

Level Crossing Strategy Council Yearly Report 2020-21



Front cover: Level crossing at Whiley Road Spring Hill NSW

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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 (Safety, Environment and Regulation - TfNSW)
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 Disability Discrimination Act 1992 (Commonwealth)
IPWEA	Institute of Public Works Engineering Australasia
ITSOC	Infrastructure and Transport Senior Officials' Committee
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
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
RSNL	The Rail Safety National Law (NSW)
ROM	Regional and Outer Metropolitan
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
RISSB	Rail Industry Safety Standards Board
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

Executive Summary

1 Year in review: 2020-21

In 2020-21 Rail Infrastructure Managers (RIMs) and road managers invested \$21.58 million on safer level crossing initiatives in NSW of which \$7.48 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 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.

COVID-19 continued to impact the LCIP engineering projects in 2020-21. The strict border controls impacted the availability of materials, equipment and contractors nationally. The social distancing meant on-site construction practices needed to be compliant with NSW Health requirements. This has impacted the delivery time frames and costs of some of the LCIP engineering projects.

The following 12 major upgrades of level crossings were commissioned in 2020-21 through the LCIP. This includes some delayed projects from the previous financial year.

- LX572 Mills Road Towrang
- LX1908 Murrays Flat Road Towrang
- LX583 Jerrawa Road Jerrawa
- LX1301 Ulan Wollar Road Wollar
- LX610 Harefield Road Harefield
- LX364 Covan Creek Road Lake Bathurst
- LX417 Burley Griffin Way Yoogali
- LX366 Mt Fairy Road Mt Fairy
- LX260 Myall Park Road Yenda
- LX651 Tarana Road Tarana
- LX669 Whiley Road Spring Hill
- LX707 Eulomogo Road Dubbo

In addition to infrastructure works, the LCIP also funded further 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
- ALCAM data verification project
- Level crossing strategy and policy development.

The TfNSW Transport Infrastructure Plan provides LCIP \$7.3 million in funding a year to 2025-26. This translates to a \$43.8 million LCIP allocation from 2015-16 to 2020-21, which enables the planning and completion of future priority level crossing upgrades.

In June 2017 the LCIP converted to a three 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 2020-21 (including LCIP funded projects).

Appendix A: provides a summary of all projects funded under the LCIP in 2020-21.

Appendix B: sets out the expenditure on level crossing upgrades in NSW funded through

the LCIP and by RIMs and road managers from 2014-15 to 2020-21.

1.1 Agency level crossing initiatives

In addition to the LCIP, Australian Rail Track Corporation (ARTC), John Holland Rail (JHR), 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 2020-21, ARTC planned and delivered level crossing safety initiatives to the value of \$3,325,226 plus level crossing upgrades across various geographic regions over its NSW network. Initiatives included minor works covering:

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

Country Regional Network (JHR–TfNSW)

JHR and TfNSW continued to improve level crossing safety on the Country Rail Network (CRN) with improvements totalling \$7.1 million. These improvements included: design works, civil road surface upgrades, passive to active level crossing upgrades, replacement of life expired equipment at an actively controlled location, upgrades to level crossing passive signage at various locations, and pedestrian level crossing upgrades.

As the contracted RIM for the CRN, JHR has a statutory obligation under the *Rail Safety National Law (NSW) (RSNL)* to manage the risk at the level crossings on the network So Far As Is Reasonably Practicable (SFAIRP).

In pursuing this obligation, JHR meets regularly at the 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 Sub-Committee abide by the statutory requirements under the RSNL and collaborate with the Level Crossing Strategy Council (LCSC).

Sydney Trains

Sydney Trains undertook a program of level crossing improvements across the network during 2020-21. Improvements included:

- Installation and commissioning of a new pedestrian crossing and an upgrade of an existing pedestrian crossing at LX56 Bourke Street East Richmond - \$1.9 million.
- Modifications to signalling arrangements in conjunction with line speed changes to reduce the level crossing gates closure time to improve traffic flow at LX945 Pine Road Fairfield level crossing - \$1.6 million. The objective is to reduce the number of incidents at this location.

Sydney Trains also delivered project development, scoping, design and construction upgrade works for other key safety initiatives to the value of \$187,000 for:

- LX437 St James Road Adamstown
- LX434 Rawson Road Woy Woy
- Audible warning and other signalling improvements at a number of level crossings to improve safety and to comply with current TfNSW and Australian Standards.

For more information relating to agencies and organisations initiatives refer to pages 29-34.

2 Level crossings in New South Wales

Under the RSNL, 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 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, Regional and Outer Metropolitan, Country Rail Contracts, Customer Strategy and Technology)
- ARTC
- JHR
- Local Government NSW
- NSW Police Force
- NSW TrainLink
- Sydney Trains

The ONRSR also attends LCSC meetings 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.

The LCSC is supported by the Level Crossing Working Group (LCWG) and the Level Crossing Communication Working Group (LCCWG), which comprise of 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 Australian Level Crossing Assessment Model (ALCAM) in NSW.

Level Crossing Strategy Council Strategic Plan 2021-30

The Level Crossing Strategy Council Strategic Plan 2021-30 was developed by the Centres for Road Safety and Maritime Safety (CRSMS) and endorsed by the LCSC 23 February 2021. The Strategy guides the LCSC to continue to develop policy, review incident and safety trends, monitor new technologies, and oversee the development and delivery of the annual capital works program, and education and awareness campaigns.

Under the Strategic Plan, rail and road stakeholders will commit to working collaboratively to address 12 areas of strategic focus across three key themes for safer level crossings in NSW: safe people; vehicles, speeds and infrastructure; and harnessing knowledge for safety.

The Strategy is available on the [TfNSW website](#).

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 the CRSMS, 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 three year program to commence from the 2017-18 financial year. The three year LCIP program 2020-21 to 2022-23 was approved by the LCSC on 28 April 2020.

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, ensures available funding is applied effectively to level crossing safety improvements. The methodology continues to apply to the development of the LCIP through to 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, 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 Infrastructure and Transport Senior Officials Committee (ITSOC). 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 managers, RIMs, 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 new Chair of the NLCSC from 11 December 2020 is the Chief Executive of the Department of Planning, Transport and Infrastructure South Australia. NLCSC includes representatives from Australasian jurisdictions, government and private rail operators, RIMs, rail industry associations, regulators, and the Australia New Zealand Policing Advisory Agency. Its secretariat support function is provided by the TrackSAFE Foundation.

2.4 Level crossing closures

The only means to 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), are considered before closure. Consultation with the relevant local council, adjacent landowners, the community, Regional and Outer Metropolitan Division (ROM), 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 additional information related to level crossing closures.

Since 2003, a total of 186 level crossings have been gazetted for closure, most of which were on private property. As shown in Table 1 below, three level crossings were gazetted for closure in 2020-21.

Table 1: Level crossings gazetted for closure in 2020-21

Location	Rail KM	Line Section	Status
Goobang Junction	451.400	Parkes to Narromine	Private
Peak Hill	491.492	Parkes to Narromine	Private
Pedestrian level crossing West Tamworth	452.490	Werris Creek - Armidale	Public

2.5 Level crossing incident data

Of the 1,360 public road level crossings in NSW, 434 have active traffic controls; 154 have flashing lights and bells, 278 have flashing lights, bells and boom gates and two have manually operated booms/gates. The majority of other crossings are passively controlled by 'give-way' or 'stop' signs.

There were seven collisions between a road vehicle and a train in NSW in 2020-21. Four collisions involved light passenger vehicles and three involved heavy vehicles.

There were two fatalities resulting from a collision between a B-double and a freight train at a regional level crossing with passive protection. There were also two serious injuries as a result of a collision between a car and passenger train at a regional level crossing with passive protection.

The number of collisions between a road vehicle and a train and the number of resultant fatalities both increased from 2019-20. The number of collisions increased from five to seven, with resultant fatalities up from zero to two. There were no collisions between a train and a person during 2020-21, down from one collision in 2019-20.

Figure 1 through to Figure 4 shows the number of collisions and fatalities at level crossings from 1989-90 to 2020-21.

Figure 1: Train colliding with road vehicle at level crossing in NSW 1989-90 to 2020-21¹

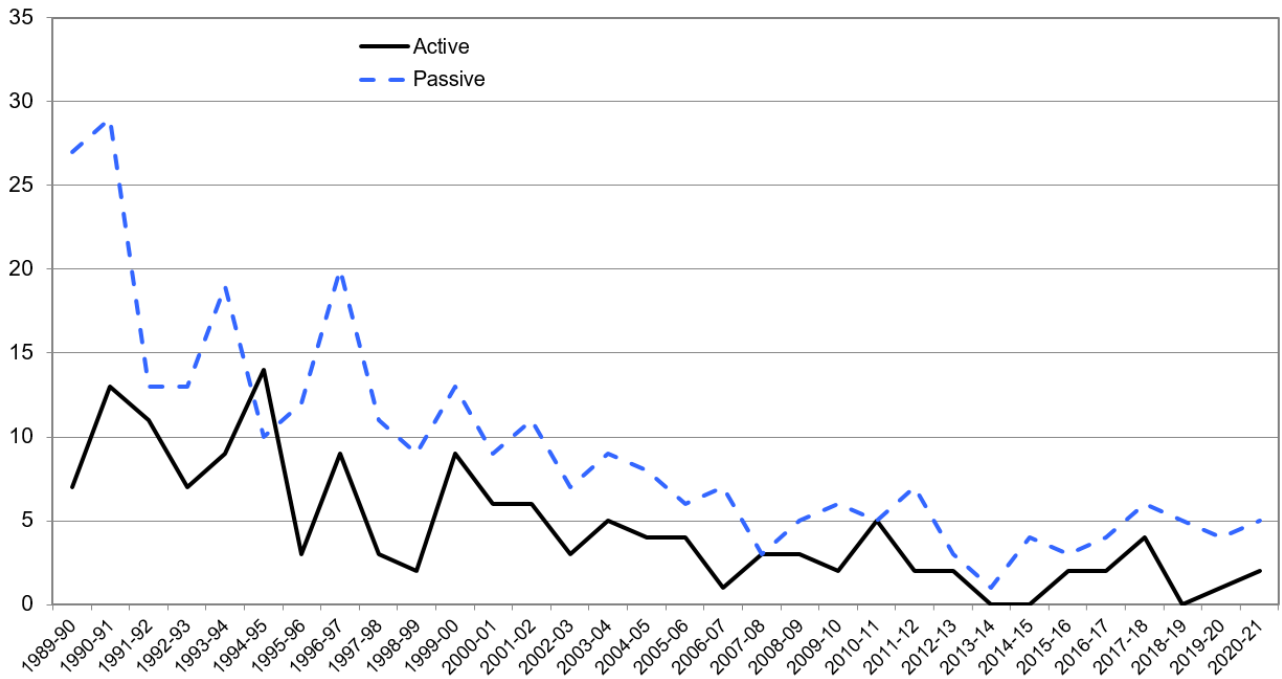
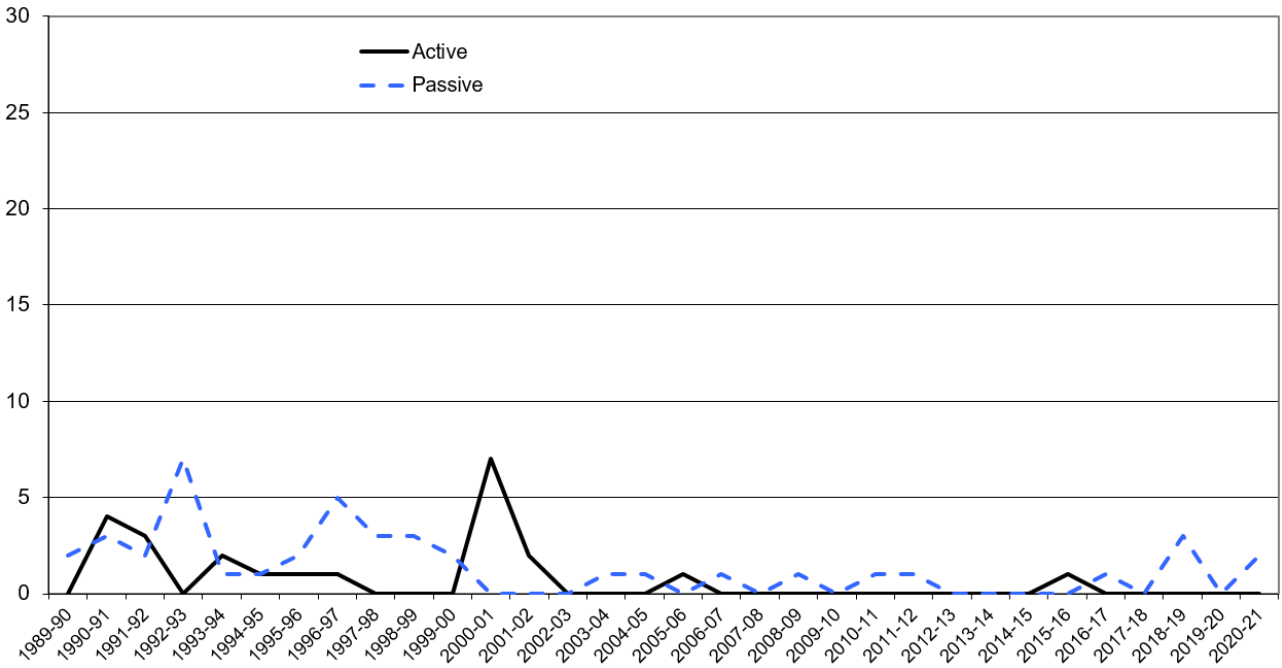


Figure 2: Fatalities: train colliding with road vehicles at level crossings in NSW - 1989-90 to 2020-21



¹ 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

Figure 3: Train colliding with person at level crossings in NSW - 1989-90 to 2020-21

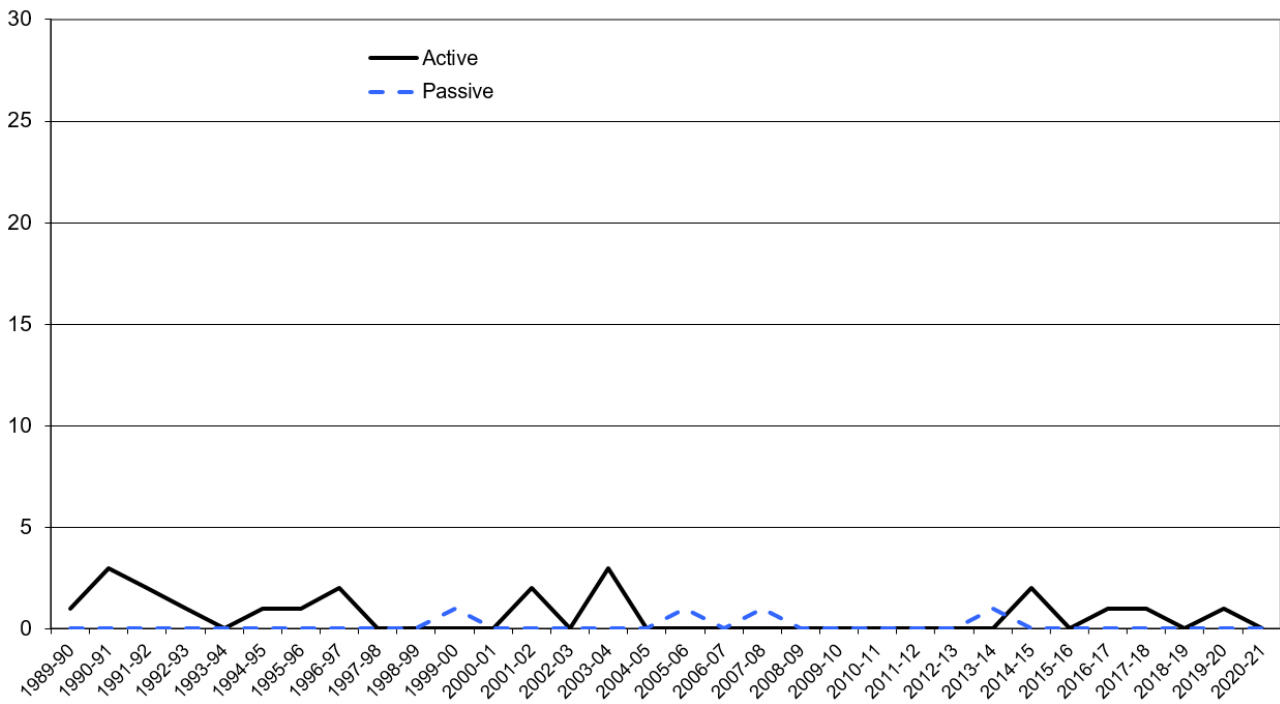
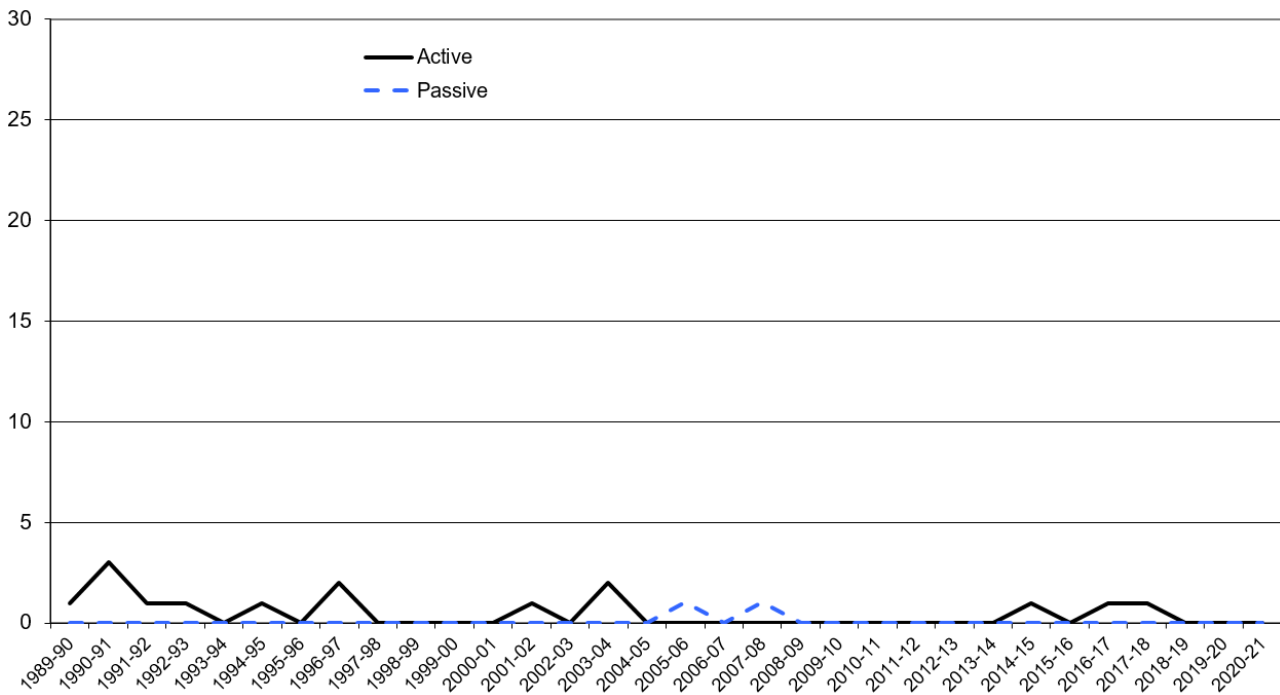


Figure 4: Fatalities: train colliding with person at level crossings in NSW - 1989-90 to 2020-21



Level Crossing Improvement Program 2020-21

3 Infrastructure works

3.1 Major works completed

During 2020-21 there were 12 major construction projects commissioned across the NSW rail network under the LCIP. The commissioned projects are shown in Table 2 and described in detail below.

Table 2: LCIP major construction works completed in 2020-21

Location	Electorate	Network
LX572 Mills Road Towrang	Goulburn	ARTC
LX1908 Murrays Flat Road Towrang	Goulburn	ARTC
LX583 Jerrawa Road Jerrawa	Goulburn	ARTC
LX1301 Ulan Wollar Road Wollar	Upper Hunter	ARTC
LX610 Harefield Road Harefield	Cootamundra	ARTC
LX364 Covan Creek Road Lake Bathurst	Goulburn	CRN
LX417 Burley Griffin Way Yoogali	Murray	CRN
LX366 Mt Fairy Road Mt Fairy	Monaro	CRN
LX260 Myall Park Road Yenda	Murray	CRN
LX651 Tarana Road Tarana	Bathurst	CRN
LX669 Whiley Road Spring Hill	Orange	CRN
LX707 Eulomogo Road Dubbo	Dubbo	CRN

3.1.1 LX572 Mills Road Towrang

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 23 January 2021 at a total cost of \$1,034,631 including a LCIP contribution of \$990,000.

Figure 5: LX572 Mills Road Towrang (before and after)



3.1.2 LX1908 Murrays Flat Road Towrang

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 and new road and rail signage. The upgrade was commissioned on 23 January 2021 at a total cost of \$1,001,893, including a LCIP contribution of \$990,000.

Figure 6: LX1908 Murrays Flat Road Towrang (before and after)



3.1.3 LX583 Jerrawa Road Jerrawa

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 13 March 2021 at a total cost of \$1,106,021, including a LCIP contribution of \$990,000.

Figure 7: LX583 Jerrawa Road Jerrawa (before and after)



3.1.4 LX1301 Ulan Wollar Road Wollar

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 28 April 2021 at a total cost of \$1,051,315, including a LCIP contribution of \$990,000.

Figure 8: LX1301 Ulan Wollar Road Wollar (before and after)



3.1.5 LX610 Harefield Road Harefield

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 7 September 2020 at a total cost of \$893,834, including a LCIP contribution of \$682,788.

Figure 9: LX610 Harefield Road Harefield (before and after)



3.1.6 LX364 Covan Creek Road Lake Bathurst

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 28 November 2020 at a total cost of \$912,000, including a LCIP contribution of \$688,000.

Figure 10: LX364 Covan Creek Road Lake Bathurst (before and after)



3.1.7 LX417 Burley Griffin Way Yoogali

This active level crossing was upgraded from flashing lights to new high intensity LED flashing lights, bells and retro-reflective boom gates. The existing pedestrian facility was upgraded with new mazes on one side of the crossing with red man lights and tone generators.

The upgrade also included road widening, intersection treatment and traffic signal interfaced with level crossing controls which was partly funded by the Federal Heavy Vehicle Safety and Productivity Program. The upgrade was commissioned on 23 August 2020 at a total cost of \$2,116,000 (road and pedestrian level crossing components only), including a LCIP contribution of \$1,044,000.

Figure 11: LX417 Burley Griffin Way Yoogali (before and after)



3.1.8 LX366 Mt Fairy Road Mt Fairy

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 12 December 2020 at a total cost of \$1,362,000, including a LCIP contribution of \$688,000.

Figure 12: LX366 Mt Fairy Road Mt Fairy (before and after)



3.1.9 LX260 Myall Park Road Yenda

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 20 June 2021 at a total cost of \$1,216,000, including a LCIP contribution of \$688,000.

Figure 13: LX260 Myall Park Road Yenda (before and after)



3.1.10 LX651 Tarana Road Tarana

This passive level crossing was upgraded from stop signs to new high intensity LED flashing lights, bells and retro-reflective boom gates. The upgrade included road works and new road and rail signage. The upgrade was commissioned on 25 September 2020 at a total cost of \$1,451,000, including a LCIP contribution of \$445,000.

Figure 14: LX651 Tarana Road Tarana (before and after)



3.1.11 LX669 Whiley Road Spring Hill

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 18 June 2021 at a total cost of \$898,000, including a LCIP contribution of \$688,000.

Figure 15: LX669 Whiley Road Spring Hill (before and after)



3.1.12 LX707 Eulomogo Road Dubbo

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 16 July 2021 at a total cost of \$999,274, including a LCIP contribution of \$688,000.

Figure 16: LX707 Eulomogo Road Dubbo (before and after)



3.2 Development work

Development work for upgrades in future years is a key element of the LCIP. In 2020-21 LCIP provided \$413,000 for the concept design work and early procurement of signalling equipment for the following projects.

Table 3: LCIP Development work in 2020-21

Location	Electorate	Network	Cost \$
LX515 Bulunbulun Road Breeza	Tamworth	ARTC	173,000
LX466 Merriwa Road Willow Tree	Upper Hunter	ARTC	113,000
LX980 Akuna Road Parkes	Orange	CRN	127,000

3.3 Level Crossing Asset Renewal

LX398 Irrigation Way Leeton

This active level crossing had an asset renewal upgrade which included: replacing life expired flashing lights and post, the relocation of the signalling enclosure due to its close proximity to the road way and renewing all signal cabling and track detection circuit. The upgrade was commissioned on 31 October 2020 at a total cost of \$812,000, including an LCIP contribution of \$535,000.

Figure 17: LX398 Irrigation Way Leeton (after)



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 2020-21 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, outdoor billboards, radio, digital, social media and cinema.

Figure 18: Don't rush to the other side campaign



Level crossings social media content featured two train drivers from NSW TrainLink being interviewed about their personal experiences. There was also a series of short form social informative content, to support an always on approach, which highlights the risks at level crossings and the need for drivers to always obey the signs and signals.

All social content was distributed across TfNSW and key stakeholder channels to further engage and encourage mindfulness when next approaching a level crossing.

Train driver interviews show a strong engagement rate with indigenous audiences of more than four per cent, which is higher than mainstream audiences. While nearly one in five are watching the content to completion.

In addition, social media content was adjusted to support the NSW Road Safety COVID-19 Tactical Response. Messaging was aligned with government requirements and focused around 'essential travel'.

Also industry communication aimed at Heavy Vehicle drivers was distributed during this time. With more delivery trucks on the road than ever, it's never been more important to remind truck drivers to take care and not rush to the other side.

There were three periods of paid advertising in 2020-21:

- November 2020, to coincide with harvest season when more trains are operating and more vehicles are on the road.
- February 2021 and May/June 2021 during the traditional peaks in level crossing collisions.

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

Campaign tracking research carried out during 2020-21 activity by an independent research agency showed the campaign continues to perform well for light vehicle drivers over time.

Results for key measures and advertising diagnostics are well above norms and results are either stable or continue to increase over time. The summary of the results are set out in Figure 19 below.

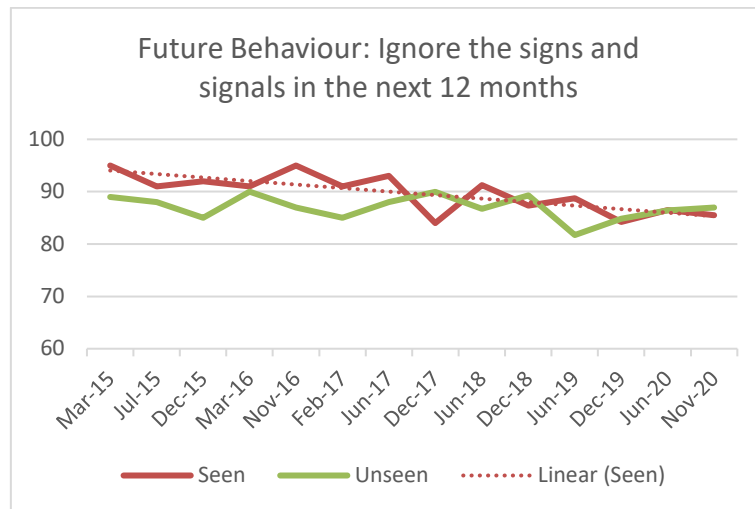
Figure 19: Campaign effectiveness – advertising diagnostics and outcomes

	Results achieved overtime	Baseline	Norms (TfNSW Safety Video average)
Recognition	17/18 – 58% 18/19 – 60% 19/20 – 59% Dec 20 – 59%	42%	With TV AT 1000+ TARPS – 68% With TV up to 1000 TARPS = 57%
Main message takeout* (always look and obey the road signs and signals when approaching a level crossing")	14/15 – 72% 15/16 – 78% 16/17 – 87% 17/18 – 75% 18/19 – 80% 19/20 – 80% Dec 20 – 82%	77%	66%
Main message takeout (dangerous behaviour at level crossings can lead to negative consequences)	17/18 – 77% 18/19 – 85% 19/20 – 83% Dec 20 – 86%	87%	66%
Believability	14/15 – 81% 15/16 – 69% 16/17 – 75% 17/18 – 73% 18/19 – 80% 19/20 – 74% Dec 20 – 78%	71%	68%
Personal Relevance If you were a passenger in a car where the driver did not obey the signs and signals at a level crossing, how likely would you be to encourage them to always obey the signals? (Very likely)	17/18 – 83% 18/19 – 83% 19/20 – 79% Dec 20 – 82%	48%	48%
Social Relevance 'After seeing this ad, I would tell my family and friends to be careful and always obey the signs and signals at level crossings	14/15 – 46% 15/16 – 43% 16/17 – 48% 17/18 – 43% 18/19 – 54% Dec 20 – 54%	81%	55%

Throughout the lifetime of the campaign there has been an ongoing positive effect demonstrated on both past behaviour and future intentions on the actions needed when approaching a level crossing.

The graph below shows the campaign over time has been successful in maintaining regional drivers to the desired outcome to signs and signals at level crossings.

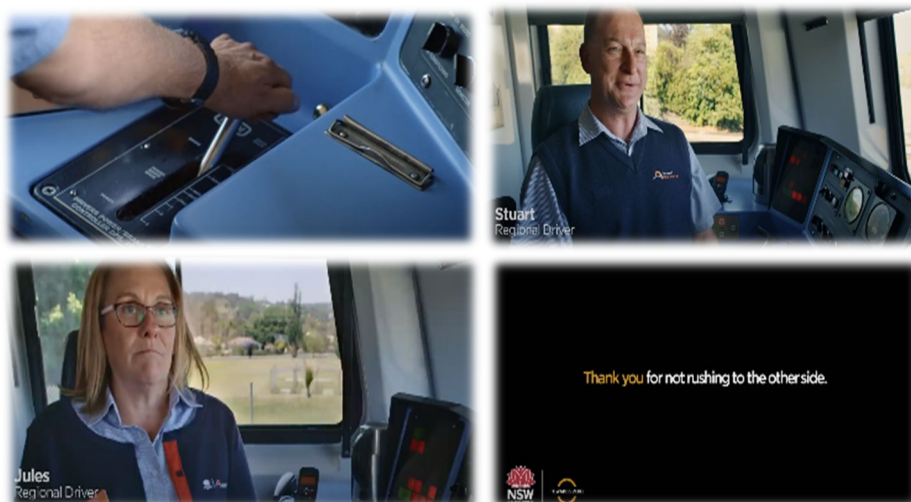
Figure 20: Future Behaviour: Ignore the signs and signals in the next 12 months



86 per cent of regional drivers say they will never ignore the signs or signals at a level crossing in the next 12 months, this maintains with the average of 89 per cent over the last six years of the campaign.

The Level Crossing Safety [Thank you for not rushing to the other side](#) advertising campaign will continue to raise awareness of the safety risks at level crossings and educate drivers on the actions needed when approaching a level crossing. This will continue to be done in partnership with other level crossing safety campaigns and programs in NSW.

Figure 21: 'Thank you for not rushing to the other side' campaign



Regional Field Days

To raise the profile of level crossings and generate discussion, TfNSW usually participates in three public engagement exhibitions featuring the 'Pearly Gates' campaign message and a car that had been involved in a level crossing crash. Unfortunately, due to COVID-19 restrictions the AgQuip Field Days at Gunnedah, Henty Machinery Field Days at Henty and Australian National Field Days at Borenore events were cancelled.

Harvest Season

The annual grain harvest season 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.

The mix of farm machinery, grain trucks and other traffic along 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 ROM organise and manage an annual Behavioural Road Safety Campaign focussing on farmers, truck drivers, grain receival site staff, rail companies and the general travelling public during the bumper grain harvest season in 2020. The region covers approximately 60 per cent of NSW and the entire length of the Newell Highway Queensland to the Victorian border areas, incorporating a vast array of agricultural areas with crops including cotton, wheat, barley and sorghum.

The campaign focus and key messaging is on driver fatigue, obeying the rules around level crossings, and drivers being aware and patient with oversize over mass slow moving harvest/heavy vehicles.

Level crossing safety has been featured in the campaign since 2014 and is a key area of focus for level crossing safety education and awareness in NSW. The campaign supported this with media and portable variable message signs deployed at key sites. The media key results included:

- Social media delivered a reach of over 360,883
- 3,714 click throughs and shared over 100 times, demonstrating the audience were highly engaged with the post
- Level crossing creative were the highest performing amongst all creative.

4.2 Level crossing awareness and enforcement campaigns

NSW Police enforces the *Road Rules 2014 (NSW)* including level crossing offences. The impact of level crossing awareness and enforcement campaigns in delivering increased road policing around level crossings is reflected in the increase in legal actions for level crossing offences (driving) since the first campaign in February 2011.

Four joint TfNSW and NSW Police level crossing awareness and enforcement campaigns were conducted during 2020-21 as shown in Table 4 below.

Table 4: Level crossing awareness and enforcement campaigns in 2020-21

Location	Electorate	Region	Period
Campaign 1 Moss Vale and Calwalla	Goulburn	Southern Highlands	Sep 2020
Campaign 2 Port Kembla	Wollongong	Illawarra	Sep 2020
Campaign 3 Sandy Hollow and Bylong	Upper Hunter	Hunter and Central West	Apr 2021
Campaign 4 Red Bend, Forbes and Daroobalgie	Orange	Central West	Jun 2021

Campaigns 1 and 2 were significantly impacted by COVID-19 and Campaign 3 was restricted to a four day enforcement window due to roadworks impacting on law enforcement abilities to conduct duties. For the 2020-21 awareness and enforcement campaigns, NSW

Police Force enforced level crossings in a targeted approach with a significant amount of level crossing breaches being detected.

From 1 July 2020 to 30 June 2021 there were 320 infringement notices and five Court Attendance Notices for the following offences:

- Enter level crossing contrary to lights/bells
- Enter level crossing when approaching train/tram seen/heard
- Enter level crossing when crossing/road beyond blocked
- Enter level crossing when train/tram on/entering crossing
- Enter level crossing with gate/boom/barrier operating
- Not give way to train/tram at level crossing with stop sign
- Not stop at stop line/sign at level crossing.

The Traffic and Highway Patrol Command increased its media footprint for the 2020-21 campaign. This was strategically timed to coincide with the enforcement period to highlight education as well as enforcement of offences.

Figure 22: LCIP Awareness and Enforcement campaign NSW Traffic and Highway Patrol



As shown in Figure 23 below, 320 penalty notices were issued to motorists for traffic offences at level crossings in 2020-21. The legal actions for level crossings offences (driving) are lower than the previous year due to NSW Police being redirected for COVID-19 border controls and other related restrictions. The campaigns heighten awareness of level crossing safety.

Figure 23: NSW Police level crossing legal actions between 2010-11 and 2020-21



Figure 24: Campaign 3 Traffic and Highway Patrol at Sandy Hollow and Bylong Valley Way level crossings



Figure 25: Campaign 4 Traffic and Highway Patrol at Red Bend, Forbes and Daroobalgie



Figure 26: Traffic and Highway Patrol Command Facebook – level crossing enforcement at Bylong Valley

Traffic and Highway Patrol Command - NSW Police Force
 April 12 · 🌐

Level crossing campaign launched in the Central West

Risky driver behaviour at level crossings will be targeted by police in support of a campaign in the state's Central West regions.

From today (Monday 12 April 2021) to Thursday (15 April 2021), police from the Traffic and Highway Patrol Command will be increasing patrols at level crossings in the Bylong Valley area.

The campaign is aimed at increasing public safety and awareness around rail level crossings in regional NSW – part of an ongoing series of enforcement campaigns between the NSW Police Force and the NSW Centre for Road Safety at Transport for NSW.

During the campaign police will be on the look-out for motorists disobeying level crossing flashing lights and stop signs, vehicles queuing over the railway tracks, speeding near level crossings, and drivers who are distracted by illegal use of mobile phones.

Traffic and Highway Patrol Command North West Region Traffic Coordinator, Sergeant Kelly Wixx, said that despite the potentially fatal consequences, people are still ignoring warnings at level crossings.

"Trains can travel at speeds of up to 160km/h and can take more than a kilometre to come to a complete stop," Sgt Wixx said.

"Disobeying level crossing warning lights and signs can lead to crashes between vehicles and trains where the consequences can quickly turn deadly."

Sgt Wixx said there is no excuse for putting lives on the line by trying to race a train.

"This is why we need to continue raising awareness and reinforce our Train to Stop message to motorists at level crossings," she said.

Minister for Regional Transport and Roads and Member for Bathurst Paul Toole said there was no excuse for putting yours and other lives on the line at level crossings.

"Signs, flashing lights, boom gates and road markings are at level crossings for a good reason, and motorists and pedestrians alike need to pay attention," Mr Toole said.

"Ask yourself: are the minutes you might save rushing across the tracks really worth risking your life?"

Between 2016 and 2020 there have been nine collisions between trains and cars at level crossings in NSW, resulting in two people losing their lives and nine suffering injuries – all of which could have been avoided.

The penalty for disobeying controls is three demerit points and a \$464 fine.

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 the Northern Territory, 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.

In October 2019, the Transport and Infrastructure Senior Officials' Committee approved a recommendation from the National ALCAM Committee to transfer the management of the ALCAM and its Level Crossing Management System (LXM) from VicTrack to the Rail Industry Safety Standards Board (RISSB) in order to overcome challenges related to ALCAM's legal status, project delivery and resource constraints.

Over the last one and half years, the National ALCAM Committee, RISSB and VicTrack have done a lot of work behind the scenes to ensure a seamless, effective and timely transition. The National ALCAM Committee engaged a consulting firm (through the Department of Transport Victoria) to develop a transition plan, which incorporates considerations around the management of four key areas: finance, IT, HR and legal as well as provides all the key activities that ought to be undertaken during the transition.

In June 2021, following the execution of three key transition legal documents by the National ALCAM Committee, RISSB and VicTrack, the management and support of ALCAM and LXM have been officially transferred from VicTrack over to RISSB.

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 LXM to update the characteristics and risk profiles for level crossings in NSW.

The ALCAM data collection was unable to proceed in 2020-21 due to the contractors being affected by COVID-19 travel restrictions. The funding of the project will be carried over into 2021-22.

5.3 NSW ALCAM data verification

ALCAM plays a critical role in planning and developing the LCIP, and is used as the principal means of ranking public road level crossings for major upgrades funded under the LCIP. It is therefore important that the level crossing data in ALCAM is the most accurate and up-to-date information available.

In 2020-21, TfNSW successfully completed the first stage of the NSW ALCAM Data Verification project. This work verified the accuracy of some key NSW ALCAM data and identified a number of areas for improvement. TfNSW will undertake the second stage of the project in 2021-22 to address the findings of the previous stage.

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. The research model is reliant on funding contributions from both rail industry participants and State jurisdictions.

The Level Crossing Research Area is overseen by a working group representing ACRI participants that have pooled research funds to collectively inform and advance the safety of level crossing operations. Group members offer research ideas and endorse project proposals, research milestones and final outputs with a focus to continually improve the safety, efficiency, connectivity and sustainability of existing and new level crossing initiatives.

ACRI's local and international relationships with rail and logistics bodies via memorandums of understanding and co-operation continue to explore joint projects and information sharing with ACRI participants about current and past research. This has continued throughout 2020-21 via broad sharing and research programs, reports, expertise, contacts, webinar/meeting attendance with entities including UK Rail Safety Standards Board, the US Federal Railroad Administration, Transport Canada and the International Union of Railways.

ACRI continues to be the content manager of the NLCSC Level Crossing Safety Interventions Register, which summarises technologies and engineering interventions with known trials and evaluations. The Register is hosted on the ACRI website.

ACRI also continues to provide advisory oversight of the [Rail Knowledge Bank](#). Funded by federal, state and territory governments through the National Interest Services program. This open access online resource is the online archive of papers and presentations of the major Australasian rail resources including conferences such as CORE and AusRAIL.

During 2020-21 the ACRI team, including industry and strategic research participants, have been working closely together to assess and explore options to improve the ACRI research development and delivery model and processes to:

- Enhance efficiency and timeliness
- Ensure project outcomes are viable, worthwhile and transferrable
- Scalable to address a greater range and volume of industry needs to match the rail investment environment.

ACRI Level Crossing Work Program

The safety of all categories of level crossing users (including motorists, pedestrians, rail workers and operators) is the principal area of focus in the ACRI level crossing work program with research across various engineering and human factors disciplines. Since 2014, ACRI has completed 56 projects, in total distributed across work program themes as tabled below.

Table 5: ACRI projects since 2014

Program	Completed	In Delivery	In Development	Program Totals
Level Crossing	16	2	7	25
Heavy Haul	16	8	6	30
Passenger Operations	10	2	3	15
Freight Operations	1	2	3	6
Watching Briefs	7	5	8	20
Other	6	2	1	9
Totals	56	21	28	105

6.2 ARTC - GCP Integrated Level Crossing Solution

The LCSC has provided ARTC with \$250,000 in research funds towards the development of a novel Grade Crossing Predictor (GCP) Integrated Level Crossing Solution. ARTC has allowed a contractor to develop and verify the level crossing activation solution.

This novel approach has the prospect of lowering the cost of level crossing activation from give way or stop signs to booms, bells and lights, and reducing the time taken to deliver activated crossings. The contract includes the services of an Independent Safety Assessor to verify the system reliability, and also the development of an alarm interface to train controls.

Safety initiatives

7 Agency safer level crossings initiatives

7.1 ARTC initiatives

Infrastructure works

During 2020-21 ARTC undertook level crossing safety initiatives to the value of \$3,325,226 across its network in NSW as shown in Table 6 below.

Table 6: ARTC initiatives in 2020-21

Line section	Cost \$	Sites	Project Scope
Hunter Valley	1,212,140	30	Level crossing asset improvements
Hunter Valley	502,086	8	Sighting distance assessments and improvements
North Coast	107,000	8	Sighting distance and safety improvements
North Coast	513,000	8	Level crossing asset improvements
Main South	693,000	5	Level crossing asset improvements
Main South	90,000	7	Sighting distance assessments and improvements
Cootamundra – Parkes	119,000	2	Level crossing asset improvements
Broken Hill – Parkes	89,000	7	Level crossing asset improvements
Total	\$3,325,226	75	

Community Participation

ARTC regularly participates in local community events and Field Days events across NSW to promote rail safety, however these activities were heavily impacted in 2020-21 due to COVID-19.

Annual events such as AgQuip Field Days, Henty Machinery Field Days and Maitland Steamfest were all cancelled because of the coronavirus pandemic, as were school visits which are normally held to discuss rail safety with students.

Despite COVID-19 restrictions, ARTC did participate in the annual Rail Safety Week from 10-16 August 2020 to raise awareness of safe rail practices in communities across Australia, including the dissemination of a resource pack for schools focusing on level crossing safety.

In addition, ARTC supported the NSW Government's latest road safety campaign about level crossings '*Thank you for not rushing to the other side*' to help promote the campaign's powerful safety messages to staff across the country, as well as to local communities via social media.

Similarly, ARTC partnered with TfNSW in late 2020 to promote level crossing safety to regional road users in response to the bumper grain harvest, particularly in the Hunter Valley.

7.2 Country Regional Network

JHR and CRC continued to improve level crossing safety on the CRN with improvements of \$7.1 million set out in Table 7 below. These improvements included design works, civil road surface upgrades, level crossing passive signage upgrades, passive to active signalling upgrades, and replacement of life-expired equipment.

Table 7: CRN initiatives in 2020-21

Total Cost \$	Cost \$	Location
Level Crossing Design – Civil 10 locations		
1,075,000	130,000	2 x minor level crossing designs
	175,000	West Tamworth to Armidale – LX509 Markham Street Armidale
	40,000	Public and Pedestrian – LX697 Warne Street Wellington
	104,000	Orange Junction to Dubbo – LX683 Mullion Range Road Mullion Creek
	110,000	Orange Junction to Dubbo - LX957 Yuranigh Road Molong
	120,000	Tarana to Orange Junction – LX664 Mid Western Highway Blayney
	134,000	Temora to Griffith – LX232 Buddigower Road Beckom
	119,000	Temora to Griffith – LX259 Twigg Road Yenda
	143,000	Werris Creek to West Tamworth – LX475 Werris Creed Road Werris Creek
	Level Crossing Design – Signals 6 locations	
709,000	140,000	Protection Upgrade Design Molong to Parkes LX968 Orange Road Manildra
	152,000	Protection Upgrade Design Molong to Parkes Wheat Terminal Muginoble
	125,000	Protection Upgrade Design Orange Junction to Dubbo Archer Road Mullion Creek
	201,000	Upgrade LX654 Barley Street Raglan
	26,000	Signalling System upgrade Design increase of active level crossing gate
	65,000	Signalling System upgrade Design– Orange Junction to Dubbo – LX678 Dalton Street Orange
Level Crossing Upgrade – Construction Civil 2 locations		
1,016,000	532,000	Orange Junction to Dubbo – LX684 Kerrs Creek Road Euchareena
	484,000	Yanco to Griffith – LX400 Marston Road Leeton
Level Crossing Upgrade – Construction – Civil – Pedestrian 1 location		
429,000	429,000	Werris Creek to West Tamworth – LX479 Currabubula Street Duri
Level Crossing Upgrade Construction – Civil – Private 2 locations		
1,129,000	505,000	Joppa Junction to Tarago Joppa Junction
	624,000	Tarana to Orange Junction Raglan
Level Crossing Upgrade – Construction – Civil and Signals – Pedestrian 2 locations		
2,521,000	1,233,000	West Tamworth to Armidale Tamworth
	1,288,000	West Tamworth to Armidale Tamworth
Level Crossing Upgrade – Construction – Replace Life Expired Signal Equipment		
221,000	125,000	Signalling system upgrade renewal of motor generator, generator controller and ECO equipment LX268 Crossing Street Griffith
	96,000	Signalling system upgrade Joppa Junction to Queanbeyan LX367 Malbon Street Bungendore
Total	\$7,100,000	

7.3 Sydney Trains initiatives

Sydney Trains continued to improve the safety of the level crossings on its network during 2020-21 with key infrastructure improvement initiatives shown in Table 8 below.

Table 8: Sydney Trains initiatives in 2020-21

Location	Cost \$	Project Scope
LX56 Bourke Street East Richmond	1,892,000	<ul style="list-style-type: none"> • Upgrade of existing Sydney-side pedestrian crossing • Installation of a country-side pedestrian crossing • Construction of pedestrian path to join up and align with the new pedestrian crossing
LX945 Pine Road Fairfield	1,592,000	Modifications to signalling arrangements in conjunction with line speed changes to reduce the level crossing gates closure time to improve traffic flow at the level crossings. The objective is to reduce user frustration and the number of incidents.
LX437 St James Road Adamstown	68,000	Completion of Stage 1B Design
LX434 Rawson Road Woy Woy	22,000	Completion of Concept Design to upgrade level crossing to improve overall safety.
Various	97,000	Project development and scoping work for audible alarms and other signalling modifications to improve safety and compliance to relevant standards.
Total	\$3,671,000	

Figure 27: LX56 Bourke Street East Richmond – new country-side pedestrian swing gate crossing (left) and upgraded Sydney-side pedestrian crossing (right)



7.4 NSW TrainLink initiatives

NSW TrainLink works constructively with RIMs to address risks and increase safety at level crossings in NSW and during 2020-2021 participated in a range of initiatives to support safer level crossings. These initiatives included:

- LX346 School Parade Clifton level crossing
 - Engagement with Wollongong City Council and Sydney Trains to work collaboratively and identify suitable controls to manage the risks.
 - Engagement with Police Transport Command and local community.
 - Trial of several security options since 2017, including security cameras (mousetrap) and Real Guard tower (remote video surveillance/warning system).

- Consistent reporting from train crew for the past seven years has enabled NSW TrainLink to drive the improvements at this level crossing and work collaboratively to implement the controls to manage the risk to our staff.
- Improvements to rail corridor fencing has seen a significant reduction in trespassing at this location.
- Since the installation of the fence in October 2020 to end of April 2021 there were four incidents of trespass reported compared to 17 incidents reported during the same period of the previous financial year.
- LX347 Park Road Woonona pedestrian level crossing
 - NSW TrainLink met with TfNSW to discuss options, including a community campaign, enforcement, engineering improvements, operational enhancements etc. Meetings planned for June 2021 with relevant stakeholders included: Sydney Trains, Wollongong City Council, TfNSW and NSW TrainLink.
- Engagement with TfNSW to deliver drivers' videos for media consumption to address safety at level crossings

7.5 Level Crossing Speed Zone Reduction Program

TfNSW has developed the [Speed Limit on Approach to Active Level Crossing Policy](#) to further improve safety at active level crossings. This policy was endorsed by The Hon. Andrew Constance, Minister for Transport and Roads, and The Hon. Paul Toole, Minister for Regional Transport and Roads, in October 2019.

The [Level Crossing Speed Zone Reduction Program](#) is where speed limits at level crossings actively controlled by flashing lights, or flashing lights and boom gates, as well as the approaches to them, will be set a maximum of 80 km/h. [Frequently Asked Questions](#) are available on the TfNSW website.

This policy will help to reduce the risk of crashes at level crossings between road vehicle and train by reducing road speeds on high speed approaches to actively controlled level crossings. Reducing the road speeds to a maximum of 80km/h allows motorists more time to react and decreases the likelihood of vehicles not being able to stop at level crossings.

ROM commenced the speed change implementation in November 2020 as part of a three year program. The program is planned for completion in 2022-23. The new speed zones will be signposted in accordance with speed zoning guidelines and with supplementary 'railway crossing' signage where possible.

The Level Crossing Speed Zone Reduction Program report June 2021 shows that of the 111 sites identified for speed change:

- 28 level crossings are certified as in place
- 13 sites are in the implementation stage
- 20 sites have had the speed zone review completed
- 50 in inspection phase of the speed zone review process.

Improving road safety on approach to, and at, level crossings aligns with the Safe System principles that underpin the NSW Road Safety Plan 2021, and assists in achieving the *Future Transport 2056 Towards Zero* vision of zero fatal and serious injuries by 2056.

Figure 28: New speed zone in West Region



7.6 Inland Rail

The Inland Rail project is being delivered by the Australian Government through ARTC to provide an enhanced link between Queensland and Southern Australia to enable freight travelling to Brisbane to bypass the Sydney network. Connecting Melbourne and Brisbane via regional Victoria, New South Wales and Queensland, the 1,700 kilometres fast freight network will better link producers to markets and create new opportunities for businesses, industries and regional communities. Approximately 1,000 kilometres of the route is in NSW.

Current Inland Rail planning includes 56 new public road level crossings across the greenfield sections of Inland Rail in NSW. While Inland Rail will be introducing level crossings along greenfield sections of the project, the overarching objective across the project is to minimise the number of level crossings through a combination of design, closures and property solutions.

On the brownfield upgrade sections, the project is proactively and successfully pursuing the closure of existing public and private crossings with no proposals to introduce new level crossings.

On the first brownfield upgrade project, Parkes to Narromine (P2N), agreement has been reached with landowners to close 14 private level crossings which represents over 40 per cent of all the private level crossings on the P2N project. This is a significant safety outcome for the project, the interstate rail network and the local community. The Minister for Regional Transport and Roads has approved the closures under section 99B(1) of the *Transport Administration Act 1988*.

ARTC is finalising consultation with landowners along the Narrabri to North Star project with the potential to close up to 15 private/public level crossings. The 1st tranche of crossing closures will be submitted to the Minister for Regional Transport and Roads in September 2021.

The Parkes to Narromine section in the Central West of NSW is the first of 13 projects to be commissioned with first trains running on the line since September 2020. The project involved the upgrade of 98.4 kilometres of existing rail track, including a full rebuild of the rail tracks, rail formation and supporting structures along the rail corridor.

In June 2020 ONRSR finalised their audit of the Inland Rail-Road Rail Crossing Strategy. There were no findings or recommendations identified during the audit and as a result there were no actions for ARTC.

As part of the 2020 Federal Budget, the Australian Government has allocated \$150 million for additional grade separations in NSW, with the NSW government contributing an additional \$37.5m. This will be additional to Inland Rail scope but complimentary to it and this program will be delivered by TfNSW. The Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) and TfNSW has identified four of the five priority locations for scoping and development for grade separation along the Inland Rail alignment.

7.7 Roads and Transport Directorate

The [Roads and Transport Directorate](#) is a joint initiative between the [Institute of Public Works Engineering Australasia](#) NSW Division (IPWEA) and [Local Government NSW](#) (LGNSW) to support the councils to deliver an improved local road and transport network. The Directorate is funded by all 128 NSW councils.

Member councils are collectively responsible for the management of over 165,000 kilometres of roads valued at more than \$70 million representing the single largest community asset in NSW.

The Directorate values the ongoing involvement in the LCIP, in particular:

- The progress with the interface agreements and the support from other LCIP partners in responding to enquiries from councils.
- Short stacking on local end regional roads remains an issue but is better understood. It is now also a consideration in programs to increase the road freight task, like the [NSW Farm Gate Access Trial](#).

7.8 Cooperative Intelligent Transport Initiative

The Cooperative Intelligent Transport Initiative (CITI) was established in 2014 by the Road Safety Technology team within the Centre for Road Safety in TfNSW. 'Connected' vehicles use Cooperative Intelligent Transport Systems (C-ITS), to talk to each other and roadside infrastructure, such as signalised intersections. The CITI team is working to include the Princes Highway Unanderra level crossing (one of the busiest crossings in NSW with respect to train movements and vehicular traffic) into the CITI testbed.

Drivers of vehicles fitted with C-ITS technology will receive in-cab audio-visual alerts to indicate that the crossings are closing or is closed. Whilst the Unanderra crossings is a small-scale trial, this technology could ultimately translate into larger safety benefits for level crossings where there are no gates, infrequent train movements (where drivers are not currently primed for train traffic) and there are similarly connected (heavy) vehicles.

This small-scale trial will assess the use of both dedicated short-range communications (DSRC) applications as well as cloud-based communications.

This project has drawn on the expertise and collaboration of various government agencies and stakeholders across the transport cluster, including Sydney Trains, road operators, road safety officers and Local Government. Having now engaged technical experts, the project is currently in its design phase. The equipment is expected to be installed in the third quarter of 2021 with testing to follow. The Road Safety Technology team will evaluate the technology with the assistance of 20 local public buses over the following 12-18 months.

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 RNSL.

Progress

The Office of the National Rail Safety Regulator (ONRSR) has been actively encouraging councils and RIMs to meet their requirements as road managers under the RSNL and in September 2020, ONRSR wrote to councils with outstanding agreements requesting finalisation of agreements by 30 November 2020. ONRSR continues to engage with the RIMs to monitor progress of the remaining outstanding agreements.

During 2020-21, RIMs advised that a further five agreements were executed in NSW and seven new agreements were identified as being required. As at 30 June 2021, 134 interface agreements have been signed and 34 remain outstanding.

Table 9: Outstanding interface agreements in NSW as at 30 June 2021

Summary of interface agreement implementation	
Agreements required in NSW	168
Agreements outstanding in NSW	34 (20%)

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 through to 2020-21.

Table 10: Funding for Level crossing safety improvements in NSW from 2003-04 to 2020-21

Year	Program Agency	Expenditure \$ million	Total \$ million	Year	Program Agency	Expenditure \$ million	Total \$ million		
2003-04	CRIA	2.00	5.00	2004-05	LCIP	5.00	5.00		
	LCIP	3.00							
2005-06	RailCorp	1.30	7.30	2006-07	RailCorp	2.40	11.33		
	LCIP	6.0							
2007-08	RailCorp	2.65	18.49		2008-09	RailCorp		2.81	18.03
	ARTC	6.90							
	CRIA	1.94							
	LCIP	7.00							
2009-10	RailCorp	3.27	59.77	2010-11	RailCorp	3.60	15.94		
	ARTC ¹	42.77							
	CRIA	3.87							
	RTA	3.30							
	LCIP	6.57							
2011-12	RailCorp	3.20	42.69	2012-13	RailCorp	1.90	24.65		
	ARTC	29.21							
	CRIA	2.88							
	LCIP ³	7.40							
2013-14	Sydney Trains	1.80	20.85		2014-15	Sydney Trains		2.78	19.62
	ARTC	8.17							
	CRN	2.82							
	RMS	0.46							
	LCIP ³	7.60							
2015-16	Sydney Trains	1.96	16.70	2016-17	Sydney Trains	2.94	29.21		
	ARTC	3.88							
	CRN	3.79							
	LCIP	7.07							
2017-18	Sydney Trains	0.11	13.16		2018-19	Sydney Trains		1.55	21.57
	ARTC	2.00							
	CRN	4.71							
	LCIP	6.34							
2019-20	Sydney Trains	1.62	30.31	2020-21		Sydney Trains	3.67	21.58	
	ARTC	5.52							
	CRN	15.59							
	LCIP	7.58							

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

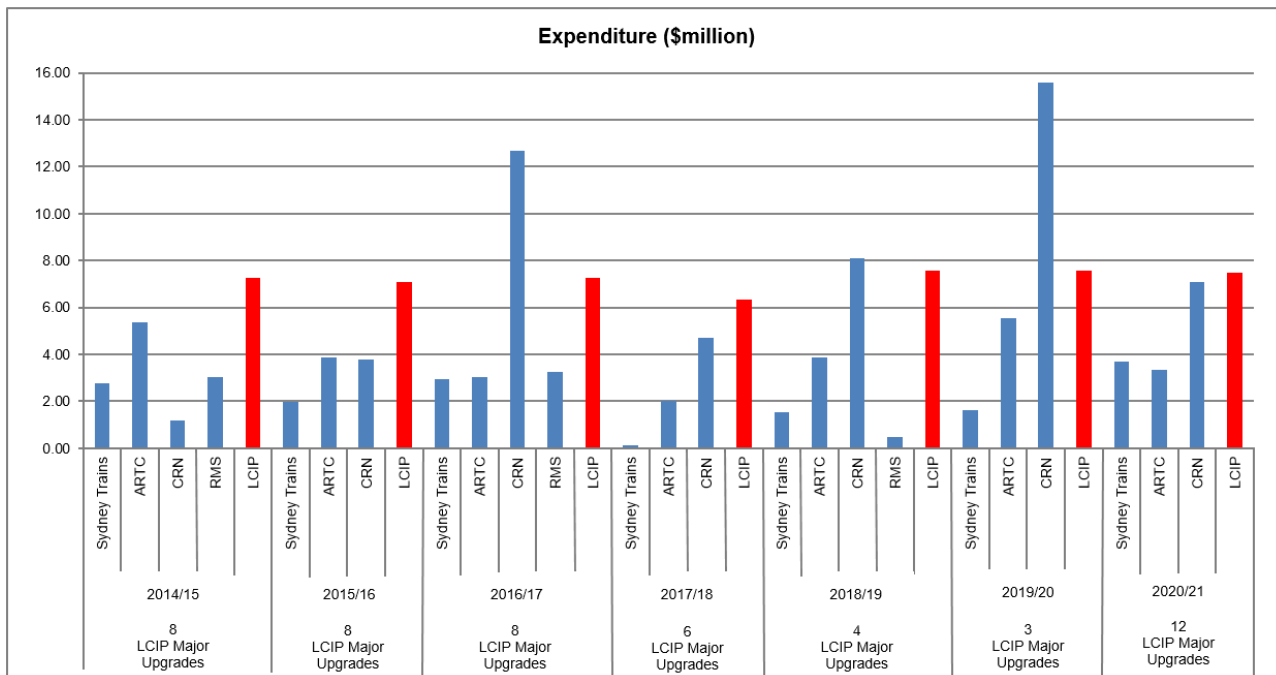
⁴ Includes \$2.5 million provided by RailCorp and \$5.0 million provided by RMS

Appendix A: Total LCIP 2020-21 work completed

Table 11: Total LCIP 2020-21 work completed

Location	Electorate	Value \$
Construction projects		
LX572 Mills Road Towrang	Goulburn	109,908
LX1908 Murrays Flat Road Towrang	Goulburn	156,860
LX583 Jerrawa Road Jerrawa	Goulburn	104,826
LX1143 Wirrinya Road Wirrinya	Orange	135,681
LX1301 Ulan Wollar Road Wollar	Upper Hunter	210,664
LX515 Bulunbulun Road Breeza	Tamworth	173,000
LX366 Mt Fairy Road Mt Fairy	Monaro	688,000
LX260 Myall Park Road Yenda	Murray	688,000
LX980 Akuna Road Parkes	Orange	127,000
LX651 Tarana Road Tarana	Bathurst	445,000
LX466 Merriwa Road Willow Tree	Upper Hunter	113,000
LX707 Eulomogo Road Dubbo	Dubbo	688,000
LX696 Maxwell Street Wellington	Dubbo	688,000
LX669 Whiley Road Spring Hill	Orange	688,000
LX398 Irrigation Way Leeton	Murray	535,000
	Sub Total	\$5,550,939
Other safer level crossings initiatives		
Minor works – road speed limits reduction at active level crossings		500,000
Trial and Technologies – Trial of GCP Integrated Level Crossing Solution		250,000
Trial and Technologies – ACRI level crossing research project		50,000
Level Crossing Education and Enforcement Campaigns		838,536
ALCAM Data Verification project		29,730
National ALCAM Contribution		80,000
Level crossing policy and strategy development		175,850
	Sub Total	\$1,924,116
	Total	\$7,475,055

Appendix B: Expenditure on level crossing upgrades in NSW funded through the LCIP and by RIMs and road managers 2014-15 to 2020-21



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