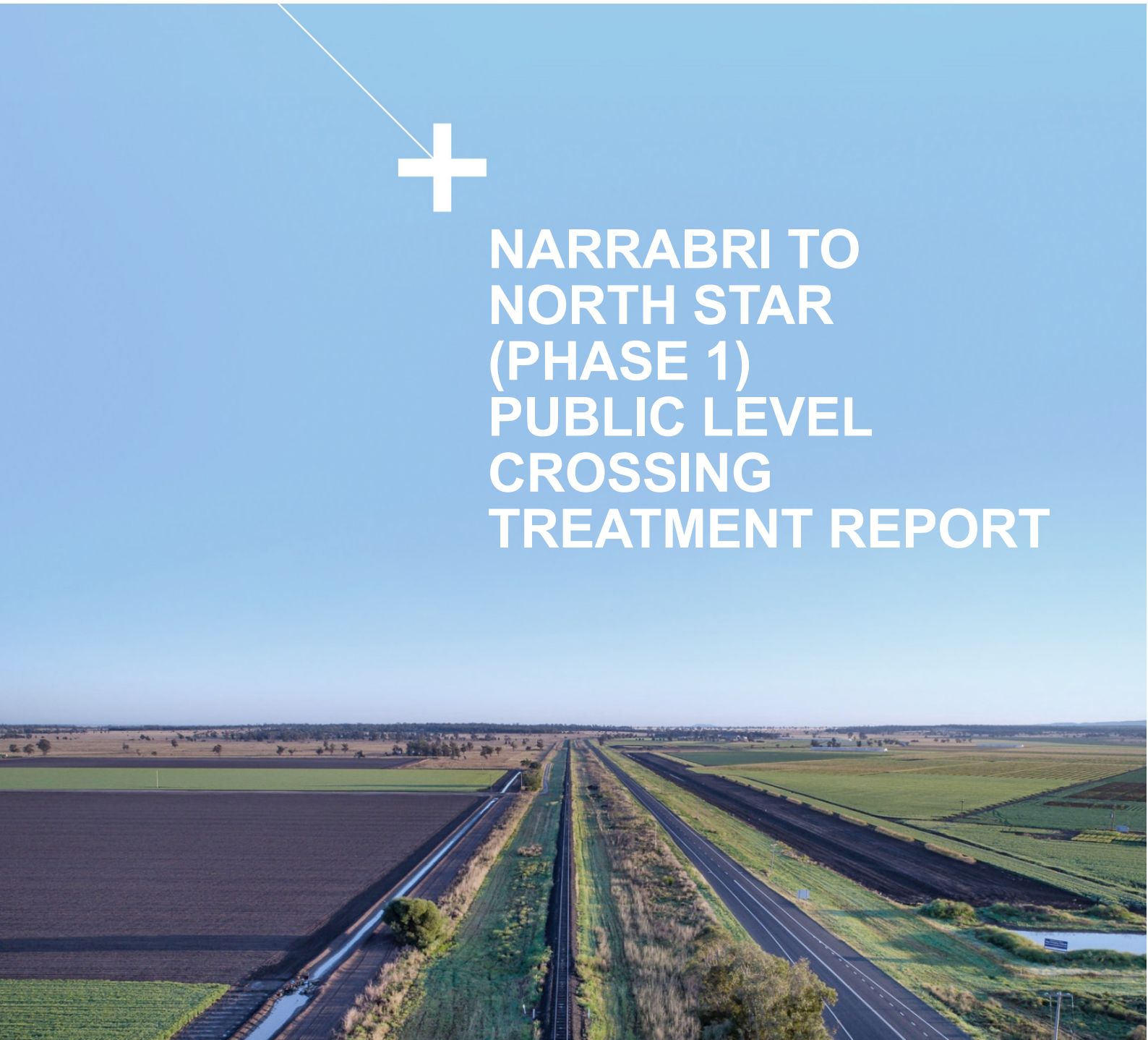




**NARRABRI TO
NORTH STAR
(PHASE 1)
PUBLIC LEVEL
CROSSING
TREATMENT REPORT**



Revision History

REVISION	REVISION DATE	DESCRIPTION
A	04/03/2020	Draft Issue received IRDJV for Inland Rail Input
B	08/12/2020	Draft version with N2NS approved CoA
0	24/02/2021	Approved for submission to the Department of Planning, Industry and Environment

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1 Glossary

A complete Glossary of Terms can be found by accessing the [Inland Rail Intranet Page](#) (click to access) and then selecting the Inland Rail Glossary link under the heading “Important Documents”.

ALCAM	AUSTRALIAN LEVEL CROSSING ASSESSMENT MODEL
ARTC	Australian Rail Track Corporation
IR	Inland Rail
CBA	Cost Benefit Analysis
CSSI	Critical State Significant Infrastructure
GDF	Grossly Disproportionate Factor
IRDJV	Inland Rail Design Joint Venture – WSP MM legal entity
LGA	Local Government Area
LX	Level Crossing
N2NS	Narrabri to North Star
ONRSR	Office of the National Rail Safety Regulator
RISSB	Rail Industry Safety and Standards Board
RMS	Former Roads and Maritime Services. Now TfNSW
SFAIRP	So Far as Is Reasonably Practical
TfNSW	Transport for New South Wales
WSP MM	WSP Australia Mott MacDonald trading as IRDJV
P1	Phase 1 - 171km of track between Narrabri and North Star, excluding works over the Mehi–Gwydir floodplain.

2 Introduction

Inland Rail is an Australian Government funded project which forms part of the Department of Infrastructure, Regional Development and Cities portfolio. In late 2013, the former Deputy Prime Minister, the Hon Warren Truss MP, established the Inland Rail Implementation Group to provide high-level leadership for the implementation of Inland Rail. ARTC has been appointed to deliver Inland Rail in partnership with the private sector.

Inland Rail is a once-in-a-generation project connecting regional Australia to domestic and international markets, transforming the way freight is moved around the country, creating opportunities for regional workforces and delivering economic and social benefits for local communities.

As Australia's largest infrastructure project, the 1,700km Inland Rail corridor will complete the spine of the national freight network between Melbourne and Brisbane via regional Victoria, New South Wales and Queensland.

In accordance with condition E43 of the Planning Approval, this report:

- ▶ Illustrates the location of all public level crossings which traverse the CSSI
- ▶ Lists and identifies on a figure, any public level crossings that will be closed or upgraded, including the type of treatment proposed where a level crossing is to be upgraded
- ▶ Where no works are proposed at a public crossing, the report provides reason for the decision
- ▶ Consider measures to avoid potential short stacking at level crossings
- ▶ Provide justification for any proposed closures
- ▶ Includes an assessment of the road risks, consistent with the guideline Railway Crossing Safety Series 2011, Plan: Establishing a Railway Crossing Safety Management Plan (NSW Roads and Traffic Authority, 2011)

2.1 Background

The Narrabri to North Star section is one of the 13 projects that completes the Inland Rail corridor. The project involves upgrading approximately 188 kilometres of existing track with a small greenfield area of new track at Camurra, north of Moree.

Since 2017, Narrabri to North Star (N2NS) has been fast-tracked as the second project slated for construction, with the Environmental Impact Statement (EIS) on public display in late 2017 and Detailed Design underway from 2018. As part of the EIS process, and in order to allow N2NS to proceed, the more complex section of track between Moree and Camurra has been separated.

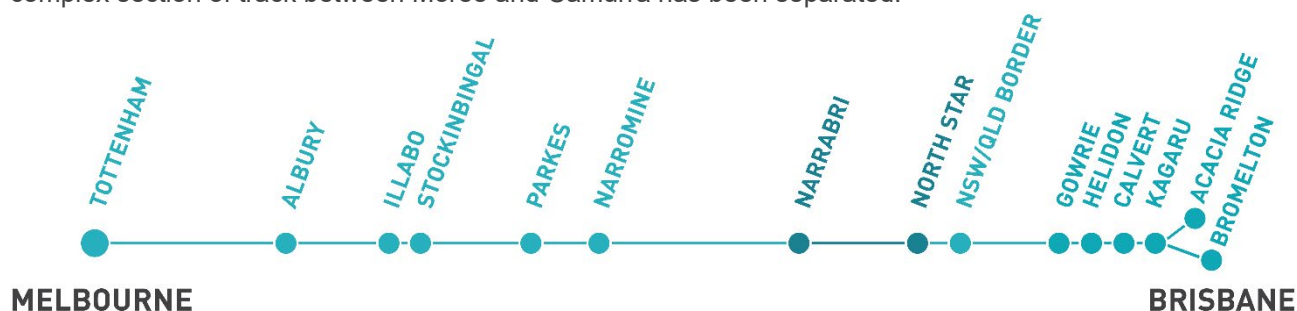


Figure 1: Inland Rail program

Due to design complexities associated with flood management, the project has been divided into two portions, known as Phase 1 and Phase 2. ***This report relates to Phase 1 only.***

This approach enables construction to continue on schedule for the majority of the project, while environmental approvals are finalised on the Mehi–Gwydir floodplain.

- ▶ **PHASE 1:** Upgrading 171km of track between Narrabri and North Star, excluding works over the Mehi–Gwydir floodplain. Trans4m Rail, a joint venture between contractors John Holland and SEE Civil, was announced in November 2020 as the principal contractor for Phase 1 works.
- ▶ **Phase 2:** Upgrading 15km of track crossing the Mehi–Gwydir floodplain and building 2.3km of new track at Camurra to bypass the existing hairpin turn. This portion of the project will go through a new approvals process and consultation to make sure that railway structures across the Mehi–Gwydir floodplain meet local community expectations and the NSW Government’s planning and floodplain management policies.

The assessment of level crossings utilise the Australian Level Crossing Assessment Model (ALCAM). The process for determining the type of level crossing treatment is consistent with the methodology outlined in “*Public Level Crossing Treatment Methodology*” of the Submissions Report.

In the treatment report it states that ARTC key principles guiding the decision-making process for determining treatments at public level crossings includes:

- ▶ Utilising a risk-based decision-making process focused on minimising risk so far as is reasonably
- ▶ Consistency in the determination of level crossing treatments across the projects of the Inland Rail
- ▶ Consistent methodology used in the determination of whether the cost of the potential available treatment is grossly disproportionate to the level of risk to safety and the projected benefits; and
- ▶ Ensuring the feasibility of the Inland Rail Program by proposing cost-effective solutions.

2.2 Planning Approvals

Inland Rail submitted a State Significant Infrastructure (SSI) application to construct and operate the N2NS project under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The project was subsequently declared State Significant Infrastructure in November 2017 by the Department of Planning and Environment. The Department placed the N2NS Environmental Impact Statement on exhibition from November 15, 2017 to December 15, 2017.

The project is also subject to approval under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

YEAR	ASSESSMENT
2016	An Environmental Impact Statement (EIS) in accordance with the requirements of Division 5.2 of the EP&A Act. The EIS addressed the environmental assessment requirements of the Secretary of the Department of Planning and Environment
2016	N2NS project is determined State significant infrastructure under section 5.12 (formerly section 115U) of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act).
2017	Preparation of the EIS to support ARTC’s application for approval of the proposal as critical State significant infrastructure in accordance with the requirements of Division 5.2 of the EP&A Act.

YEAR	ASSESSMENT
2017	The EIS is exhibited to the public for submissions. 18 submissions were received.
2020	The DPIE accepted public submissions on the SPIR. The SPIR was prepared to address the issues raised in submissions and to complete environmental assessments of the finalised design.
2020	The DPIE and the Minister for Planning and Public Spaces set conditions of approval under the EP&A Act.
2020	Commonwealth Minister for Environment to set further conditions under the EPBC Act.

2.3 Conditions of approval applicable to the Public Level Crossing Report

CONDITION REFERENCE	REQUIREMENT	REFERENCE IN REPORT	COMPLIANCE
E43 a)	Illustrate the location of all public level crossings which traverse the CSSI	Appendix B	Appendix B illustrates the location of all public level crossings on the CSSI
E43 b)	List, and identify on a figure, any public level crossings that will be closed or upgraded, including the type of treatment proposed where a level crossing is to be upgraded;	Appendix B and C	Appendix B and C outlines the level crossings to be upgraded and closed including the proposed treatments
E43 c)	Where no works are proposed at a public crossing, provide reason for the decision	Appendix C	ARTC is completing works at all public level crossings within the CSSI
E43 d)	Consider measures to avoid potential short-stacking at level crossings	Section 3.2 and 3.3	Short stacking risks have been mitigated. See section 3.2 and section 3.3
E43 e)	Provide justification for any proposed closures	Appendix D	Justification is included in section 6.2 and Appendix D
E43	The assessment of level crossings must utilise the Australian Level Crossing Assessment Model (ALCAM). The process for determining the type of level crossing treatment must be consistent with the methodology outlined in Appendix L of the Submissions Preferred Infrastructure Report	Section 6 and Appendix C	The methodology followed, consistent with Appendix L of the SPIR and, is detailed in Section 6 of this report. Further detail is included in Appendix C.

CONDITION REFERENCE	REQUIREMENT	REFERENCE IN REPORT	COMPLIANCE
E43	The report must include an assessment of the road risks, consistent with the guideline Railway Crossing Safety Series 2011, Plan: Establishing a Railway Crossing Safety Management Plan (NSW Roads and Traffic Authority, 2011)	Appendix E	The assessment of road risks is included in appendix E
E43	The design of any level crossing on a public road must be endorsed by Transport for NSW or the relevant road authority (where not TFNSW) prior to commencing construction of that crossing	n/a	ARTC will receive written endorsement from the relevant road authority before works on the level crossing commence
E43	The Public Level Crossing Treatment Report and Private Level Crossing Treatment Report must be submitted to the Planning Secretary for information at least one (1) month prior to the closure or upgrade of a public or private level crossing, as relevant. Individual reports may be submitted for each crossing or address a group of crossings or the entire CSSI.	n/a	ARTC will submit the report "Public Level Crossing Treatment" to the Secretary at least one month before the closure or upgrade of a public level crossing.

3 Consultation

3.1 Overview

Inland Rail's values commit the organisation to active engagement with stakeholders and the community; therefore, a comprehensive consultation program has been undertaken throughout the planning and design phases of the N2NS Inland Rail project.

Effective communication and stakeholder engagement are fundamental to reducing risk, optimising the route alignment, and minimising social and environmental impacts. Inland Rail believes that identifying, engaging, and effectively communicating with stakeholders is critical to the successful delivery of Inland Rail.

ARTC has conducted extensive consultation with key level crossing stakeholders including Narrabri, Moree Plains & Gwydir Shire Councils and TfNSW during the planning and detailed design of the Narrabri to North Star public level crossings. All consultation has been done in line with the N2NS Communication Strategy including the consultation on public level crossings.

Information sharing agreements have been established to enable the prompt transfer of information between councils and the project team. This information included inputs into the design process including road traffic counts, proposed changes in road usage and feedback on any future development plans.

The following sections outline key consultation activities conducted with each of the stakeholders during the design of the public level crossings. Inland Rail will continue to consult and work closely with these key stakeholders during the construction and operation of N2NS.

Correspondence related to the consultation activities is included in Appendix A. Other evidence as outlined below, is held by ARTC and can be provided on request to the Secretary or Environmental Representative.

3.2 Consultation with TfNSW

There has been several workshops, presentations and meetings with TfNSW (formally RMS) during the design process which are summarised below.

3.2.1 Key issues raised during consultation with TfNSW

ITEM	ISSUE RAISED	ARTC RESPONSE	OUTCOME	CLOSED/OPEN
1	TfNSW noted that the policy adopted for active upgrades in NSW which are delivered under the State Level Crossing Improvement Program (LCIP) is that all active upgrades are to boom barriers and flashing lights rather than flashing lights only	ARTC has adopted this position for Inland Rail	All active upgrades on N2NS include boom barriers and flashing lights	Closed
2	TfNSW noted that there are two level crossing policies in NSW for consideration as part of the level crossing design process	ARTC noted that the TfNSW "crossing closure" and "New Level Crossing" policies would be reviewed as part of the design process	Noted	Closed
3	TfNSW asked for an update on how ARTC were maximising crossing closures on N2NS	ARTC provided an update on the public crossing closure process, noting that 1 public crossing would be closed on N2NS. ARTC discussed their proposed approach to incentivise landowners to close private crossings which was supported by TfNSW	All closures will proceed in accordance with the requirements of the Transport Administration Act 1998	Formal gazettal's of closures being progressed with TFNSW
4	TFNSW sought clarification on what train speed was adopted for the ALCAM assessments in sections where the XPT operates at speeds of up to 145km/h (between Narrabri to Moree).	While the rail operational speed for Inland Rail is 115km/h, the speed used in the ALCAM assessments is the higher of the IR speed or the passenger train speed for that crossing.	No further action required	Closed
5	ARTC proposed to reduce the road speed limit through active level crossings from 100km/h to 80km/h. TFNSW(RMS) noted that this treatment was inconsistent with the RMS speed zoning guidelines and would not be supported.	ARTC did not progress this proposal.	The existing speed limits will remain unchanged.	Closed
6	Concerns regarding the raising of the rail line and the subsequent gradient leading onto and off the crossing,	All Level Crossing approach roads have	No further action required	Closed

ITEM	ISSUE RAISED	ARTC RESPONSE	OUTCOME	CLOSED/OPEN
	resulting in potential safety issues if required to stop.	been designed to standard.		
7	TfNSW sought feedback on what measures ARTC had considered to avoid potential short stacking at level crossings, with reference to the private crossing adjacent to the Newell Highway.	ARTC reviewed all level crossings for short stacking and confirmed the available stacking distance is consistent with the requirements in AS1742.7 (2016). Potential short stacking was identified at several private level crossing interfaces with the Newell Highway. These were designed out.	No further action required	Closed
8	Clarification was sought on how road operating speeds were determined	The required information was provided in the design report.	No further action required	Closed

3.3 Consultation with Narrabri Shire Council

Communication activities with, and issues raised by Narrabri Shire Council (NSC) are summarised below.

3.3.1 Key issues raised during consultation with Narrabri Shire Council

ITEM	ISSUE RAISED	ARTC RESPONSE	OUTCOME	CLOSED / OPEN
1	Level Crossing Closure Proposal	Council to undertake site visits to better understand closure locations.	Council advised they do not support a closure of LX548 or LX1827.	Closed
2	Approaches with increased grades should consider the use of installing culverts	Some road approaches had an increased grade (for both incoming and outgoing grades), (e.g. Moree Road, Ten Mile Lane, Sports Ground Road).	Road grades reviewed and updated to meet council requirements. Bigger diameter culverts not required.	Closed
3	Council requested a review of the seal design on the approach to level crossings.	Narrabri Shire Council requested the full approach to be sealed where the crossing were adjacent to the Newell highway (seal to the highway)	Agreed -Full length of new road approaches sealed where adjacent to the Newell.	Closed

ITEM	ISSUE RAISED	ARTC RESPONSE	OUTCOME	CLOSED / OPEN
4	ARTC presented all proposed level crossing treatments to NSC.	Council reviewed the proposed treatments for all NSC public level crossings. Council agreed with the proposed treatments which included the activation of two-level crossings – Tarlee Road and Millie Road – Council noted that Millie Rd is one of their busier roads.	LX 549 (Millie Rd) and LX 543 (Tarlee Rd) are being upgraded to RX-5 + Booms	Closed
5	Sighting distances to be reviewed to ensure compliance to standards	Road alignments have been updated to ensure sighting compliance is achieved at all locations	Item closed	Closed
6	Council noted that TfNSW had produced a guideline on short stacking signage.	ARTC noted they are reworking the design to resolve all short stacking issues	Short stacking issues have been resolved on all N2NS level crossings	Closed
7	Discussion with council around seal length around LX	Unless otherwise agreed by council, a 15 metre seal will be adopted for all approach roads for public level crossings	Agreement reached with Councils	Closed

3.4 Consultation with Moree Plains Shire Council

Communication activities with, and issues raised by Moree Plains Shire Council are summarised below.

3.4.1 Key issues raised during consultation with Moree Plains Shire Council

ITEM	ISSUE RAISED	ARTC RESPONSE	OUTCOME	CLOSED / OPEN
	ARTC proposed a number of level crossing closures to council (LX1828, , LX1829 and LX1559). Aside from LX559, these were all minor roads.	Traffic information and site details in relation to the proposed closure locations was provided to council.	Council advised that for LX551, MPSC were the road manager and that council supported the closure of this crossing.	Closed -Formal closure process progressing for LX551
	Council noted that they were not the road manager for several crossings which were initially identified as council roads	ARTC undertook a detailed property review off all locations to confirm the road ownership	Agreement was reached with council as to the correct road manager for each level crossing within MPSC	Closed

ITEM	ISSUE RAISED	ARTC RESPONSE	OUTCOME	CLOSED / OPEN
6	Lighting requirements for straight approaches to an active control were discussed.	Crossings were reviewed against the RMS lighting for railway crossings guideline.	Within the MPSC lighting requirements have been provided on Bullus Drive (LX560) with existing lighting assets at Gurley Creek Road (LX554) and Penneys Road (LX552) to remain. No further action required	Closed
8	Design speed different to Posted speed for four active crossings.	Council concurs that road geometry limits the legal speed being achieved for LX552, LX558 and LX559 and agrees with the lesser design speed nominated in each case.	No further actions required	Closed

3.5 Consultation with Gwydir Shire Council

Communication activities with, and issues raised by Gwydir Shire Council are summarised below.

3.5.1 Key issues raised during consultation with Gwydir Shire Council

ITEM	ISSUE RAISED	ARTC RESPONSE	OUTCOME	OPEN/CLOSED
1	ARTC proposed a number of level crossing closures to council..	Traffic information and site details in relation to the proposed closure locations was provided to council.	Council advised that neither crossings are council managed. Both locations confirmed as being private crossings.	Closed –
2	Council noted that they were not the road manager for a number of crossings which were initially identified as council roads	ARTC undertook a detailed property review off all locations to confirm the road ownership	Agreement was reached with council as to the correct road manager for each level crossing within GSC	Closed
3	It was raised that golfers are illegally crossing the rail to access both side of the Croppa Creek Golf Club	ARTC reviewed the location	New pedestrian crossing to be provided to facilitate golf club pedestrian users and improve community access across the rail line at LX918 (Buckie Road)	Closed
4	Confirmation of road width for level crossings	Road width agreed with Gwydir Shire Council.	No further action required	Closed
5	Inadequate property access at LX916	Revised approach roads to be realigned	Additional property accesses provided	Closed

ITEM	ISSUE RAISED	ARTC RESPONSE	OUTCOME	OPEN/CLOSED
6	Side road for LX913 (Crooble Croppa Creek Road) does not appear to accommodate for road trains	Side road connecting Gil Gil Creek Road to be updated to accommodate 36.5m B-triples	Design updated to accommodate B-triple turn movements	Closed
7	Council have raised the use of non-standard machinery at LX920.	This road is currently gazetted for b-doubles and ARTC have confirmed that the LX will also be compliant for 36.5m B-triples. This LX is currently designed as a complaint passive level crossing as per AS1742.7. Council have requested an active LX.	Discussions continuing with Council.	Open

4 Summary of location and treatment for public level crossings

Location and treatment for public level crossings within the project extent is illustrated in figures included in Appendix B.

5 Level crossing assessment

Level crossings have been assessed in accordance with the public level crossing treatment methodology detailed in Appendix L “*Public Level Crossing Treatment Methodology*” of the N2NS Submissions Preferred Infrastructure Report.

The key principles that guided the decision-making process for determining treatments at public level crossings are noted below:

- ▶ Utilising a risk-based decision-making process focused on minimising risk so far as is reasonably practicable (SFAIRP);
- ▶ Consistency in determining public level crossing treatments across the projects of the Inland Rail Programme;
- ▶ Consistent methodology used to determine whether the cost of potential treatment is grossly disproportionate to the level of risk to safety and the projected benefits; and
- ▶ Ensuring the feasibility of the Inland Rail Programme by proposing cost-effective solutions.

An overview of the process followed in assessing public level crossings and developing treatments is outlined in the following sections. Refer to Appendix C for a summary of the assessment for each public level crossing.

5.1 Identification of all public level crossings within the project area

An important objective of public level crossing investigations was the clear and accurate identification of all level crossings within the project area. The development of an initial level crossing list encompassed a review of existing level crossing datasets including the Australian Level Crossing Assessment Model (ALCAM) database, ARTC’s asset management database and any relevant property records. The Australian Transport Council in May 2003 agreed to adopt ALCAM as the only comprehensive level crossing assessment model in Australia. ALCAM is an assessment tool used to identify key potential risks at level crossings and assess the overall effects of proposed treatments.

Section 10 of ONRSR's Policy on Level Crossings (June 2016) provides support for the use of ALCAM as follows: *"ONRSR accepts the use of ALCAM as a tool to help prioritise investment (when used in conjunction with other relevant factors, such as recent occurrence history). This tool has been endorsed by state and territory ministers."*

The list of level crossings was then provided to the relevant road manager for review to ensure that all level crossings and associated Road Corridor Managers were correctly identified, and the data was updated to reflect any agreed changes. The road managers for all public crossings are documented in Appendix C.

6 Public level crossing closure review

6.1 Basis for level crossing closure review

In New South Wales, formal closure of a level crossing needs to be undertaken in accordance with the requirements of the *Transport Administration Act 1998* and requires Ministerial approval. Closure of legal level crossings within N2NS project will only be actioned following confirmation from the road manager (for public level crossings) of no objection to closure.

Initial consideration was given to the elimination of level crossing risks by assessing all level crossings for closure. This is in line with the Transport for New South Wales (TfNSW) Level Crossing Closures Policy, which notes that:

"in order to manage the risks to safety associated with road and rail interfaces, the closure of public and private level crossings in NSW is to be pursued, where it is practical and cost effective to do so"

6.2 Assessment of public level crossings for closure

An assessment of the potential traffic and other impacts of closing level crossings was undertaken.

The potential closure of each of the existing level crossings was assessed. Each was reviewed considering traffic volumes and alternative routes, along with land use, property ownership and any special user groups which may use the level crossing.

Crossings that could potentially be closed were identified where:

- ▶ Traffic volumes are (relatively) low;
- ▶ Alternative legal access is available or reasonably achievable; and
- ▶ The imposition on road users is not considered unreasonable, considering Rail Industry Safety and Standards Board (RISSB) level crossing consolidation guideline.

Further information is included in Appendix D.

Assessments also identified where closure may require construction of an alternative route or other works roadworks to facilitate removing an access across the railway.

Following review of the proposed closure locations by the relevant road managers the permanent closure of one public road level crossing (LX551 Bellata Pits) on the N2NS section is being progressed by ARTC in accordance with the requirements of the NSW Transport Administration Act 1988. Refer to Section 7 and Appendix D for more details

MPSC have noted they may investigate restricting LX559 Burrington Road to an emergency access crossing at some point in the future. This is not within the current IR scope.

6.3 Criteria for automatic grade separation

ARTC's policy as per Appendix L of the Submission Report is that rail-road interfaces will be automatically grade separated in the following instances:

- ▶ Rail-road crossings with four rail tracks (current);
- ▶ Rail-road crossings of freeways and highways of four or more lanes (current and committed plans);
- ▶ Where grade separation is the logical option for engineering or topographical reasons.

No level crossing within N2NS project extent met the above criteria.

All public level crossings which do not meet the automatic grade separation criteria are to be assessed using the Level Crossing Risk Tool, in order to determine the appropriate crossing treatment, which may still be that the crossing be grade separated. Further detail on the risk tool is included below.

6.4 Level crossing risk tool

Where closure is not feasible, a methodology was developed to identify risk treatments to be implemented at each individual level crossing. This methodology was formalised in the level crossing risk tool which identified risk treatments and assisted Inland Rail to demonstrate that risks to safety would be managed So Far As Is Reasonably Practicable (SFAIRP) for both brownfield and greenfield interfaces.

In accordance with the Office of the National Rail Safety Regulator's (ONRSR's) recommendation on the use of quantitative risk assessment techniques, a decision was made to develop a tool which moved away from a "warrant" approach (e.g. decisions around control types based on basic metrics such as road type or traffic volumes) to a cost benefit analysis (CBA) approach for safety risk management. The approach utilises ALCAM as one of the main inputs into the decision process for the recommended level of control at Inland Rail level crossings.

Consideration of factors other than ALCAM that may influence the recommended level of control were also considered, where relevant on a case-by-case basis, including:

- ▶ Collision and near-collision history;
- ▶ Engineering experience (both rail and road);
- ▶ Traffic and transport impacts; and
- ▶ Local knowledge of driver and pedestrian behaviour.

Level crossing treatment (control) options considered as part of the process included:

- ▶ Upgrade of RX-2 passive (stop sign) level crossings to RX-5 active (flashing lights and boom barrier) control;
- ▶ Upgrade of existing RX-5 flashing light-controlled level crossings to include boom barriers;
- ▶ Retain existing RX-2 passive controls and renew the level crossing infrastructure, including signage and road markings, to ensure that the crossing complies with the Australian Standard;
- ▶ Grade separation; and
- ▶ Other treatments identified based on-site specific risks.

Transport for New South Wales (TfNSW) Level Crossing polices have been considered in the development of the proposed treatments, including:

- ▶ the *Level Crossing Closures Policy*; and
- ▶ the *Construction of New Level Crossings Policy*.

In order to be consistent with the TfNSW Level Crossing Improvement Program (LCIP), Inland Rail have also adopted the position that all upgrades to active controls (RX-5) will include boom gate barriers in addition to the flashing lights and bells.

6.5 Cost benefit analysis (CBA)

Part of the test as to whether risks have been managed SFAIRP was to determine whether the cost of the additional control was grossly disproportionate to the benefit gained via a CBA. From a financial perspective, to do the CBA, three key inputs were required:

- ▶ *The avoided cost if an additional risk control is implemented* – ALCAM provided a quantitative measure of risk reduction generated by changing the controls at the level crossing. Risk reduction (benefits) could be calculated by comparing two risk scores for two scenarios – for example one proposal with stop signs and one with flashing lights and boom barriers. ALCAM is focused on safety risks and encompasses the costs of fatalities and injuries resulting from a road rail collision.
- ▶ *The cost of implementing the additional risk control* – This was a combination of the capital cost of the additional control and the annual maintenance and repair cost over the life of the additional control
- ▶ *What would be considered grossly disproportionate* – From a legal perspective the ONRSR *Meaning of Duty to Ensure Safety So Far As Is Reasonably Practicable Guideline* provided guidance on what would be considered grossly disproportionate through considering a Grossly Disproportionate Factor (GDF). The guideline suggested that the GDF may be dependent on the likelihood and consequence with low risks having a factor of 2 and high risk having a factor of 10.

6.6 The use of ALCAM assessments in the determination of level crossing treatments

ALCAM assessments have been undertaken for public road level crossings in their existing configuration, thus providing a baseline risk score. The “proposal” functionality in the ALCAM system was used to model the ALCAM risk score assuming the project proceeds. This incorporates forecast changes to train speeds, volumes and train lengths. For the N2NS project, this assessment assumed the maximum operational train speed and the forecasted road and train volumes. This aligns with the EIS timeframes.

Updated road traffic counts, including a breakdown between light and heavy vehicles, have also been collected for all public roads and included in this analysis. In parallel, Inland Rail reviewed the ONRSR incident data to determine road rail collisions at the respective level crossings.

The next level of control was applied at level crossings assessed as being non-compliant for the existing control. For example, where sufficient sighting distance for a stop sign crossing could not be achieved as a result of increased train speeds, as per Australian Standard 1742.7-2016 (Manual of uniform traffic control devices Part 7: Railway crossings) the minimum control would be flashing lights and boom barriers. Even for level crossings compliant for the current control, the next level of control was modelled in ALCAM and a cost-benefit/grossly disproportionate analysis undertaken. Additional levels of control were modelled and a cost-benefit/gross disproportionate analysis carried out for each until the risk factor was reduced and a cost-effective level of crossing protection established.

6.7 Preliminary design

Preliminary design was first undertaken to confirm that a level crossing with the proposed control, compliant with the relevant standards, could be constructed onsite. This design incorporated the appropriate road design standards as directed by the relevant road infrastructure manager.

The design has been completed such that all level crossings remaining as part of the final works will be upgraded/constructed to comply with AS/RISSB 7658:2012 “Railway Infrastructure – Railway Level Crossings”, AS1742.7 (2016) “Manual of Uniform Traffic Control Devices Railway Crossings” and other road authority standards, and to address SFAIRP any safety deficiencies identified through the design and risk assessment process.

Site specific level crossing treatments were then reviewed with the respective road infrastructure managers as the project progressed through detailed design.

6.8 Interface agreements

In accordance with National and State Rail Safety Law requirements, all current and proposed public road crossings will be subject to an Interface Agreement. Where not already completed, all interface agreements will be updated following commissioning of the upgraded crossings.

7 Closure of level crossings

An assessment of level crossings that could potentially be closed in accordance with the criteria specified in Section 4.2 was undertaken (where traffic volumes are low, legal access is alternatively available or reasonably achievable and the imposition on road users is not considered unreasonable). The assessment is summarised in Appendix D.

Following consideration of the closure assessment and consultation Inland Rail undertook with the relevant stakeholders, Inland Rail is progressing with the permanent closure of LX551.

8 Assessment of the road risks

An assessment of the road risks, consistent with the guidelines Railway Crossing Safety Series 2011 (NSW Roads and Traffic Authority, 2011) was undertaken. The assessment is included in Appendix E.

The process follows the following steps:

- ▶ Identify the safety risks, hazards and hazardous events at each level crossing.
- ▶ Evaluate the mechanisms of crash causation at a level crossing, applying the railway crossing cause/consequence bow tie model. Select safety management measures that are appropriate for the risk and that will minimise that risk, so far as is reasonably practicable; and
- ▶ Assess the risk at each level crossing, applying risk tolerance and risk assessment processes.

The risk assessment was undertaken on the proposed configuration for each level crossing at the completion of the detailed design. The assessment shows that all risks are rated at no greater than low level, SFAIRP

APPENDIX A – Correspondence with Key Stakeholders

8.1.1 Transport for NSW

ITEM	METHOD OF COMMUNICATION	DATE	TOPIC ADDRESSED
1	Workshop	Feb 2017	General Programme overview – ARTC & TfNSW with DIRD as observers. Level Crossing section addressed the IR Road Rail Crossing Strategy, the grade separation policy, the level crossing risk tool and treatment options
2	Meeting	May 2017	Meeting with ARTC and TfNSW with DIRD as observers to discuss a number of NSW projects including I2S, NS2B and N2NS. This incorporated a level crossing update
3	Presentation	May 2017	Presentation to the TfNSW Level Crossing Policy and Program manager on the IR Road Rail Strategy, IR grade separation policy, Level Crossing Risk Tool, IR Road Rail Investigation & Design Procedure and ARTC also provided a breakdown of the proposed numbers of public and private road rail interfaces across NSW
4	Presentation	June 2018	Presented to the NSW Level Crossing Strategy Council which is chaired by TfNSW. Provided an overview of the IR Road Rail Strategy and the Public LX treatment approach, provided a breakdown of the number of proposed public road rail interfaces by project across NSW.
5	Meeting - Presentation	November 2018	Level Crossing strategy update to TfNSW. Presented a breakdown of proposed public road rail interfaces by project area and discussed the public level crossing treatment methodology, crossing closures, provided an update on the Parkes to Narromine project and the P2N public Level crossing treatment report.
6	Email	Dec 2018	Alice St Level Crossing Moree – TCS Phase adjustments
7	Meeting	Dec 2018	Update on Jones Avenue overpass

ITEM	METHOD OF COMMUNICATION	DATE	TOPIC ADDRESSED
8	Email	Jan 2019	N2NS RMS comments Jones Avenue overpass
9	Meeting	May 2019	N2NS update meeting
10	Email	August 2019	RMS comments and advice on Phase 2
11	Email	October 2019	Comments on Final 100% design
12	Email	December 2019	Response on final 100% design

8.1.2 Narrabri Shire Council

ITEM	METHOD OF COMMUNICATION	DATE	TOPIC ADDRESSED
1	Phone call	Jan 2018	Call to Narrabri, Moree and Gwydir councils regarding future action on traffic management
2	Email	July-September 2018	Comments on changes in LX 544
3	Meeting	June 2019	Meeting with MPSC and NSC to discuss project update
4	Meeting	July 2018	Meeting to advise Council on Level Crossings and roads
5	Email	April 2019	Comments on 70% design for N2NS
6	Email	April 2019	Request for traffic information and operations to verify level crossing data
7	Email	May/June 2019	Comments on upgrading booms LX 544
8	Community Information Session (face2face)	January 2020	Attended a "Meet the shortlisted contractors" networking session held for local suppliers and sub-contractors. (Cr Cameron Staines)
9	Email	July 2020	Request to Review Narrabri Council PHASE 1 Level Crossings Comment Register (3-0000-260-CXR-00-CS-0001_C) (Anthony Smetanin)
10	Email	Aug 2020	Updated comments from PHASE 1 Level Crossings Comment Register (3-0000-260-CXR-00-CS-0001_C) (Anthony Smetanin)
11	Community Information Session (online)	September 2020	Attended: Phase 2 Online Information Session – Initial discussions
12	Email	October 2020	Review and approve LX pavement extensions drawings LX544, LX545, 546

13	Meeting (online)	September 2020	introduction to Principal Contractor (key contacts at council)
14	Meeting (face2face)	November 2020	More introduction to Principal Contractor (senior leaders at Council)
15	Email	October 2020	Council requested that a soft copy of the NSC level crossing memo which was presented at the meeting be provided to NSC. Council noted that they were happy with the degree of consultation which has been undertaken to date.
16	Email	October 2020	Council requested a copy of a typical arrangement to be sent for review (e.g. to show sealed or unsealed surfaces) – ARTC advised will be generally replacing 'like for like'
17	Meeting (face2face)	November 2020	Narrabri introduction to Principal Contractor (senior leaders at Council)

8.1.3 Gwydir Shire Council

ITEM	METHOD OF COMMUNICATION	DATE	TOPIC ADDRESSED
1	Phone call	Jan 2018	Call to Narrabri, Moree and Gwydir councils regarding future action on traffic management
2	Meeting	July 2018	Meeting to advise Council on Level Crossings and roads
3	Email	April 2019	Comments on 70% design for N2NS
4	Phone call	April 2019	Comments on road with for level crossings

ITEM	METHOD OF COMMUNICATION	DATE	TOPIC ADDRESSED
5	Email	February 2020	High level comments on design and asset owners for Level Crossings
6	Email	May 2020	Consultation with Gwydir regarding LX 918
7	Email	June 2020	Request for drawing: public level crossing LX 918 - Croppa Creek
8	Meeting	August 2020	Sign off on final design and LX comments register
9	Meeting (online)	September 2020	introduction to Principal Contractor (key contacts at council)
10	Email	October 2020	Essential Energy public lighting and connection consent request
11	Meeting (face2face)	November 2020	Moree introduction to Principal Contractor (senior leaders at Council)

8.1.4 Moree Plains Shire Council

ITEM	METHOD OF COMMUNICATION	DATE	TOPIC ADDRESSED
1	Phone call	Jan 2018	Call to Narrabri, Moree and Gwydir councils regarding future action on traffic management

ITEM	METHOD OF COMMUNICATION	DATE	TOPIC ADDRESSED
2	Meeting	October 2018	Discussion of Jones Avenue Bridge design
3	Email	December 2018	Discussions with MPSC and Infrastructure NSW on Jones Avenue Overpass
4	Phone call	February 2019	Call regarding closure of LX 551
5	Meeting	April 2019	PHASE 1 Level crossing detailed design 70%
6	Email	April 2019	PHASE 1 Level crossing detailed design 70%
7	Meeting	June 2019	Meeting with MPSC and NSC to discuss project update
8	Meeting	August 2019	Meeting to discuss status of Jones Avenue Overpass
9	Email	October 2019	Comments on 100% design for N2NS
10	Meeting (online)	June 2020	introduction to Principle Contractor (key contacts at council)
11	Emails	May	LX551 (Bommeri Pit) closure and alternate access
12	Emails	May	LX551 (Bommeri Pit) closure and alternate access
13	Emails	June	LX551 (Bommeri Pit) closure and alternate access
14	Emails	June	LX551 (Bommeri Pit) closure and alternate access

ITEM	METHOD OF COMMUNICATION	DATE	TOPIC ADDRESSED
15	Emails	June	LX551 (Bommeri Pit) closure and alternate access
16	Emails	June	LX551 (Bommeri Pit) closure and alternate access
17	Emails	August	LX551 (Bommeri Pit) closure and alternate access
18	Emails	August	LX551 (Bommeri Pit) closure and alternate access
19	Emails	August	LX551 (Bommeri Pit) closure and alternate access
20	Emails	August	LX551 (Bommeri Pit) closure and alternate access
21	Emails	November	LX551 (Bommeri Pit) closure and alternate access
22	Meeting (face2face)	November 2020	More introduction to Principle Contractor (senior leaders at Council)
23	Email	February 2021	Seeking clarification on road seal requirements

APPENDIX B – Level Crossing Locations

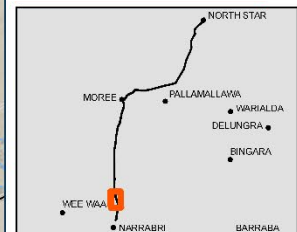
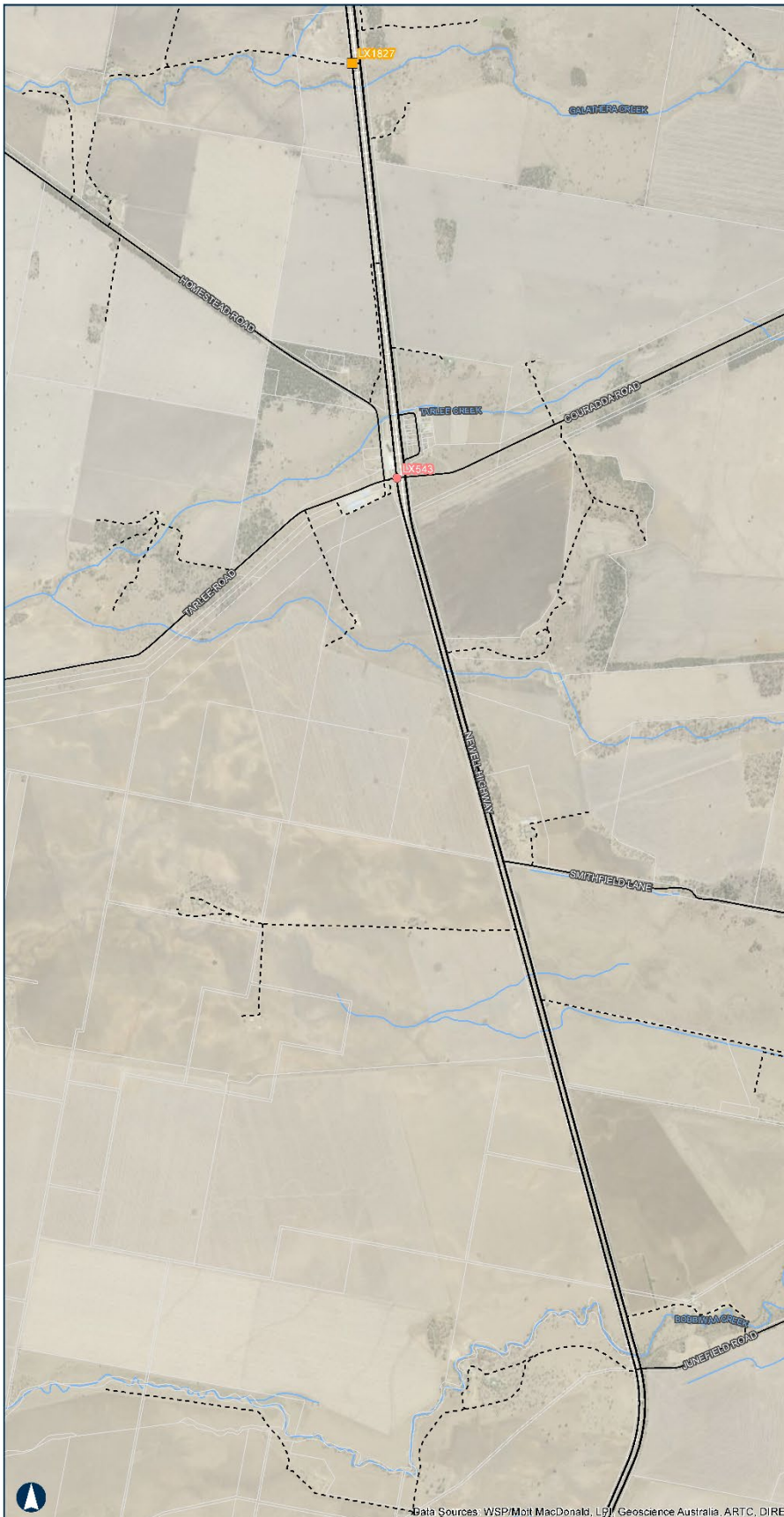
- (a) illustrate the location of all public level crossings which traverse the CSSI; (beginning at Narrabri, moving north)
(See maps below)

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NARRABRI TO NORTH STAR
Figure 2
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastre (LP)
- Public Level Crossings**
- RX-2
- ⊗ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



Coordinate System: GDA 1994 MGA Zone 55

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Date: 25-Jun-20
Author: IRDJV

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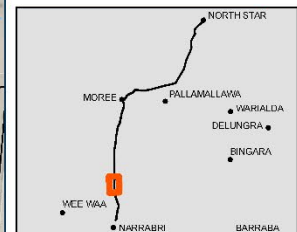
Data Sources: WSP/Mott MacDonald, LP, Geoscience Australia, ARTC, DIRE

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NARRABRI TO NORTH STAR
Figure 3
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastre (LPI)
- Public Level Crossings**
- RX-2
- ✘ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



1:500 Metres

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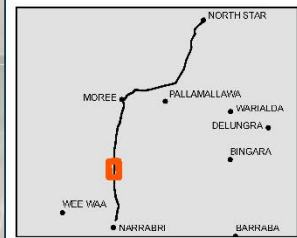
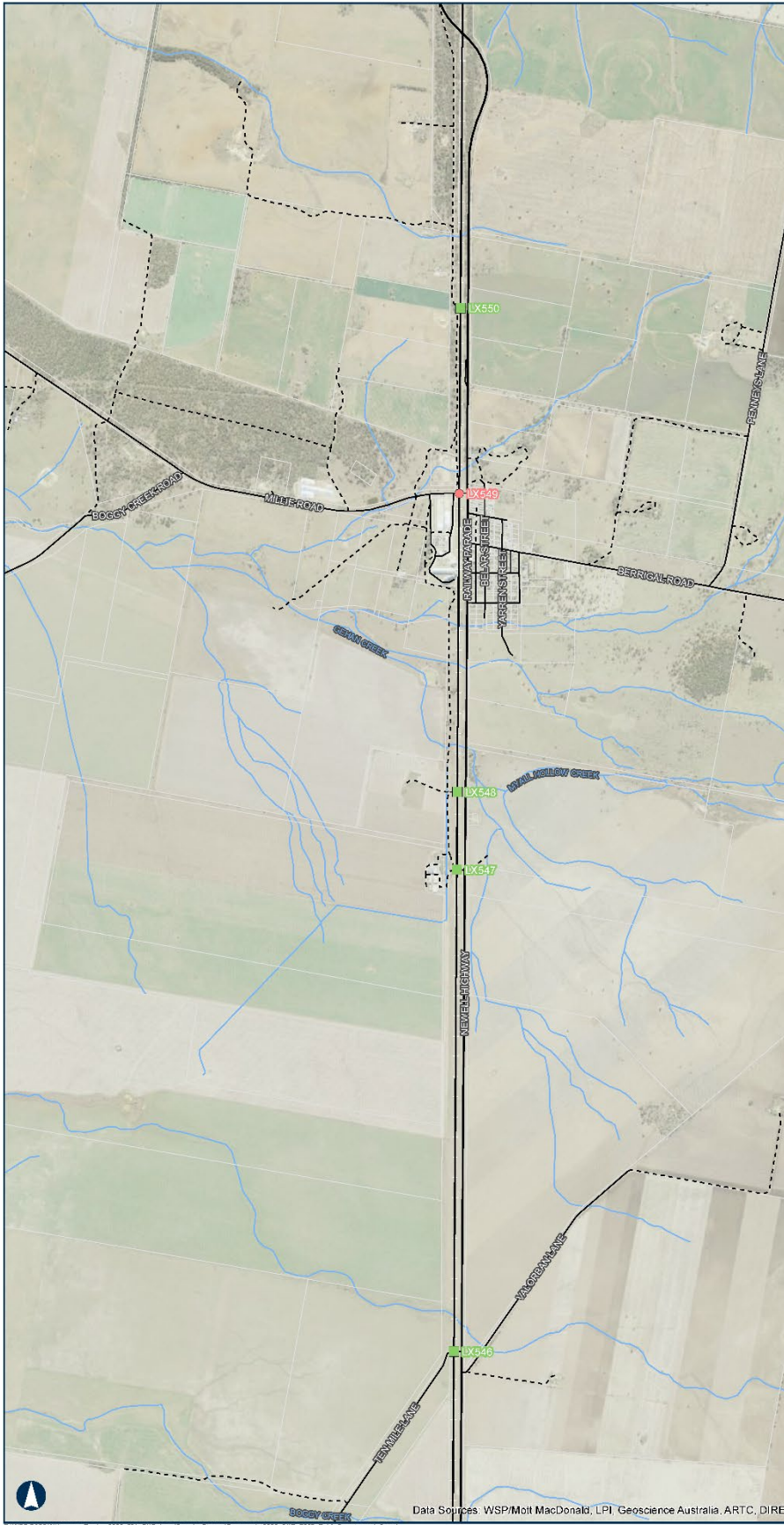
Data Sources: WSP/Mott MacDonald, LPI, Geoscience Australia, ARTC, DIRE

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NARRABRI TO NORTH STAR
Figure 4
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastre (LPI)
- Public Level Crossings**
- RX-2
- ✘ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



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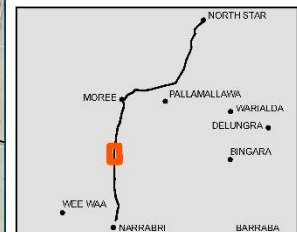
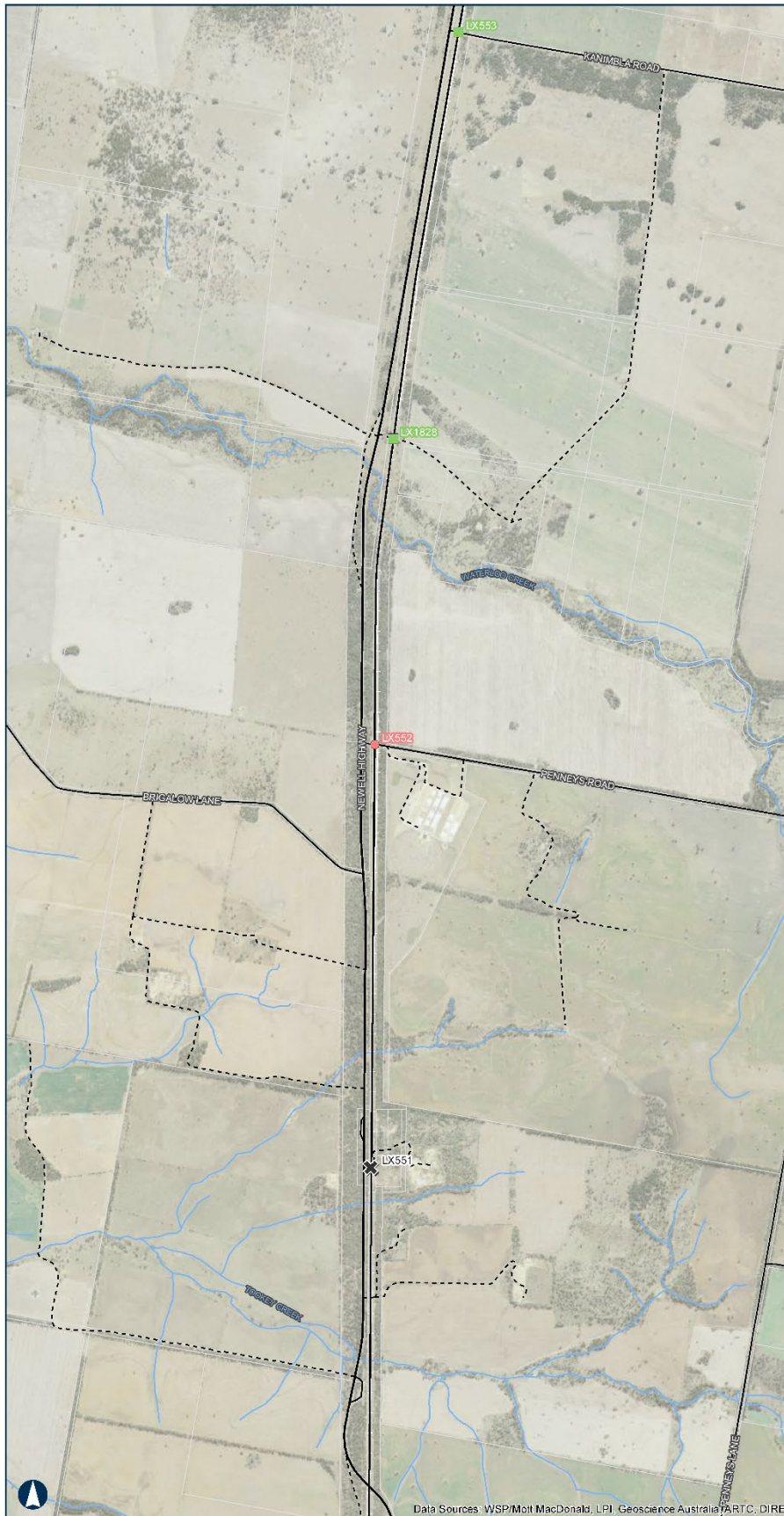
Data Sources: WSP/Mott MacDonald, LPI, Geoscience Australia, ARTC, DIRE

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NARRABRI TO NORTH STAR
Figure 5
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastral (LPI)
- Public Level Crossings**
- RX-2
- ✘ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



Coordinate System: GDA 1994 MGA Zone 55

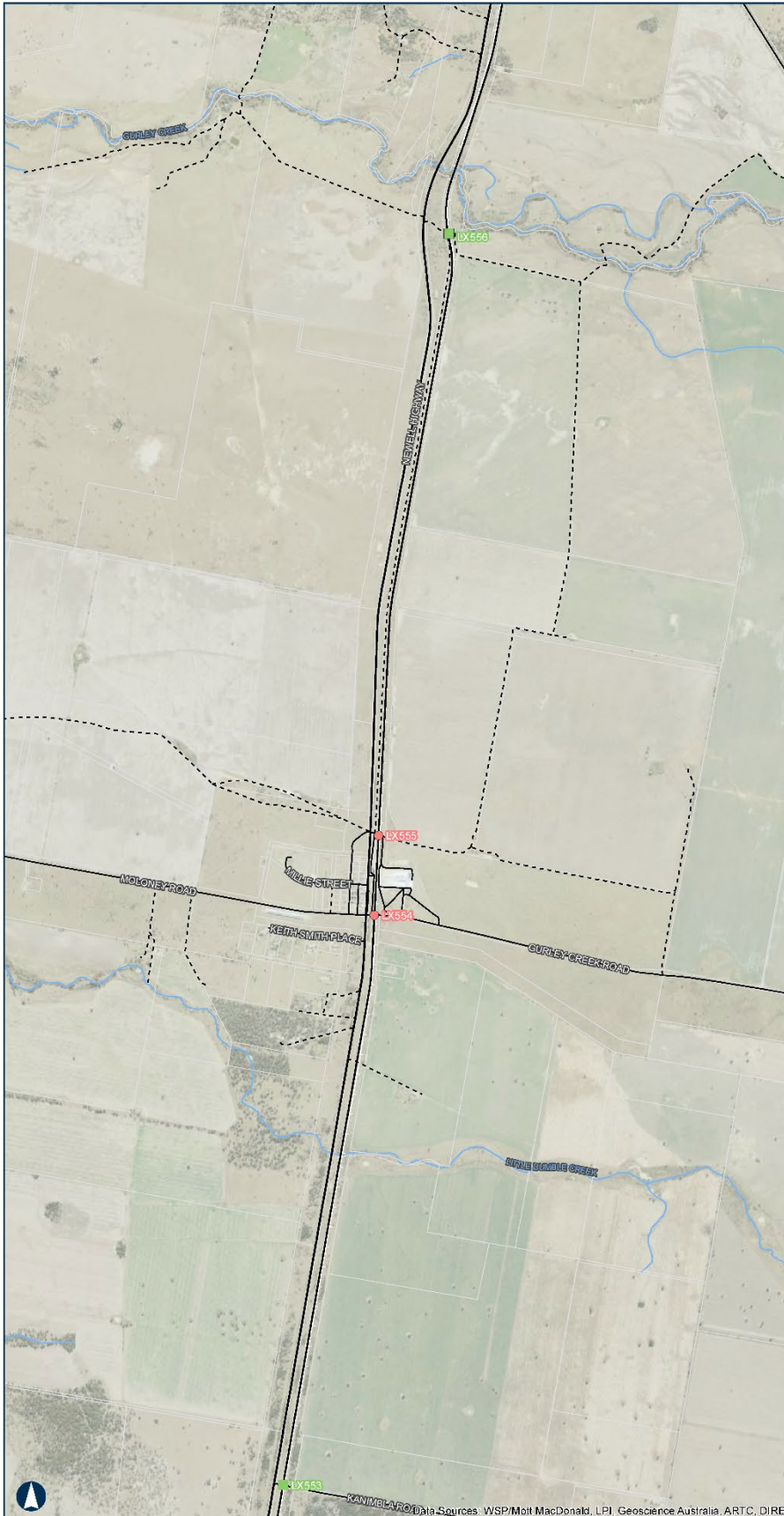
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Data Sources: WSP/Mobit MacDonald, LPI, Geoscience Australia, ARTC, DIRE

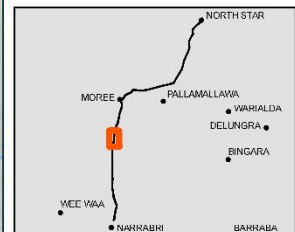
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NARRABRI TO NORTH STAR
Figure 6
N2NS - Public Level Crossings



LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastral (LPI)
- Public Level Crossings**
- RX-2
- ⊗ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



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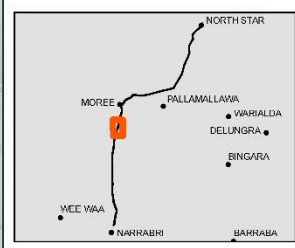
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NARRABRI TO NORTH STAR
Figure 7
N2NS - Public Level Crossings

- LEGEND**
- Townships
 - Highway
 - Local Road
 - Track
 - Existing Rail Network
 - Watercourse
 - Phase 3 Track
 - Cadastre (LPI)
 - Public Level Crossings**
 - RX-2
 - ✘ RX-2 to be closed
 - RX-2 + Gate
 - RX-5 + Booms
 - Active Pedestrian Crossing
 - Passive Pedestrian Crossing



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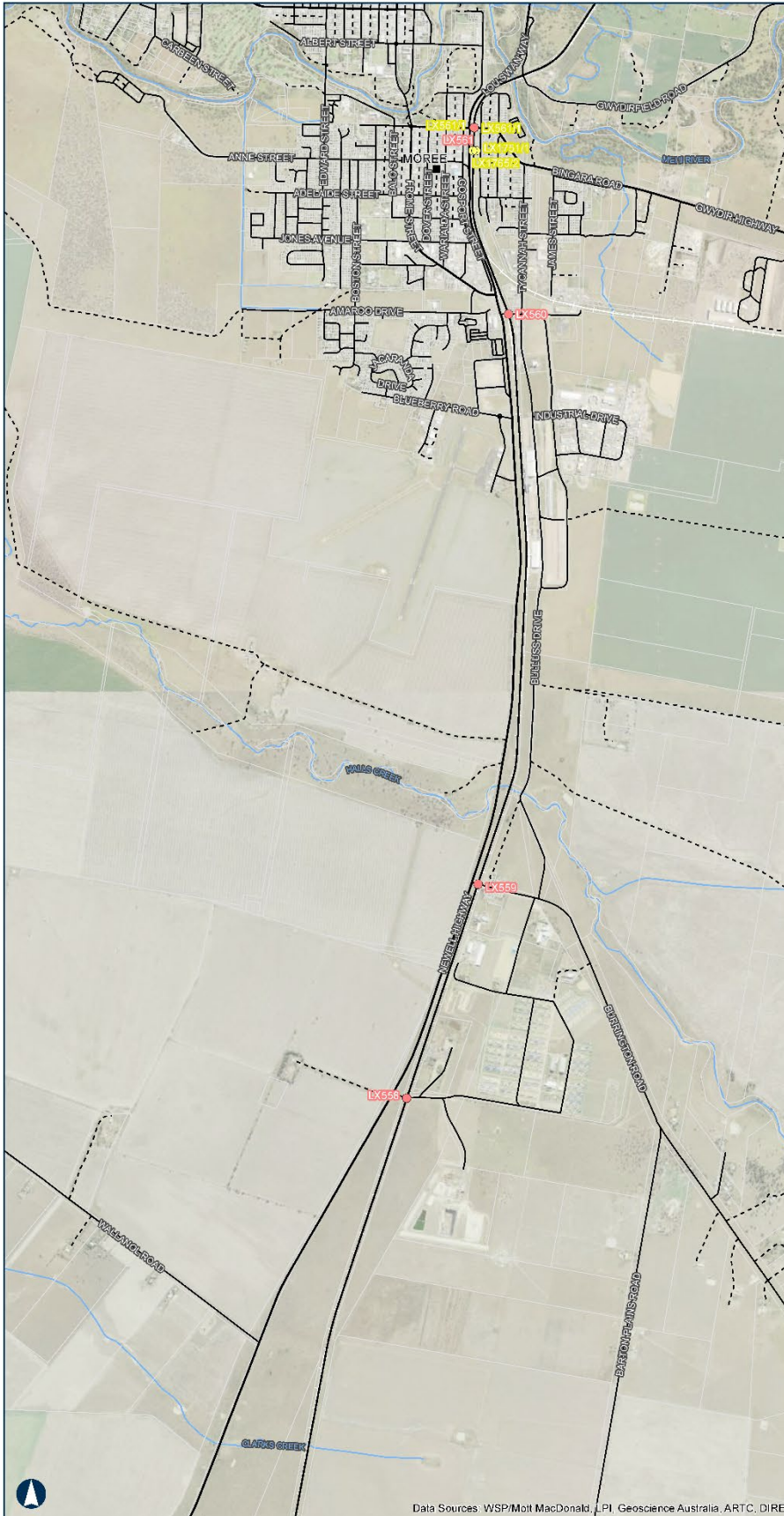
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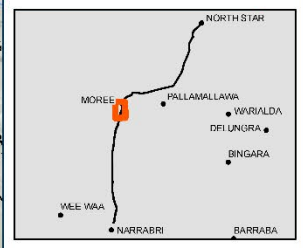
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NARRABRI TO NORTH STAR

Figure 8
N2NS - Public Level Crossings



- LEGEND**
- Townships
 - Highway
 - Local Road
 - - - Track
 - Existing Rail Network
 - Watercourse
 - Phase 3 Track
 - Cadastre (LP)
 - Public Level Crossings**
 - RX-2
 - RX-2 + Gate
 - RX-5 + Booms
 - Active Pedestrian Crossing
 - Passive Pedestrian Crossing



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Data Sources: WSP/Mott MacDonald, LPI, Geoscience Australia, ARTC, DIRE

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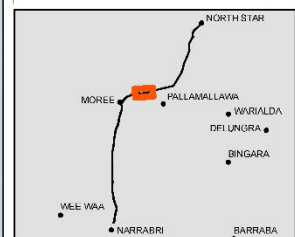
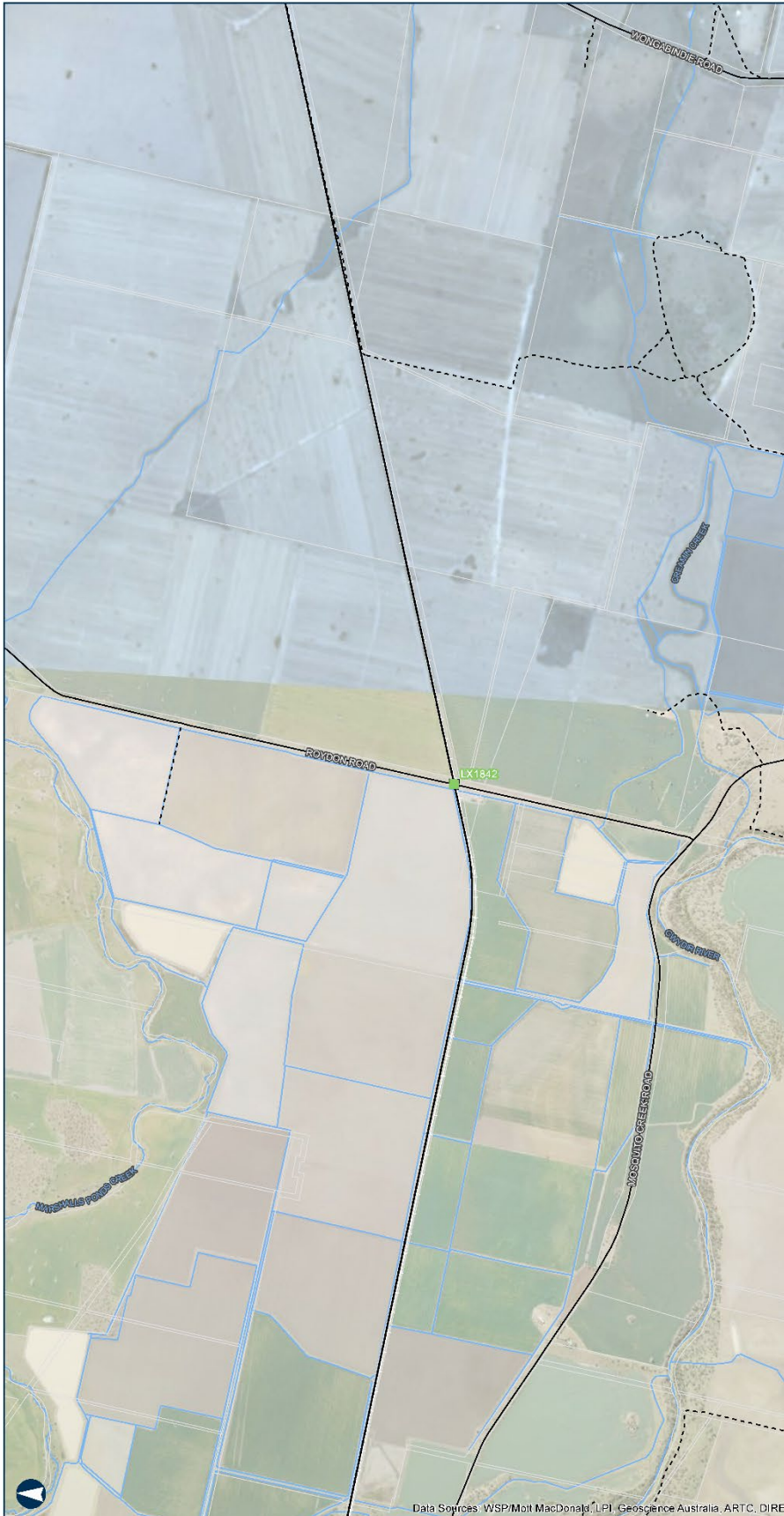
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NARRABRI TO NORTH STAR

Figure 9
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastral (LPI)
- Public Level Crossings**
- RX-2
- ✘ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



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Author: IRDUV
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Data Sources: WSP/Mott MacDonald, LPI, Geoscience Australia, ARTC, DIRE

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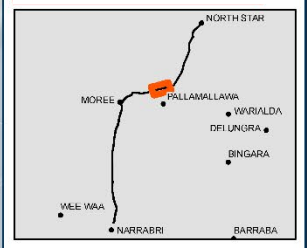


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NARRABRI TO NORTH STAR
 Figure 10
 N2NS - Public Level Crossings

- LEGEND**
- Townships
 - Highway
 - Local Road
 - - - Track
 - Existing Rail Network
 - Watercourse
 - Phase 3 Track
 - Cadastral (LP)
 - Public Level Crossings**
 - RX-2
 - ✘ RX-2 to be closed
 - RX-2 + Gate
 - RX-5 + Booms
 - Active Pedestrian Crossing
 - Passive Pedestrian Crossing



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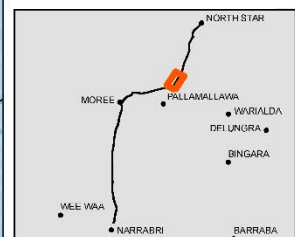


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NARRABRI TO NORTH STAR
Figure 11
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastre (LP)
- Public Level Crossings**
- RX-2
- ⊗ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



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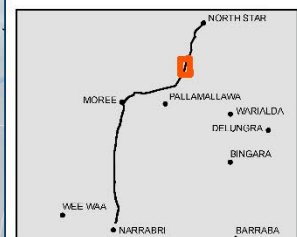
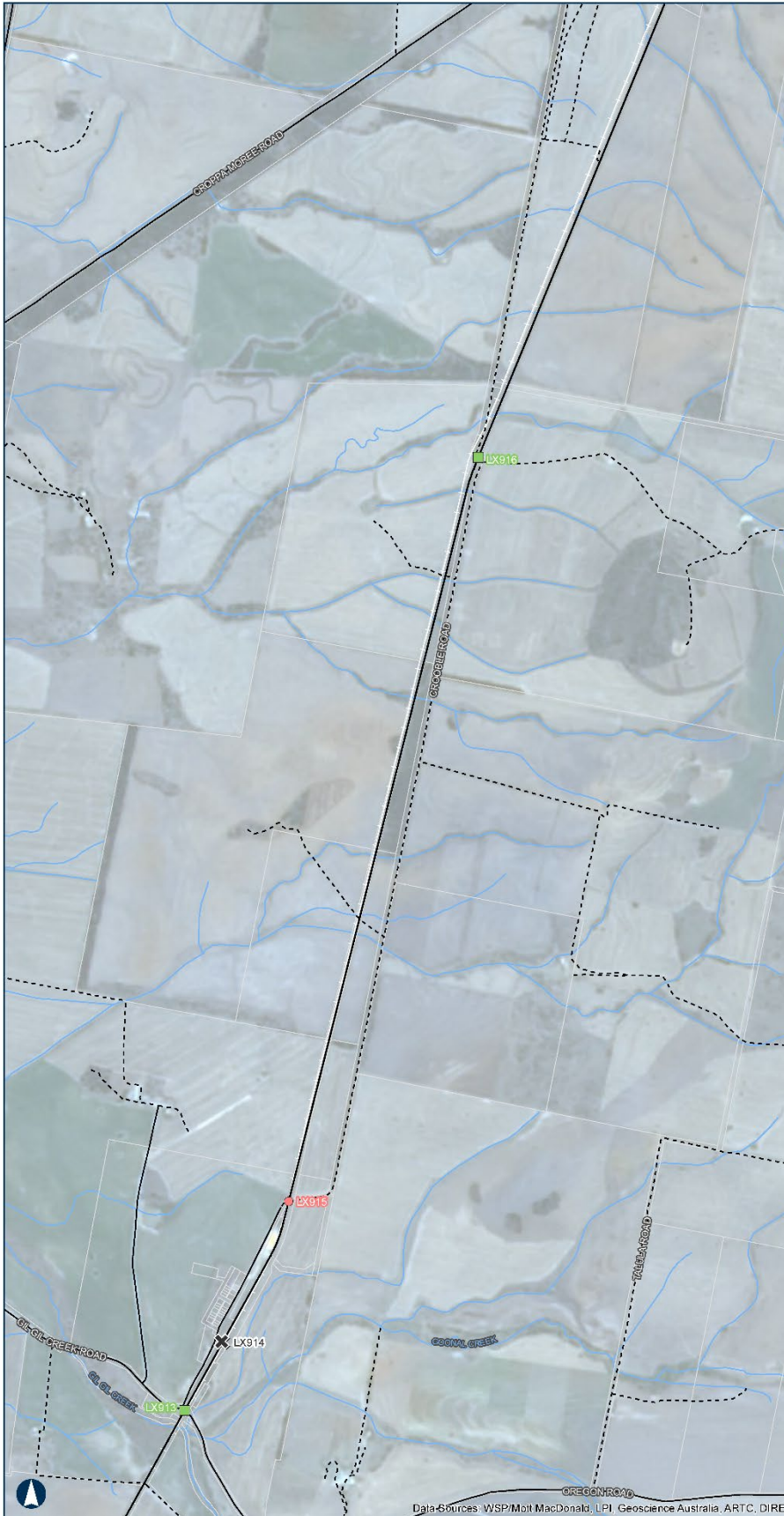
Data Sources: WSP/Mott MacDonald, LPI, Geoscience Australia, ARTC, DIRE

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NARRABRI TO NORTH STAR
Figure 12
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastre (LPI)
- Public Level Crossings**
- RX-2
- ✘ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



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Data Sources: WSP/Mott MacDonald, LPI, Geoscience Australia, ARTC, DIRE

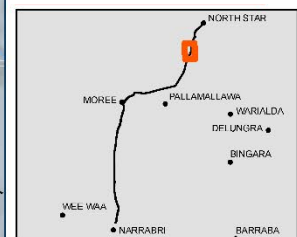
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NARRABRI TO NORTH STAR
Figure 13
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastre (LPI)
- Public Level Crossings**
- RX-2
- ✘ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



Coordinate System: GDA 1994 MGA Zone 55

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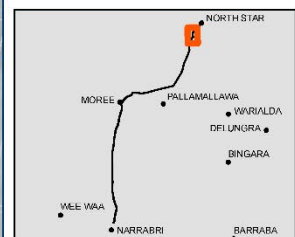
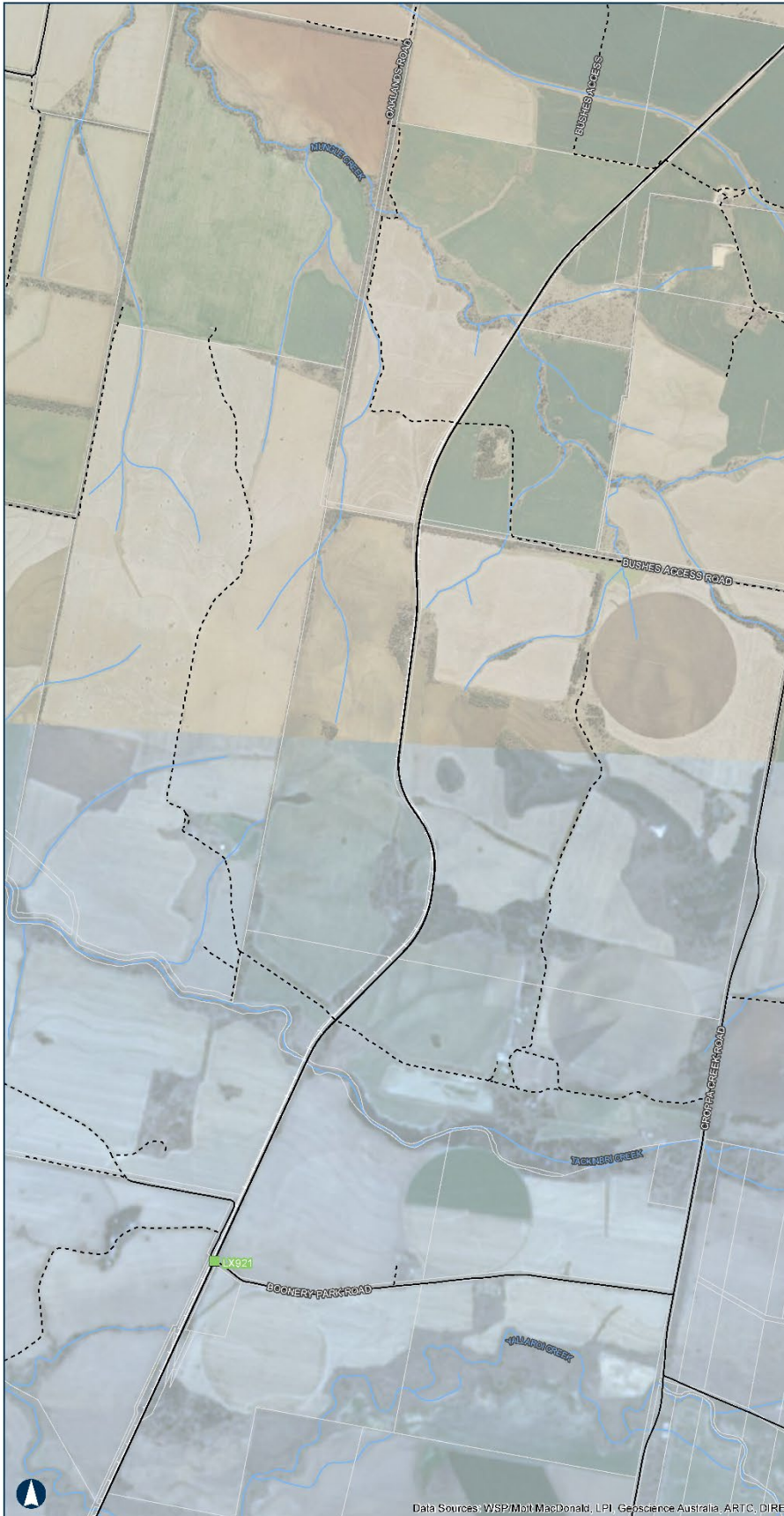
The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

NARRABRI TO NORTH STAR

Figure 14
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastre (LPI)
- Public Level Crossings**
- RX-2
- ✘ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



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Author: IR/DJV
Scale: 1:30,000

Data Sources: WSP/Mott MacDonald, LPI, Geoscience Australia, ARTC, DIRE

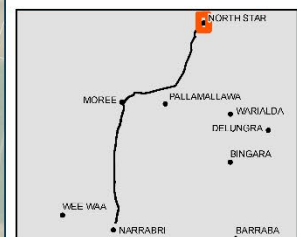
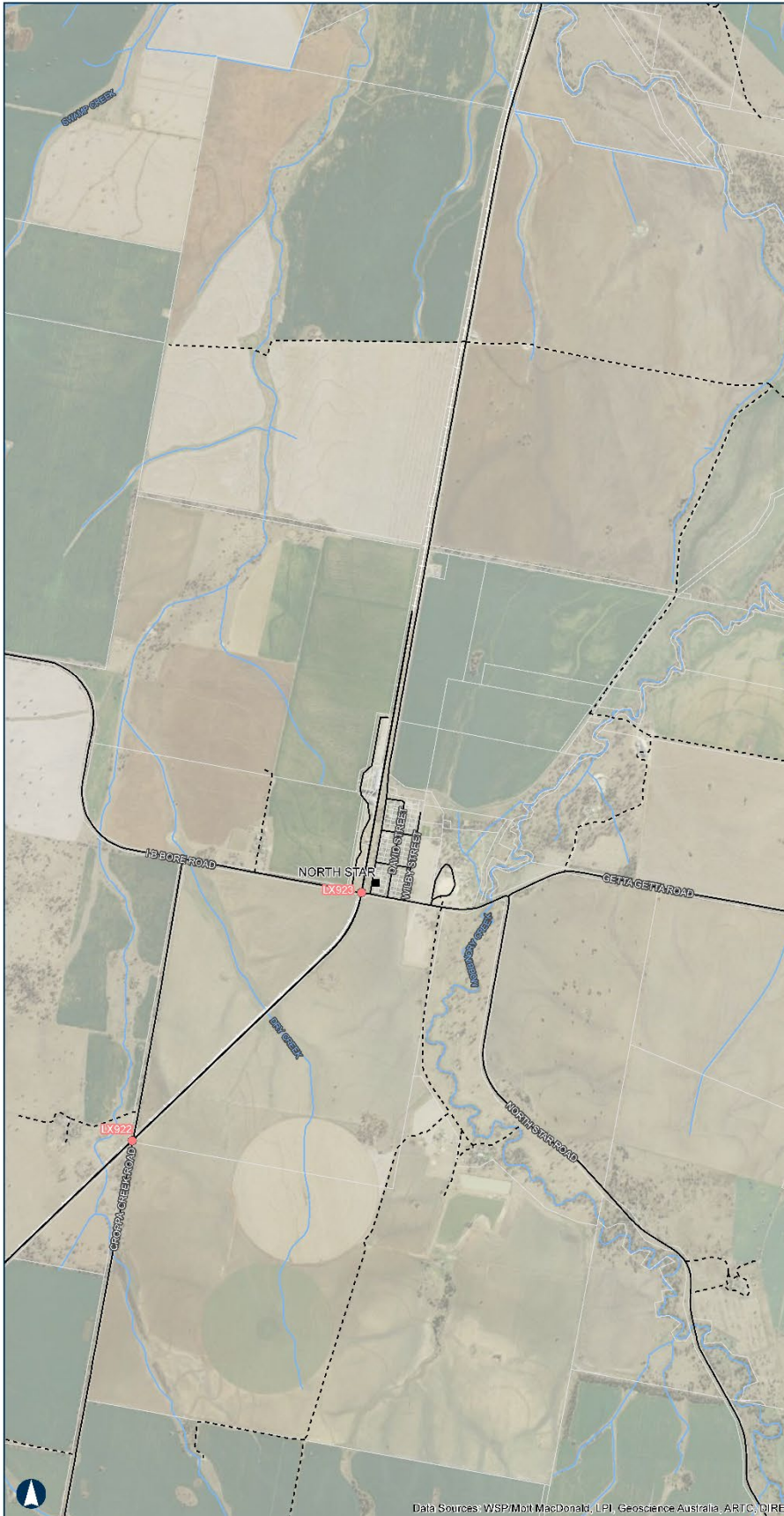
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The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

NARRABRI TO NORTH STAR
Figure 15
N2NS - Public Level Crossings

LEGEND

- Townships
- Highway
- Local Road
- - - Track
- Existing Rail Network
- Watercourse
- Phase 3 Track
- Cadastre (LP)
- Public Level Crossings**
- RX-2
- ✘ RX-2 to be closed
- RX-2 + Gate
- RX-5 + Booms
- Active Pedestrian Crossing
- Passive Pedestrian Crossing



Coordinate System: GDA 1994 MGA Zone 55

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Scale: 1:30,000

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APPENDIX C – Level Crossing Treatment Summary

- (b) list, and identify on a figure, any public level crossings that will be closed or upgraded, including the type of treatment proposed where a level crossing is to be upgraded;
- (c) where no works are proposed at a public crossing, provide reason for the decision
(see below table)

Crossing Number	Crossing Name	Existing Control	Proposed Control	Road Manager	Crossing Location	Existing Chainage	Revised Chainage	GIS Latitude	GIS Longitude	Meets the criteria for automatic Grade Separation?
LX543	Tarlee Road (also known as Bald Hill Road)	RX-2	RX-5 + Booms	Narrabri Shire Council	Edgeroi	593420	593353	-30.117457	149.798666	N
LX1827	Moree Road	RX-2	RX-2	Crown Lands	Edgeroi	596630	596638	-30.088113	149.794218	N
LX544	Galathera Lane	RX-2	RX-2	Narrabri Shire Council	Edgeroi	598550	598577	-30.070781	149.791574	N
LX545	The Clump Road	RX-2	RX-2	Narrabri Shire Council	Edgeroi	602950	602982	-30.031302	149.789544	N
LX546	Duncombers Road (Ten Mile Lane)	RX-2	RX-2	Narrabri Shire Council	Bellata	609350	609301	-29.974437	149.791651	N
LX547	Tremayne Property	RX-2	RX-2	Narrabri Shire Council	Bellata	613080	613088	-29.940296	149.790945	N
LX548	Sports Ground	RX-2	RX-2	Narrabri Shire Council	Bellata	613630	613701	-29.934769	149.790821	N
LX549	Millie Road	RX-2	RX-5 + Booms	Narrabri Shire Council	Bellata	616020	616045	-29.913637	149.790397	N
LX550	Old Newell Highway	RX-2	RX-2	Crown Lands	Bellata	617460	617506	-29.900466	149.790123	N
LX551	Bellata Pits	RX-2	Close	Moree Plains Shire Council	Bellata	622150	622172	-29.858399	149.789293	N
LX552	Penneys Road	RX-2	RX-5 + Booms	Moree Plains Shire Council	Bellata	625460	625509	-29.828314	149.788705	N
LX1828	Waterloo Road	RX-2	RX-2	Crown Lands	Gurley	627850	627927	-29.806575	149.789652	N
LX553	Merimbula Road (also known as Kanimbla Road)	RX-2	RX-2	Moree Plains Shire Council	Gurley	631150	631166	-29.777636	149.794143	N
LX554	Gurley Creek Road (also known as Terry Hie Hie Road)	RX-2	RX-5 + Booms	Moree Plains Shire Council	Gurley	635600	635705	-29.737104	149.800459	N
LX1829	Unnamed Public Road	RX-2	RX-2	Crown Lands	Moree	649350	649424	29.61714345	149.8276809	N
LX557	Gurley (old) Settlers Road	RX-2	RX-2	Moree Plains Shire Council	Moree	658850	658900	-29.6664712	149.8101326	N
LX558	Tapscott Road (Dunavants)	RX-5 + Booms	RX-5 + Booms	Moree Plains Shire Council	Moree	658027	658116	-29.540189	149.844593	N
LX559	Burrington Road	RX-5 + Booms	RX-5 + Booms	Moree Plains Shire Council	Moree	659800	659888	-29.524903	149.849951	N
LX560	Bulluss Drive	RX-5 + Booms	RX-5 + Booms	Moree Plains Shire Council	Moree	664333	664433	-29.484396	149.851269	N
LX1765/1	Moree Station West	Passive Maze	Active Pedestrian Crossing	ARTC	Moree	665685	665766	-29.472882	149.848112	N
LX1765/2	Moree Station East	Passive Maze	Active Pedestrian Crossing	ARTC	Moree	665685	665766	-29.472825	149.848265	N
LX561/1	Gwydir Highway / Alice Street pedestrian	Active + Maze	Active (road) + Maze	TFNSW	Moree	665931	665934	-29.471403	149.848112	N
LX561	Gwydir Highway / Alice Street	RX-5 + Booms	RX-5 + Booms	TFNSW	Moree	665846	665947	-29.470926	149.848116	N
LX561/2	Gwydir Highway / Alice Street pedestrian	Active + Maze	Active (road) + Maze	TFNSW	Moree	665959	665960	-29.47115	149.848115	N
LX1842	Roydon Road	RX-2	RX-2	Moree Plains Shire Council	Camurra	686480	686451	-29.402361	150.001973	N
LX909	Wongabindie Road	RX-1	RX-2	Moree Plains Shire Council	Camurra	693970	693959	-29.383582	150.076246	N

LX910	Calimpa - County Boundary Road (Pallmallawa)	RX-1	RX-2	Moree Plains Shire Council	Milguy	700930	700932	-29.3661	150.145188	N
LX911	County Boundary Road (Milguy)	RX-2	RX-5 + Booms	Moree Plains Shire Council	Milguy	706560	706550	-29.351835	150.200667	N
LX912	Alma Lane (Milguy - Crooble)	RX-2	RX-2	Gwydir Shire Council	Milguy	710950	710961	-29.318029	50.223585	N
LX913	Gil Gil Creek Road	RX-2	RX-2	Gwydir Shire Council	Crooble	717045	717020	-29.269555	150.252334	N
LX915	Crooble Road, (also known as Crooble - Croppa Creek Road) Crooble	RX-1	RX-5 + Booms	Gwydir Shire Council	Crooble	718835	718865	-29.254519	150.260276	N
LX916	Crooble - Croppa Creek Road (Yamboon (Moree / Yallaroi Road))	RX-2	RX-2	Gwydir Shire Council	Crooble	724890	724905	-29.201399	150.273945	N
LX917	Croppa Moree Road (also known as Myall Downs Road or Moree Road)	RX-1	RX-5 + Booms	Gwydir Shire Council	Croppa Creek	730320	730335	-29.155579	150.293685	N
LX918/1	Buckie Road (Croppa Creek) Pedestrian	NA	Active Pedestrian Crossing	Gwydir Shire Council	Croppa Creek		733852	-29.12513	150.306852	N
LX918	Buckie Road (Croppa Creek)	RX-1	RX-5 + Booms	Gwydir Shire Council	Croppa Creek	733920	733944	-29.13688	150.301758	N
LX920	Murgo Access Road (Murgo 2)	RX-2	RX-2	Gwydir Shire Council	Croppa Creek	739315	739332	-29.030343	150.32768	N
LX921	Tumba Road (Murgo 3)	RX-2	RX-2	Gwydir Shire Council	Croppa Creek	742835	742842	-29.047704	150.318425	N
LX922	North Star - Croppa Creek Road (Moree North)	RX-1	RX-5 + Booms	Gwydir Shire Council	North Star	755565	755578	-28.950531	150.372717	N
LX923	I B Bore Road (also known as North Star Road)	RX-2	RX-5 + Booms	Gwydir Shire Council	North Star	758240	758252	-28.932565	150.390552	N

Crossing Number	Assessed for Closure? (Refer to Appendix C)	AADT 2018	%HV	Assumed Growth Rate	AADT 2040	ALCAM Assessments Undertaken	Non ALCAM factors considered	Incident Data (2011 - 2015)	LX is compliant - existing control	CBA undertaken	Proposed control complies with AS1742.7	Required S3 greater than 750m
LX543		81	4.90%	1%	101	Y	Y	2 near misses with road vehicle	N	Y	Y	NA (Active controls)
LX1827	Y	0	0.00%	0%	0	Y	Y		Y	Y	Y	Y
LX544		17	12.00%	1%	21	Y	Y	1 near miss with road vehicle	Y	Y	Y	Y
LX545		29	14.40%	1%	36	Y	Y	1 near miss with road vehicle	N	Y	Y	Y
LX546		48	5.90%	1%	60	Y	Y		Y	Y	Y	Y
LX547		53	2.20%	1%	66	Y	Y		Y	Y	Y	Y
LX548	Y	0	0.00%	0%	0	Y	Y		Y	Y	Y	Y
LX549		290	4.30%	1%	361	Y	Y	1 collision with road vehicle	N	Y	Y	NA (Active controls)
LX550	Y	17	9.40%	1%	21	Y	Y	1 near miss with road vehicle	Y	Y	Y	Y
LX551	Y	2	0.00%	1%	2	Y	Y		Y	Y	Y	Y
LX552		135	2.00%	1%	168	Y	Y	1 near miss with road vehicle	N	Y	Y	NA (Active controls)
LX1828	Y	2	0.00%	0%	2	Y	Y		Y	Y	Y	Y
LX553		11	2.70%	0%	11	Y	Y	1 near miss with road vehicle	Y	Y	Y	Y
LX554		169	6.60%	1%	210	Y	Y	2 near misses with road vehicle	N	Y	Y	NA (Active controls)
LX557		29	12.30%	0%	29	Y	Y		Y	Y	Y	Y
LX1829	Y	15	9.00%	0%	15	Y	Y	1 collision with road vehicle	Y	Y	Y	Y
LX558		354	12.90%	1%	441	Y	Y		Y	Y	Y	NA (Active controls)
LX559	Y	406	5.20%	1%	505	Y	Y		Y	Y	Y	N
LX560		2596	9.30%	1%	3231	Y	Y		Y	Y	Y	NA (Active controls)
LX1765/1		270				Y	Y		Y	Y	Y	NA (Ped)
LX1765/2		289				Y	Y		Y	Y	Y	NA (Ped)
LX561/1		Pedestrian				Y	Y	1 near miss with road vehicle	Y	Y	Y	NA (Ped)
LX561		4168	6.00%	2%	6444	Y	Y		Y	Y	Y	NA (Active controls)
LX561/2		Pedestrian				Y	Y		Y	Y	Y	NA (Ped)
LX1842	Y	22	0.00%	0%	6444	Y	Y		N	Y	Y	N
LX909		20	10.50%	0%	20	Y	Y		N	Y	Y	N
LX910		29	13.20%	0%	29	Y	Y		N	Y	Y	N
LX911		113	14.50%	1%	141	Y	Y		Y	Y	Y	NA (Active controls)
LX912		23	16.70%	0%	23	Y	Y		Y	Y	Y	N
LX913		65	11.40%	0%	65	Y	Y		N	Y	Y	N
LX915		28	12.20%	0%	28	Y	Y		Y	Y	Y	NA (Active controls)
LX916		53	4.10%	0%	53	Y	Y		N	Y	Y	N
LX917		259	50.00%	2%	400	Y	Y		N	Y	Y	NA (Active controls)
LX918/1		Pedestrian				Y	Y		N	Y	Y	NA (Ped)
LX918		267	7.90%	1%	332	Y	Y		Y	Y	Y	NA (Active controls)
LX920		26	0.00%	0%	26	Y	Y		Y	Y	Y	N
LX921		20	17.50%	0%	20	Y	Y		N	Y	Y	N

LX922		197	50.00%	2%	305	Y	Y		N	Y	Y	NA (Active controls)
LX923		438	1.80%	1%	545	Y	Y		N	Y	Y	NA (Active controls) N

Crossing Number	Road Manager feedback on the design	Feedback incorporated into the design	Reason feedback not incorporated	Interface Agreement to be updated post commissioning
LX543	No concern with the road design	Y		Y
LX1827	No concern with the road design	Y		Y
LX544	Proposed fence realignment on western side to avoid impact to community assets (incl. the community memorials and proposed toilet)	Y		Y
LX545	No concern with the road design	Y		Y
LX546	No concern with the road design	Y		Y
LX547	No concern with the road design	Y		Y
LX548	No concern with the road design	Y		Y
LX549	No concern with the road design	Y		Y
LX550	No concern with the road design	Y		Y
LX551	No concern with the road design	Y		Y
LX552	Council concurs that road geometry limits the legal speed achieved.	Y	Warning signage will be provided for the private property road. The offset from the rail is based on the 85th percentile vehicle speed not the design speed	Y
	Install warning signs along the private property access road. Warning Signage to be provided on the private property road.		Signage on the exit from the silo will be installed, the drawings are currently being updated.	
	Install distance plate sign and warning sign on the eastern approach to the crossing		Signage on the exit from the silo will be installed, the drawings are currently being updated.	
LX1828	No concern with the road design	Y		Y
LX553	No concern with the road design	Y		Y
LX554	Recorded AADT is a lot higher than council's data. Councils AADT is 34 however there are significant peak traffic during harvest periods. May have identified the peak which is relevant for risk mitigation	Y	Vehicle data recorded during the traffic survey in 2018 was adopted in the proposed design	Y

LX557	No concern with the road design	Y		Y
LX558	Council concurs that road geometry limits the legal speed achieved	Y	Signage on the exit will be installed, the drawings are currently being updated.	Y
	Install warning signs along the private property access road approaching from the sales yard			
LX559	Council concurs that road geometry limits the legal speed achieved	Y		Y
LX560	Signage not correct showing stop signs on Tycannah St which should show give way signs for both the north and south approach to Bulluss Drive	N	These existing signs will be retained,	Y
	Extend project scope to include whole of painted island on south west approach and extend through the arc of the fog line on the north west approach	Y	Existing Yellow box marking will be reinstated as this location.	
LX1751/1	No concern with the crossing design			
LX1751/2	No concern with the crossing design			
LX561/1	No concern with the crossing design	Y		Y
LX561	No concern with the road design	Y		Y
LX561/2	No concern with the road design	Y		Y
LX1842	No concern with the road design	Y		Y
LX909	No concern with the road design	Y		Y
LX910	No concern with the road design	Y		Y
LX911	Council does not agree with the adopted speed for this crossing	Y		Y
	Review lighting requirements as per RMS Guideline			
LX912	No concern with the road design	Y		Y
LX913	The side road (Crooble Croppa Creek Road) does not appear to accommodate for road trains, which are currently permitted on this route	Y		Y
	Sighting distances to be confirmed			

LX915	Concerns about the design speed of the corner approaching the crossing	N	Agreed with council the adopted design speed is 50km/h for this section of unsealed road as geometric restrictions limits the design speed due to the existing road curve, road reserve, and potential property impacts. A reduce speed and turn warning sign have been provided on both approaches to the LX	Y
	Confirm superelevation is adequate for the operating speed			
LX916	Concerns about the effect the design will have on the two property entrances south of the crossing	Y	Additional property accesses provided	Y
LX917	No concern with the road design	Y		Y
LX918/1	No concern with the crossing design	Y		Y
LX918	Concerns with the proposed driveway alignment locations and flooding impacts to nearby properties and overtopping of Buckie Road	Y		Y
LX920	No concern with the road design	Y	3-0001-260-DCW-00-DR-0831 3-0001-260-DCW-00-DR-0836 Note; These drawings form the basis of design, and Public Level Crossing Report, that is still under review by the Parties at the time of signing this Agreement.	Y
LX921	No concern with the road design	Y		Y
LX922	Sighting distances to be confirmed	Y	Barrier treatments will be included in the design	Y
	TFNSW noted that there was a medium risk against LX922 (road user speeding) and asked that ARTC review to determine if the risk level can be reduced. The designer reviewed, noting that the rating was a reflection of the high road speed and the relatively high vehicle volume and suggested that the risk rating could be reduced to low with the addition of a barrier treatment.			
LX923	Control lines do not match the labels on the long section	Y		Y

APPENDIX D – Level Crossing Closure Considerations

(e) provide justification for any proposed closures.

Crossing Number	Crossing Name	Road Manager	Crossing Location	Existing Chainage	Revised Chainage	GIS Latitude	GIS Longitude	AADT	Reasoning	Discussed with Road Manager	Conclusion
LX1827	Moree Road	Crown reserve	Edgeroi	596630	596638	-30.088113	149.794218	<1	No compliance issues Safer alternative access via crown land easements / Millie Rd possible Low use dirt track	Adjacent landowner advised that this level crossing is only used for private access. Landowner has no alternate access to residence and work during wet weather. The road connecting the residence to Galathera Lane is not an all-weather access road (black soil only).	Council did not support closure
LX548	Sports Ground	Narrabri Shire Council	Bellata	613630	613701	-29.934769	149.790821	<1	No compliance issues Safer alternative access via crown land easements / Millie Rd possible Low use dirt track	Adjacent land (Sports Ground) connected to LX548 is leased from crown land to hold cattle. • The primary user does not object to closure if existing access track between LX547 to LX548 (within crown land) is upgraded to support all-weather access – ARTC to discuss and formalise with manager of crown land. Detour road improvements. Existing access track between LX547 and LX548 would need to be upgraded to support all weather access.	Council did not support closure
LX550	Old Newell Highway	State of NSW (Crown Reserve)	Bellata	617460	617506	-29.900466	149.790123	17	Predominantly used for private access across property, farming across the rail line and rail corridor access. Alternate access via crown land to Northbound Newell Highway without crossing available, however access to southbound Newell Highway would currently require a 5km+ detour and may not be feasible with Newell Highway overpass realignment Low use dirt track	Predominantly used for private access across property, farming across the rail line and rail corridor access. Alternate access via crown land to Northbound Newell Highway without crossing available, however access to southbound Newell highway would currently require a 5km+ detour and may not be feasible with Newell Highway overpass realignment. To be discussed with Council and Rowe's Quarry owner. Note: Closure may impact southbound access to Newell Highway.	Council did not support closure
LX551	Bellata Pits	Moree Plains Shire Council	Bellata	622150	622172	-29.858399	149.789293	2	Low use dirt track	Due to the existing alignment and adjacent Bellata Pits on the eastern side of the rail, the eastern approach is aligned inside the rail corridor. Due to the extent of earthworks required it is not feasible to construct a new track outside the corridor at the existing location. Council indicated support for potential closure. Alternative access is provided via LX3065	Proposal for closure subject to transfer of adjoining Crown Land road reserve to MPSC Stakeholder supports closure, formal closure progressing.

LX1828	Waterloo Road	State of NSW (Crown Reserve)	Gurley	627850	627927	-29.806575	149.789652	2	Low use dirt track	Primary landowner/user advised that this level crossing is used for private access only. Sighting compliance is achieved when the train is in the loop as the proposed loop alignment has increased its lateral distance from the mainline	Council did not support closure
LX559	Burrington Road	Moree Plains Shire Council	Moree	659800	659888	-29.524903	149.849951	406	Opportunity to close the LX and use as an emergency LX only (discussions have been had with council).	MPSC advised that the \$3.4M North South Link upgrade will not give the Gwydirville community equivalent access to their current rail crossing as the flood immunity of this road is not equal to their existing. Council could support having a gated crossing for emergency access use only at this interface after the North South Link upgrade is completed. Council will continue this discussion with ARTC going forward.	Closure is not within the current IR scope.
LX1842	Roydon Road	Moree Plains Shire Council	Moree	686480	686451	29.402361	150.001973	22	Consider consolidating LX1841 and LX1842	Used by other stakeholders to access Newell Highway. Closure / consolidation not feasible.	Council did not support closure

APPENDIX E – Level Crossing Risk Assessment

Ref	Level Crossing Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Likelihood Rating	Risk Level	
								Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX923	I B Bore Road (also known as North Star Road) RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe another road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Operation of active control (train detection, lights, boom)	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
				Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				LX922	North Star - Croppa Creek Road (Moree North) RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X
Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Low	Low
Road user speeding	3. Road user fails to stay within travel lane, carriageway or path	Type 3.3 Road vehicle loses control	Crash between road user and railway crossing related infrastructure					X	X	X	X	X	Medium	Low	Low
Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Low	Low
Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing						X	X	X		Low	Negligible	Negligible
Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing						X	X	X		Low	Negligible	Negligible
Crossing by pedestrian or cyclist	5. Road user fails to observe another road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users					X	X	X	X	X	High	Negligible	Low
Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Negligible	Negligible
Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Low	Low
Operation of active control (train detection, lights, boom)	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Low	Low
Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing					X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Negligible	Negligible
LX921	Tumba Road (Murroo 3) RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe another road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
				Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible

Ref	Level Crossing	Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
									Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX920	Murgoo Access Road (Murgoo 2)	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe another road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Operation of active control (train detection, lights, boom)	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
					Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					LX918	Buckle Road (also known as Gunyverwarlidi Croppa Road)	RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads - Road lighting 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X
Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing							X	X	X		Low	Negligible	Negligible
Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing							X	X	X		Low	Negligible	Negligible
Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X						X	X	X	X	High	Negligible	Low
Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Negligible	Negligible
Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Operation of active control (train detection, lights, boom)	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X								X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Negligible	Negligible

NARRABRI TO NORTH STAR PUBLIC LEVEL CROSSING REPORT – PHASE 1



Ref	Level Crossing	Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
									Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX917	Croppa Moree Road (also known as Myall Downs Road or Moree Road)	RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
					Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					LX916	Crooble - Croppa Creek Road (Yamboon / Yallior Road)	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X
Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X						X	X	X	X	Low	Low	Negligible
Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing							X	X	X		Low	Low	Negligible
Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X						X	X	X		Medium	Low	Low
Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Negligible	Negligible
Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X						X	X	X	X	High	Negligible	Low
Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X								X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Negligible	Negligible
LX915	Crooble Road, (also known as Crooble - Croppa Creek Road) Crooble	RX-5 + Booms Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 						Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Operation of active control (train detection, lights, boom)	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
					Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible

Ref	Level Crossing	Control	Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
										Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX913	Gil Gil Creek Road	RX-2	Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
						Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
						Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
						Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
						Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
						Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
						Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
						Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible
						LX912	Makins Road (Millieuv - Crooble)	RX-2	Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X
Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X							X	X	X	Medium	Low	Low
Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X							X	X	X	Low	Low	Negligible
Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X							X	X		Low	Low	Negligible
Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X							X	X		Medium	Low	Low
Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X							X	X	X	Medium	Negligible	Negligible
Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X							X	X	X	High	Negligible	Low
Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X							X	X	X	Medium	Low	Low
Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X							X	X	X	Medium	Low	Low
Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X									X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X							X	X		Medium	Negligible	Negligible

NARRABRI TO NORTH STAR PUBLIC LEVEL CROSSING REPORT – PHASE 1



Ref	Level Crossing	Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
									Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX911	County Boundary Road (Milkuu)	RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
					Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible
					LX910	Callimpa - County Boundary Road (Pallimallawa)	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X
Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X						X	X	X	X	Low	Low	Negligible
Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing							X	X	X		Low	Low	Negligible
Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X						X	X	X		Medium	Low	Low
Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Negligible	Negligible
Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X						X	X	X	X	High	Negligible	Low
Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X						X	X	X	X	Medium	Low	Low
Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X								X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X						X	X	X		Medium	Negligible	Negligible
LX909	Wongabindie Road	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 						Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
					Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible

Ref	Level Crossing	Control	Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
										Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX1842	Roydon Road	RX-2	Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
						Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
						Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
						Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
						Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
						Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Operation of active control (train detection, lights, boom)	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
LX564	River Road (Pallamalawa Road)	RX-2	Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
						Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
						Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
						Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
						Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
						Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Operation of active control (train detection, lights, boom)	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
						Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible						

Ref	Level Crossing Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
								Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX563	The Rocks Road RX-5 + Booms Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Operation of active control (train detection, lights, boom)	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
LX561	Gwdfr Highway / Alice Street RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads - Road lighting 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
LX561	Gwdfr Highway / Alice Street RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads - Road lighting 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	Medium	Negligible	Negligible	

NARRABRI TO NORTH STAR PUBLIC LEVEL CROSSING REPORT – PHASE 1



Ref	Level Crossing Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
								Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX560	Bulluss Drive RX.5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads - Road lighting 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
				Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible
				LX559	Burrington Road RX.5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X
Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Low	Low
Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing					X	X	X	X	X	Low	Low	Negligible
Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing						X	X	X		Low	Low	Negligible
Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing					X	X	X	X		Medium	Low	Low
Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Negligible	Negligible
Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users					X	X	X	X	X	High	Negligible	Low
Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Low	Low
Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing					X	X	X	X	X	Medium	Low	Low
Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing					X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing					X	X	X	X		Medium	Negligible	Negligible
LX558	Tapscoot Road (Dunavants) RX.5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 					Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing		X	X	X		Low	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Operation of active control (train detection, lights, boom)	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
				Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible

NARRABRI TO NORTH STAR PUBLIC LEVEL CROSSING REPORT – PHASE 1



Ref	Level Crossing	Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence						Consequence Rating	Likelihood Rating	Risk Level
									Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash				
LX1829	Public Road	RX-2	Unsealed, sealed at crossing <ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible	
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low	
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible	
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible	
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low	
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible	
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low	
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low	
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low	
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible	
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible						
LX557	Gurley (Old) Settlers Road	RX-2	Unsealed, sealed at crossing <ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible	
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low	
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible	
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible	
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low	
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible	
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low	
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low	
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low	
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible	
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible						
LX554	Gurley Creek Road (also known as Terry Hie Hie Road)	RX-5 + Booms	Sealed <ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible	
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low	
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible	
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible	
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low	
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible	
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low	
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low	
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low	
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible	
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible						
LX554	Gurley Creek Road (also known as Terry Hie Hie Road)	RX-5 + Booms	Sealed <ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible	

<ul style="list-style-type: none"> and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
		Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
		Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
		Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
		Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
		Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
		Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
		Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
		Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X				X	Low	Low	Negligible
		Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible

NARRABRI TO NORTH STAR PUBLIC LEVEL CROSSING REPORT – PHASE 1



Ref	Level Crossing Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
								Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX1828	Waterloo Road	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible				
LX552	Penneys Road	RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible				
LX551	Bellata Pits	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible				

NARRABRI TO NORTH STAR PUBLIC LEVEL CROSSING REPORT – PHASE 1



Ref	Level Crossing	Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
									Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX550	Old Newell Highway	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible					
LX549	Millie road (also known as Colemorebri Road)	RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible					
LX548	Sports Ground	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible					

NARRABRI TO NORTH STAR PUBLIC LEVEL CROSSING REPORT – PHASE 1



Ref	Level Crossing Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
								Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX547	Tremayne Property RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible				
LX546	Duncombers Road (Ten Mile Lane) RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible				
LX545	The Clump Road RX-5 + Booms Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible				

NARRABRI TO NORTH STAR PUBLIC LEVEL CROSSING REPORT – PHASE 1



Ref	Level Crossing	Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
									Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX544	Galathera Lane	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible					
LX1827	Moree Road	RX-2 Unsealed, sealed at crossing	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible					
LX543	Tarlee Road (also known as Bald Hill Road)	RX-5 + Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible					

Ref	Level Crossing Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
								Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX561/1	Gwdfr Highway / Alice Street pedestrian crossing RX-5 - Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads - Road lighting 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible				
LX561/2	Gwdfr Highway / Alice Street pedestrian crossing RX-5 - Booms Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads - Road lighting 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible				
LX1765/1	Moree Station East pedestrian crossing pedestrian gated crossing Sealed	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads - Road lighting 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
				Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
				Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
				Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
				Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
				Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
				Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible				

Ref	Level Crossing	Control Approach	Pre-Incident Management Measures	Post Incident Management Measures	Risk	Risk category	Risk type	Incident	Consequence					Consequence Rating	Likelihood Rating	Risk Level
									Fatalities and injuries	Delays to road users and	Delays to trains and passengers	Damage to property / environment	Secondary crash			
LX1765/2	Moree Station West pedestrian crossing	Sealed Pedestrian maze	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Pedestrian tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
					Pedestrian slips/trips on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
LX9181/1	Gunvorwardi Croppa Road (Croppa Creek) Pedestrian crossing	Sealed RX-5 + Booms	<ul style="list-style-type: none"> - Sight distance to control device exceeds AS1742.2 - Adequate lane, shoulder and carriageway widths for vehicle types and speeds - Advance warning signs and pavement markings comply with AS1742.7 - Control type appropriate for road users using RC - Signs and pavement markings to AS 1742 - Design reflects NSW Road Rules 2008 - No advertising signs, or unnecessary road signs, trees and road furniture to cause road user distraction - No distracting or confusing lighting in vicinity of RC or railway approaches - Control appropriate for road / railway alignment - Road speed limit appropriate for conditions - Train speed and operations appropriate for RC - Warning signs and advisory speeds appropriate and in accordance with AS1742.2 - Road surface maintained to attain adequate ride quality and skid resistance - Education campaigns that inform road users of statutory requirements and hazard - Active control of RC (flashing lights and boom gates) - Adequate operating time of active signals before train - Maintenance of equipment and 'fail-safe' - Seal approaches on gravel roads - Road lighting 	<ul style="list-style-type: none"> - Adequate road alignment and stopping sight distances - Clear zone free of hazards - Detour routes - Emergency management plan - Emergency response by rail authority - Emergency response by TMC, police and local council - Frangible roadside furniture - Location and protection of control infrastructure - No unnecessary infrastructure at LX - No unnecessary trees at LX 	Setting sun produces glare which reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.3 Road user does not see train at or approaching the RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Road user tries to "beat" train when an oncoming train is visible or active controls are active	2. Road user fails to keep clear while a train is approaching	Type 2.6 Deliberate action by road user to beat train to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Road user speeding	1. Road user fails to stop while a train is approaching	Type 1.6 Road user travelling too fast on approach to RC	Crash between road user and train at railway crossing	X	X	X	X	X	Low	Low	Negligible
					Crossing stock	1. Road user fails to stop while a train is approaching	Type 1.1 Road user fails to observe traffic control device at RC	Crash between road user and train at railway crossing		X	X	X		Low	Low	Negligible
					Slow moving heavy vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.4 Road user slow to clear RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Low	Low
					Oversize vehicle fails to clear crossing	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Negligible	Negligible
					Crossing by pedestrian or cyclist	5. Road user fails to observe other road user	Type 5.1 Road user fails to observe and react to stationary or slow vehicles	Crash between road users	X	X	X	X	X	High	Negligible	Low
					Surface slippery in wet weather	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Poor weather (rain, dust, fog) reduces driver vision and awareness of railway crossing	1. Road user fails to stop while a train is approaching	Type 1.5 Road user does not allow for increased stopping distance on slippery or unsealed road or path	Crash between road user and train at railway crossing	X	X	X	X	X	Medium	Low	Low
					Vandalism of RC equipment - signs and signals	4. Failure of traffic control signals or active control	Type 4.3 Damaged infrastructure	Crash between road user and train at railway crossing	X			X		Low	Low	Negligible
Vehicle breakdown/stop on railway	2. Road user fails to keep clear while a train is approaching	Type 2.1 Road user stranded/crashed on RC	Crash between road user and train at railway crossing	X	X	X	X		Medium	Negligible	Negligible					