIP ⁵	7.60	
2014-15	Sydney Trains	2.78	19.62
	ARTC	5.36	
	CRN	1.16	
	RMS	3.05	
	LCIP ⁵	7.27	
2015-16	Sydney Trains	1.96	16.70
	ARTC	3.88	
	CRN	3.79	
	RMS	0.00	
	LCIP	7.07	
2016-17	Sydney Trains	2.94	29.21
	ARTC	3.03	
	CRN	12.70	
	RMS	3.26	
	LCIP	7.28	
2017-18	Sydney Trains	0.11	13.16
	ARTC	2.00	
	CRN	4.71	
	LCIP	6.34	
2018-19	Sydney Trains	1.55	21.57
	ARTC	3.87	
	CRN	8.10	
	RMS	0.48	
	LCIP	7.57	

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

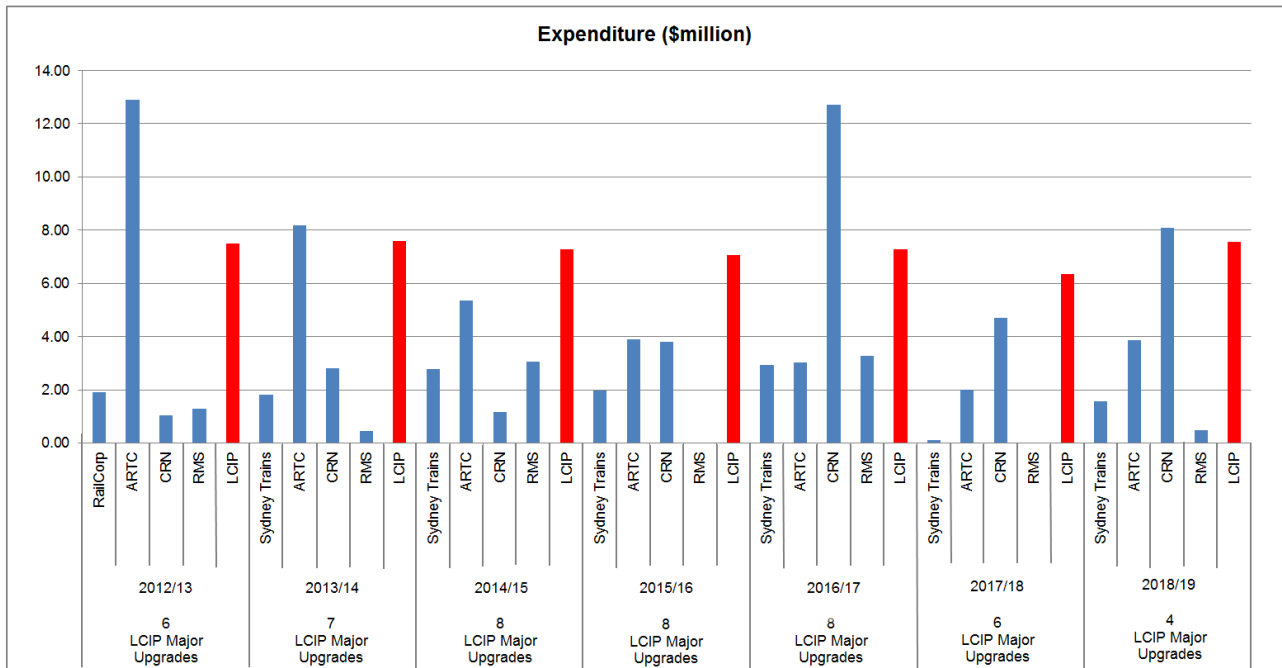
Appendix A: Total LCIP 2018-19 work completed

Table 12: Total LCIP 2018-19 work completed

Location	Electorate	Value
Construction projects		
Old Gostwyck Road, Armidale	Northern Tablelands	\$900,000
Limbri Road, Kootingal	Tamworth	\$900,000
Hoskinstown Road, Bungendore	Monaro	\$688,000
Brewongle Lane, Brewongle	Bathurst	\$688,000
Lake Street, Ganmain ⁷	Murrumbidgee	\$835,000
	Total	\$4,011,000
Concept and detailed design		
Murrays Flat Road, Towrang	Goulburn	\$264,000
Mills Road, Towrang	Goulburn	\$290,000
Ulan Road, Wollar	Murrumbidgee	\$259,000
Wirrinya Road - Back Marsden Road, Wirrinya	Burrinjuck	\$312,000
Jerrawa Road, Jerrawa	Goulburn	\$377,000
Harefield Road, Harefield	Cootamundra	\$255,000
Newell Highway, Tichborne	Dubbo	\$256,000
Newell Highway, Welcome	Dubbo	\$275,000
	Total	\$2,288,000
Other safer level crossings initiatives		
Level Crossing Education and Enforcement Campaigns		\$882,000
ALCAM Data collection and development		\$259,000
Level crossing policy and strategy development		\$131,000
	Total	\$1,272,000
	Grand Total	\$7,571,000

⁷ Work was completed in 2017-18 and funded from the 2018-19 LCIP

Appendix B: Expenditure on level crossing upgrades in NSW funded through the LCIP and by RIMs and road managers 2012-13 to 2018-19



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