CHAPTER 18

Traffic, Transport and Access

INLAND RAIL—BORDER TO GOWRIE ENVIRONMENTAL IMPACT STATEMENT

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

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18. Traffic, Transport and Access

18.1 Introduction

The purpose of this chapter is to identify existing transport and access networks within the impact assessment area (refer Section 18.4.1), including the traffic that uses them, and to assess the potential impacts of the Inland Rail Border to Gowrie Project (the Project) on this infrastructure.

For this assessment, the consideration of transport and access networks has extended to the following infrastructure types:

- Rail
- Road (State-controlled roads, local government roads and private access)
- Public transport services
- School bus routes
- Long-distance coach services
- Stock routes
- Strategic touring routes
- Cycling and pedestrian networks
- Ports and airports.

This chapter assesses the Project's potential impact on these transport and access networks by providing the following:

- An overview of existing transport network conditions, including traffic volume
- A description of the proposed Project works in relation to transport infrastructure
- An overview of baseline operations associated with intersections, road links, pavements, existing road–rail interface locations and road safety
- A summary of the anticipated construction task, including routes and resultant traffic forecast
- A summary of rail operational traffic and maintenance processes
- A summary of the traffic impact assessment associated with intersections, road links, road–rail interface locations, pavements, road safety and access
- Mitigation measures relevant to traffic, transport and access issues.

This chapter should be read in conjunction with Appendix X: Traffic Impact Assessment.

18.2 Terms of Reference requirements

This chapter has been prepared to address Sections 11.107 to 11.116 of the Terms of Reference (ToR). A compliance check of this chapter against each of the relevant components of the ToR is presented in Table 18.1. In addressing relevant sections of the ToR, additional details have been provided, where relevant, in Appendix X: Traffic Impact Assessment.

Compliance of the draft EIS against the full ToR is documented in Appendix B: Terms of Reference Compliance Table.

TABLE 18.1 COMPLIANCE AGAINST RELEVANT SECTIONS OF THE TERMS OF REFERENCE

Traffic, transport and access Terms of Reference requirements		Draft EIS section
Existing Environment		
11.107	Describe and map the existing and planned transport infrastructure and corridors. Provide data on existing road, active transport and rail traffic in the Project area.	Section 18.5 Figure 18.1
11.108	Describe how the Project complies with the Queensland Level Crossing Safety Strategy 2012-2021 (refer Appendix 1) on new road–rail interfaces and the impacts on existing public road–rail interfaces.	Sections 18.3 and Section 18.6.1.2
Impact Assessment		
11.109	Assess the impacts of the Project on individual road–rail crossings and any cumulative impacts on the wider transport network.	Section 18.6.1.2, Section 18.6.2 and Section 18.9
11.110	Assess the construction impacts of the Project on public railway level crossings through the Australian Level Crossing Assessment Model (ALCAM) and assess the wider construction impacts on the road and active transport network.	Section 18.6.1.2 and Section 18.6.2
11.111	The EIS should include a clear summary of the total transport task for the Project, including workforce, haulage routes, inputs and outputs during the construction and operational phases.	Section 18.4.3.2 and Section 18.6.2.2
11.112	Present the transport assessment in separate sections for each project-affected mode (road, active transport and rail) as appropriate for each phase of the Project.	Sections 18.5 and Section 18.6
11.113	Provide sufficient information to allow an independent assessment of how existing and proposed transport infrastructure will be affected by project transport at the local and regional level (for example, local roads and state-controlled roads). Discussion should also refer to emergency service access.	Sections 18.5 and Section 18.6
11.114	Include details of the adopted assessment methodology for impacts on roads within the road impact assessment report in accordance with the Department of Transport and Main Roads Guide to Traffic Impact Assessment and the Department of Environment and Science EIS information guideline – Transport (refer to Appendix 1).	Section 18.3, Section 18.4.3.3 and Section 18.6.2
Mitigation Measures		
11.115	Measures to mitigate impacts on railway level crossings should be in accordance with the Queensland Level Crossing Safety Strategy 2012-2021.	Section 18.7
11.116	Discuss and recommend how identified impacts will be mitigated. Mitigation strategies are to be prepared in close consultation with relevant transport authorities (including relevant local governments).	Section 18.7

18.3 Policies, standards and guidelines

The transport planning frameworks, policies, plans and guidelines that are applicable to this assessment are outlined in Table 18.2.

Legislation that is applicable to transport infrastructure and issues included in this assessment is as follows:

- *Transport Infrastructure Act 1994* (Qld) (TI Act)
- *Transport Operations (Road Use Management) Act 1995* (Qld)
- *Transport Planning and Coordination Act 1994* (Qld)
- *Rail Safety National Law (Queensland) Act 2017* (Qld)
- *Stock Route Management Act 2002* (Qld).

The relevance to the above-mentioned legislation to the Project is discussed in Chapter 3: Legislation and Project Approvals Process.

TABLE 18.2 POLICIES, STANDARDS AND GUIDELINES RELEVANT TO THIS ASSESSMENT

Policy, strategy or guideline	Relevance to the Project
Local Government Plans/Strategies	
Toowoomba City Centre Master Plan: Master Plan Report (Toowoomba Regional Council (TRC), 2010)	The *Toowoomba City Centre Master Plan* aims to guide land use planning and transport, as well as identify key projects that will support the overall strategy outlined in the Plan. It provides recommendations on how planning schemes can be developed in order to achieve the aims of the master plan and also consists of an implementation plan that comprises a series of action plans, which support the overall Master Plan vision in the short, medium and long term. The Project passes through the local government area (LGA) of TRC. In accordance with Schedule 6, Part 5, Section 26(2) of the *Planning Regulation 2017,* provisions of this local government planning scheme do not apply to the Project. Notwithstanding this, the zoning intent for these areas as determined by the planning schemes have been taken into consideration when determining impacts of the Project on future land uses in the area.
Toowoomba Region Sustainable Transport Strategy (TRC, 2014a)	The purpose of the Toowoomba Region strategy is to guide transport policy, integrated land use and transport planning, and future transport investment decisions to ensure the sustainable economic growth of the region. The strategy aims to set out the TRC's policy directions and actions around transport elements, such as land use integration, public transport, active transport, freight and air travel, and sets out key plans and projects to implement this policy direction. As the Project passes through the LGA of TRC, the Project should adopt the actions/policies outlined in the strategy to improve land-use integration, public transport, active transport, freight and air travel where necessary.
Toowoomba Local Government Infrastructure Plan (LGIP) (TRC, 2017b)	The LGIP identifies trunk infrastructure plans for five networks, including transport. The purpose of the LGIP is to integrate infrastructure planning with the land-use planning identified in the *Toowoomba Regional Planning Scheme 2012* and ensure that trunk infrastructure is planned and provided in an efficient and orderly manner. The LGIP provides a summary of the existing and projected demand for the transport network within the Toowoomba LGA. These numbers have been a point of reference when validating the data inputs to the traffic modelling for the Project.
Goondiwindi Local Government Infrastructure Plan (GRC, 2018c)	The Goondiwindi LGIP identifies trunk infrastructure plans for five networks, including transport. The purpose of the LGIP is to integrate infrastructure planning with the land use planning identified in the *Goondiwindi Regional Council Planning Scheme 2018* and ensure that trunk infrastructure is planned and provided in an efficient and orderly manner. The LGIP provides a summary of the existing and projected demand for the transport network within the Goondiwindi LGA. These numbers have been a point of reference when validating the data inputs to the traffic modelling for the Project.
Guidelines	
Office of National Rail Safety Regulator (ONRSR) Guideline: Major Projects (ONRSR, 2016a)	The ONRSR is a regulatory agency that has been established under the Rail Safety National Law (RSNL) to administer a national system of rail safety regulation. All major railway projects will result in a requirement to either vary or obtain accreditation under the RSNL. This guideline describes the minimum processes to be followed, from the onset of a major project, in order to support accreditation applications. The ONRSR has developed this guideline to: ▸ Provide guidance to duty holders about their duties and related obligations under the RSNL ▸ Explain the ONRSR's minimum expectations when reviewing the processes and associated evidence used to demonstrate that safe outcomes are being planned and, ultimately, have been achieved by major projects.

Policy, strategy or guideline	Relevance to the Project
Office of National Rail Safety Regulator (ONRSR) Guideline: Major Projects (ONRSR, 2016a) (continued)	In relation to the delivery of major projects, the following are areas of particular interest to all parties: ▸ Demonstration that the concept design minimises macro risk ▸ Identification of the accredited party/parties ▸ Demonstration of effective management and control to ensure the safe management of change across all entities involved with the major project ▸ Assuring safe outcomes: to gain confidence that safety risk is managed, 'so far as is reasonably practicable' (SFAIRP), in a manner appropriate to the complexity of the project. As a major project, Inland Rail and this Project is expected to be compliant with the requirements of the RSNL. Adherence to the requirements of this guideline facilitates that compliance.
ONRSR Guideline: Meaning of duty to ensure safety so far as is reasonably practicable (ONRSR, 2016b)	Sections 52, 53 and 54 of the RSNL provide that rail transport operators and associated industry participants (contractors, manufacturers, designers and suppliers)—referred to collectively as duty holders—have an obligation to ensure the safety of railway operations. These statutory duties do not require safety at any cost. Under section 46 of the RSNL, duty holders are required: ▸ To eliminate risks to safety SFAIRP ▸ If it is not reasonably practicable to eliminate risks to safety, to minimise those risks SFAIRP. The document provides guidance on the interpretation and application of the term SFAIRP in considering the standard that a duty holder is expected to meet under the RSNL and national regulations. In this context, and under the RSNL (s47), reasonably practicable means that which is, or was at a particular time, reasonably able to be done to ensure safety, taking into account and weighing up all relevant matters, including: ▸ The likelihood of the hazard or the risk concerned occurring ▸ The degree of harm that might result from the hazard or the risk ▸ What the person concerned knows, or ought reasonably to know, about the hazard or risk, and ways of eliminating or minimising the risk ▸ The availability and suitability of ways to eliminate or minimise the risk ▸ After assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with available ways of eliminating or minimising the risk, including whether the cost is grossly disproportionate to the risk. The reference design for the Project, including locations of intersection with the existing transport network, has been developed to comply with requirements of the RSNL and the principles of SFAIRP.
ONRSR Policy: Level Crossings (ONRSR, 2019a)	This policy sets out ONRSR's approach and broader expectations for improving the safety of railway operations with regard to existing level crossings and the early design of future road and rail intersections. The policy sets out the expectations that ONRSR has for the rail industry, road managers and governments, to reduce the safety risk of level crossings. The design decision-making process for road–rail intersections along the Project alignment has been conducted in reference to this policy.
Queensland Level Crossing Safety Strategy 2012–2021 (Department of Transport and Main Roads (DTMR), 2012)	The *Queensland Level Crossing Safety Strategy* (QLCSS) complements the *National Railway Level Crossing Safety Strategy 2017–2020,* which was released by the Australian Transport Council in 2009 to promote national consistency in addressing this important issue. The strategy focuses on all users of level crossings, including train crew and passengers, road vehicle drivers, riders, passengers and pedestrians. The strategy excludes private (occupational) crossings and crossings that are part of the cane rail network. These crossings, including any that may be accessible to the public, are a workplace health and safety matter and are managed under separate arrangements. For the purpose of the assessment, the QLCSS has been used, with its associated key performance indicators, in order to ensure that mitigation measures determined for all public road–rail interface locations (level crossings) through the analysis process focus on safety, risk and operational efficiency.

Policy, strategy or guideline	Relevance to the Project
Guideline to Traffic Impact Assessment December 2018 (GTIA) (DTMR, 2018)	The GTIA has been used as a point of reference for the traffic and transport assessment, as it relates to roads and intersections affected by the construction and operation of the Project. GTIA provides information about the processes involved to assess road impacts triggered by a proposed development. While it is not mandatory, the GTIA provides a basis for the assessment of road impacts and has been adopted for the preliminary assessment on traffic and pavement impacts by the Project. Although the guidelines only apply to the State-controlled roads, local government may choose to adopt or use this as a reference. In general, the DTMR will consider a development's road impacts to be 'insignificant' if the development generates an increase in traffic on State-controlled roads of less than 5 per cent over existing levels, either measured in terms of annual average daily traffic (AADT) or standard axle repetitions (SARs). Inputs to the GTIA process typically include: the existing traffic levels; the Project construction timeframe and that of other projects; volume of construction materials; haul vehicles and their capacities; and, therefore, the number of new or additional Project-related trips likely to use the network. The use of the assessment process recommended in the GTIA will provide the Project with clarification on likely traffic impacts on nominated haulage routes, intersections and other affected roads.
Manual of Uniform Traffic Control Devices Part 7: Railway Crossings (Department of Transport and Main Roads (DTMR), 2019e)	The use of signs, markings and other devices at railway level crossings, based on uniform standards and practices, is essential in the interests of safety for both rail traffic and road users. This part of the *Manual of Uniform Traffic Control Devices* sets out the various controls used at railway, cane railway and combined railway/cane railway level crossings, and describes the devices and assemblies, their use and location, to achieve these controls.
Guide to Development in a Transport Environment: Rail (DTMR, 2015)	The *Guide to Development in a Transport Environment: Rail* (the guide) provides important information for the planning, design or delivery of development in the vicinity of railways in Queensland. It is intended for use as a technical reference document. The guide provides specific technical guidance to assist development proponents to achieve compliance with the performance outcomes and acceptable outcomes in the Queensland State Development Assessment Provisions in relation to managing impacts of development on railway safety, structural integrity and operation. The guide also provides useful information in relation to the operational constraints and requirements when undertaking construction work within the railway environment.
Guide to Traffic Management Part 12: Traffic Impact Assessments (Austroads, 2016)	This guide helps traffic and transport practitioners identify and manage the impacts on the road arising from land-use developments. The impacts being considered are those directly affecting road users of all classes, from large freight vehicles and buses, to cyclists and pedestrians. Transport that runs on separate alignments or are grade separated, such as elevated bus rapid transit metro rail, are not directly considered.
Guide to Traffic Management Part 3: Traffic Studies and Analysis Methods (Austroads, 2020a)	In the context of the Guide, Part 3: Traffic Studies and Analysis Methods outlines the importance of traffic data and its analysis for the purpose of traffic management and traffic control within a network. It serves to ensure some degree of consistency in conducting traffic studies and surveys. It provides guidance on the different types of traffic studies and surveys that can be undertaken, their use and application, and methods for traffic data collection and analysis.
Cycling Aspects of Austroads Guides (Austroads, 2014)	This guideline contains information that relates to the planning, design and traffic management of cycling facilities. The guideline provides: ▸ An overview of planning and traffic management considerations and cross-references to other Austroads guides and texts for further detailed information ▸ A summary of design guidance and criteria relating to on-road and off-road bicycle facilities together with a high level of cross-referencing to the relevant Austroads guides for further information ▸ Information and cross-references on the provision for cyclists at structures, traffic control devices, construction and maintenance considerations and end-of-trip facilities.

18.4 Methodology

This section provides an overview of the spatial extent of assessment, the data accessed for assessment and the methodologies applied in assessing impacts associated with the Project.

18.4.1 Impact assessment area

The impact assessment area sets the spatial limits for establishing the existing traffic, transport and access network conditions and assessing potential impacts associated with the Project. The GTIA provides guidance on the conditions for determining the spatial extent for a traffic impact assessment. This guidance is provided in Table 18.3.

TABLE 18.3 EXTENT OF IMPACT ASSESSMENT AREA BY IMPACT TYPE

Impact type	Impact assessment area
Road safety	All intersections and road links where the development traffic exceeds 5 per cent of the base traffic for any movement in the design peak periods in the year of opening of each stage.
Access and frontage	The State-controlled road corridor for the extent of the geometric frontage of the site includes works on both the frontage side and potentially on the opposite side of the road.
Intersection delay	All intersections where the development traffic exceeds 5 per cent of the base traffic for any movement in the design peak periods in the year of opening of each stage.
Road link capacity	All road links where the development traffic exceeds 5 per cent of the base traffic in either direction on the link's annual average daily traffic (AADT) in the year of opening of each stage.
Pavement	All road links where the development SARs exceed 5 per cent of the base traffic in either direction on the link's SARs in the year of opening of each stage.
Transport infrastructure	All road links where the development traffic exceeds 5 per cent of the base traffic in either direction on the link's AADT in the year of opening of each stage or where DTMR identifies prevailing structural integrity issues of transport infrastructure (e.g. bridges or culverts).

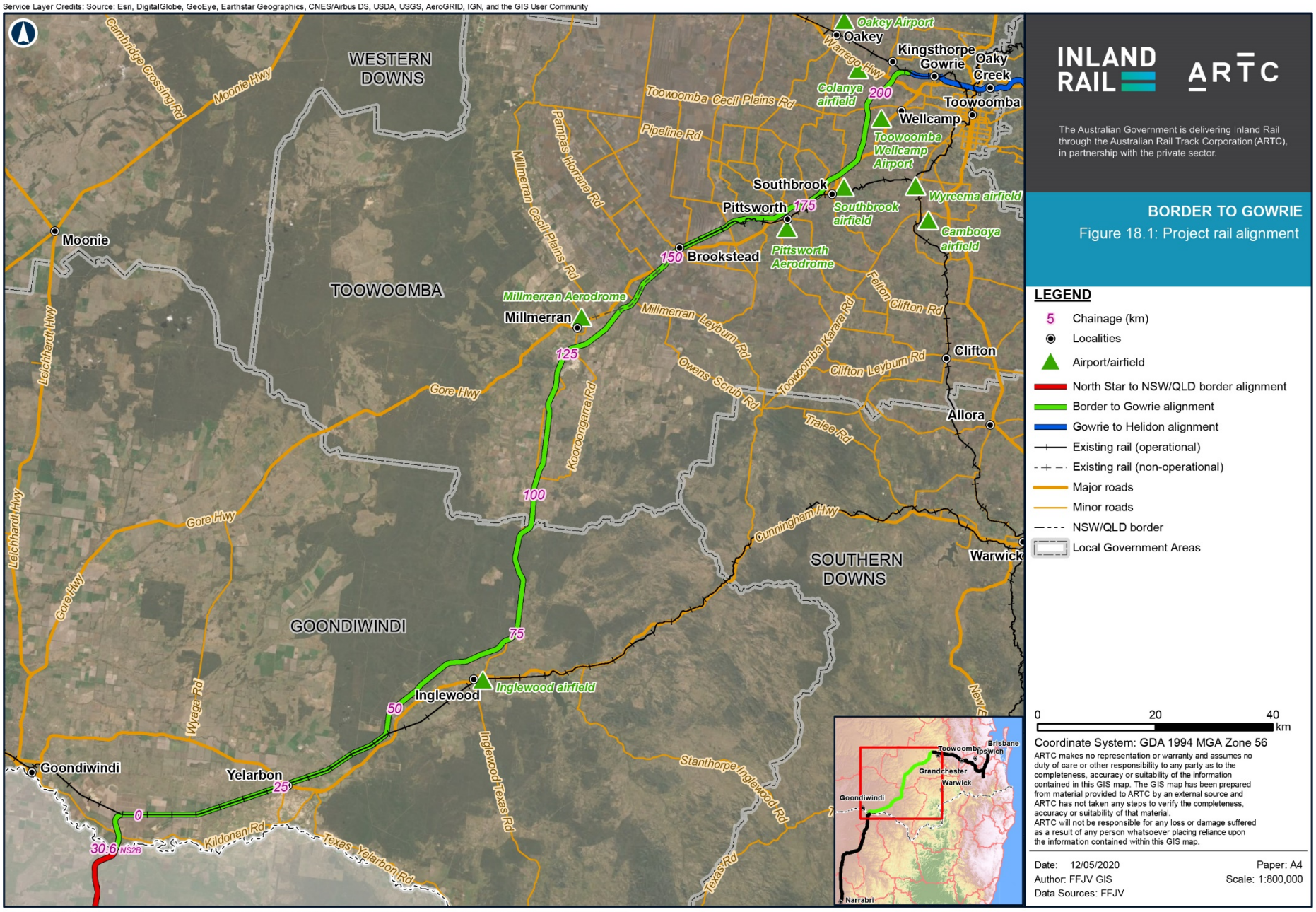
Based on the guidance in Table 18.3, the impact assessment area has been established to comprise:

- The extent of the proposed rail corridor for the Project, including public roads intersecting the rail corridor (road–rail interface locations)
- The road network anticipated to be used for the transport of workforce, materials and equipment during the construction and operation phases of the Project
- Other transport facilities in proximity to the Project, such as airports.

In regard to traffic, the impact assessment area defines where impacts would most likely occur at intersections and on links in the network that may be used by Project traffic.

The road–rail interface locations included in the impact assessment area are all public road crossings that are intersected by the reference design for the Project.

Figure 18.1 identifies the Project footprint and Figure 18.2a-h illustrates the road–rail interface locations in the reference design.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WESTERN DOWNS
TOOWOOMBA
GOONDIWINDI
SOUTHERN DOWNS
Moonie
Oakey
Oakey Airport
Kingsthorpe
Gowrie
Oaky Creek
Toowoomba
Wellcamp
Toowoomba Wellcamp Airport
Colanya airfield
Southbrook
Southbrook airfield
Wyreema airfield
Pittsworth
Pittsworth Aerodrome
Cambooya airfield
Brookstead
Millmerran
Millmerran Aerodrome
Clifton
Allora
Warwick
Inglewood
Inglewood airfield
Yelarbon
Goondiwindi
Moonie Hwy
Cambridge Crossing Rd
Leichhardt Hwy
Gore Hwy
Warrego Hwy
Toowoomba Cecil Plains Rd
Pipeline Rd
Pampas Horrane Rd
Millmerran Cecil Plains Rd
Millmerran Leyburn Rd
Felton Clifton Rd
Toowoomba Karara Rd
Clifton Leyburn Rd
Owens Scrub Rd
Tralee Rd
Kooroongarra Rd
Cunningham Hwy
Wyaga Rd
Inglewood Texas Rd
Stanthorpe Inglewood Rd
Texas Rd
Kildonan Rd
Texas Yelarbon Rd
New E
0
25
50
75
100
125
150
175
200
30.6
NS2B
Brisbane
Ipswich
Toowoomba
Grandchester
Warwick
Goondiwindi
Narrabri
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BORDER TO GOWRIE
Figure 18.1: Project rail alignment
LEGEND
Chainage (km)
Localities
Airport/airfield
North Star to NSW/QLD border alignment
Border to Gowrie alignment
Gowrie to Helidon alignment
Existing rail (operational)
Existing rail (non-operational)
Major roads
Minor roads
NSW/QLD border
Local Government Areas
0
20
40
km
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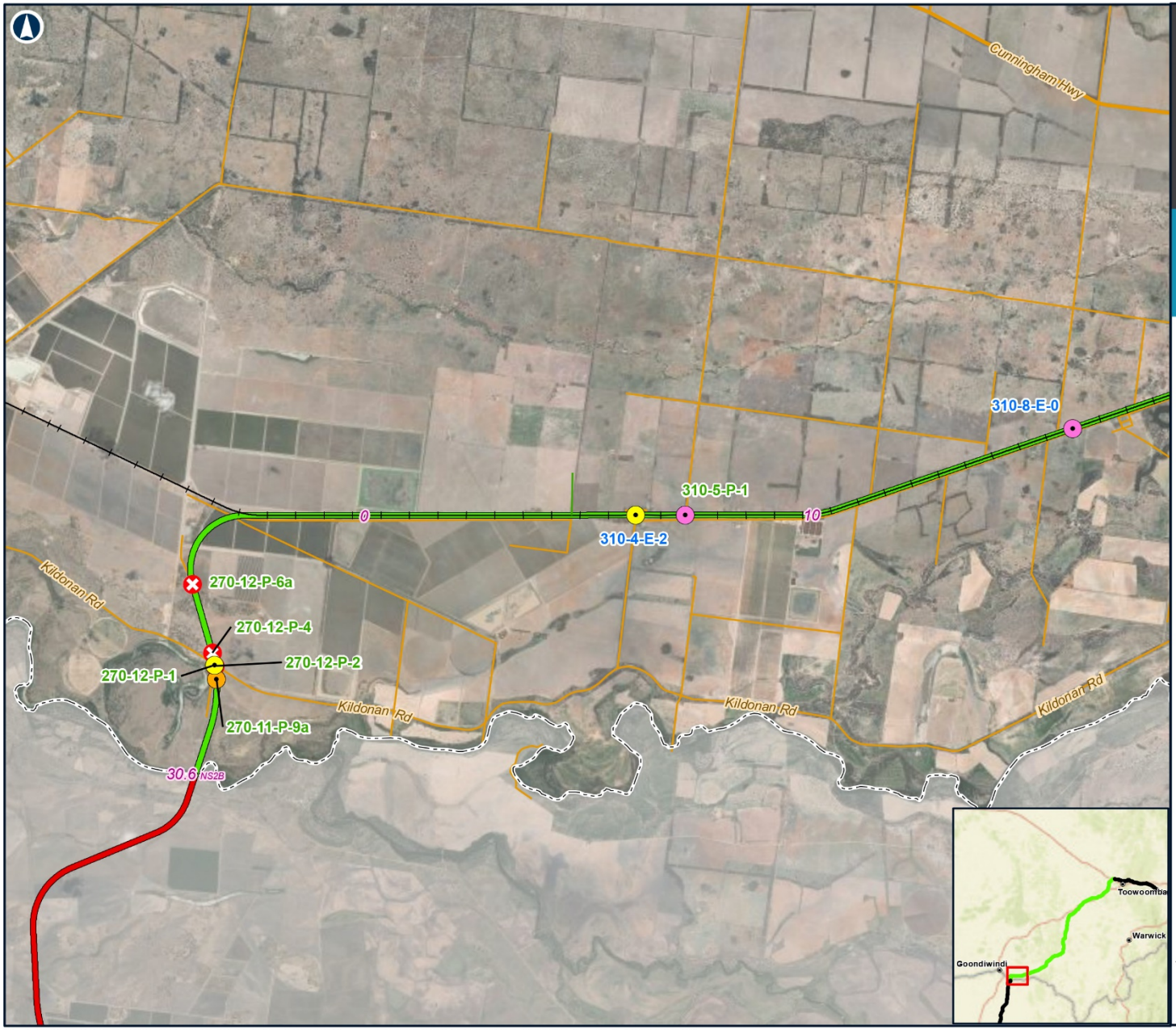

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BORDER TO GOWRIE

Figure 18.2a:
Project road-rail interface locations

LEGEND

- 5 Chainage (km)
- Grade separation - Rail over
- Active level crossing
- Passive level crossing
- E Existing road rail interface
- P Proposed road rail interface
- North Star to NSW/QLD border alignment
- Border to Gowrie alignment
- Existing rail (operational)
- Major roads
- Minor roads
- NSW/QLD border

0 3 6 km

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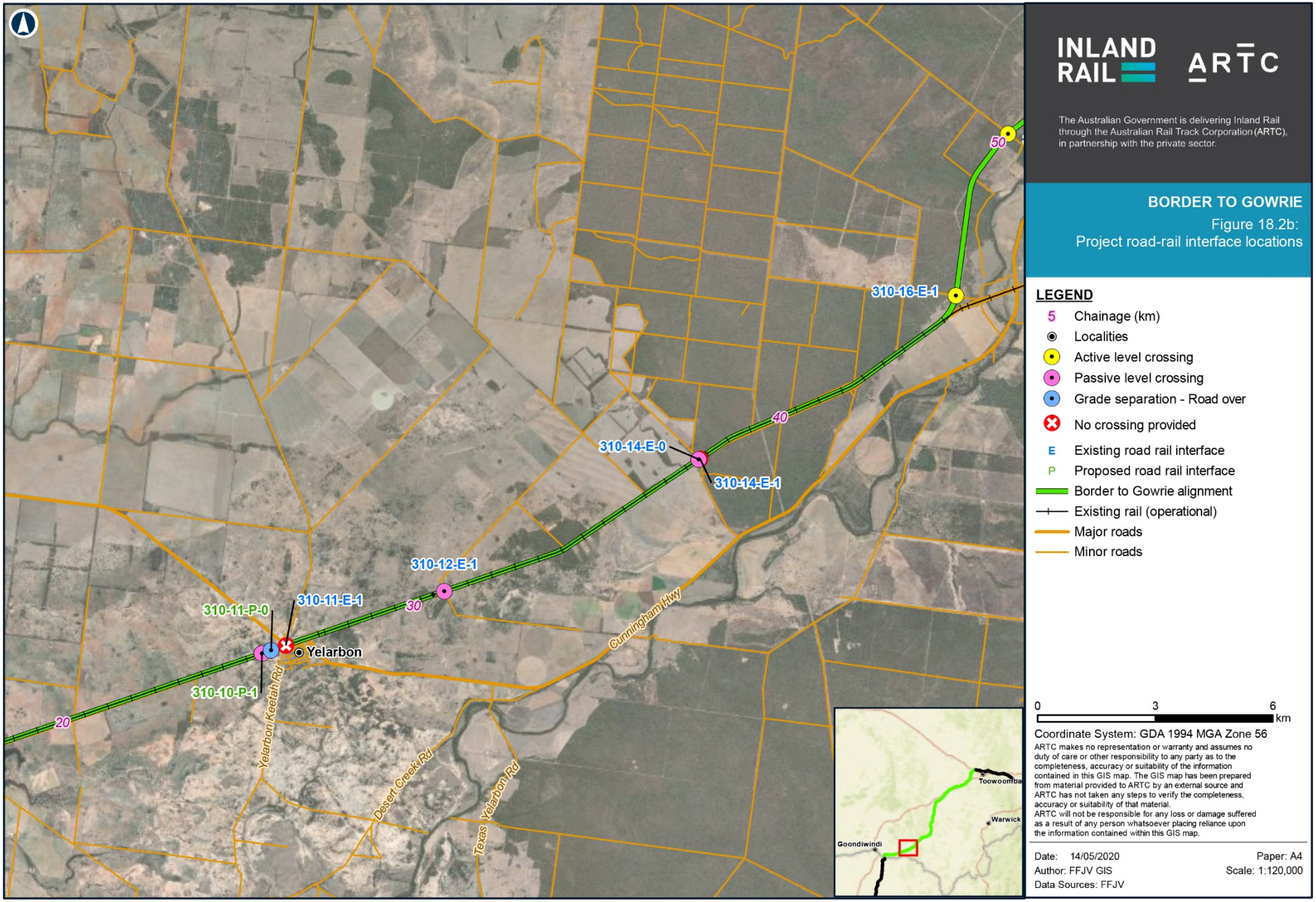

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BORDER TO GOWRIE

Figure 18.2b:
Project road-rail interface locations

LEGEND

- 5 Chainage (km)
- Localities
- Active level crossing
- Passive level crossing
- Grade separation - Road over
- No crossing provided
- E Existing road rail interface
- P Proposed road rail interface
- Border to Gowrie alignment
- Existing rail (operational)
- Major roads
- Minor roads

0 3 6 km

Coordinate System: GDA 1994 MGA Zone 56

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BORDER TO GOWRIE

Figure 18.2c:
Project road-rail interface locations

LEGEND

- 5 Chainage (km)
- Localities
- Active level crossing
- Passive level crossing
- No crossing provided
- E Existing road rail interface
- P Proposed road rail interface
- Border to Gowrie alignment
- Existing rail (operational)
- Major roads
- Minor roads

0 3 6 km

Coordinate System: GDA 1994 MGA Zone 56

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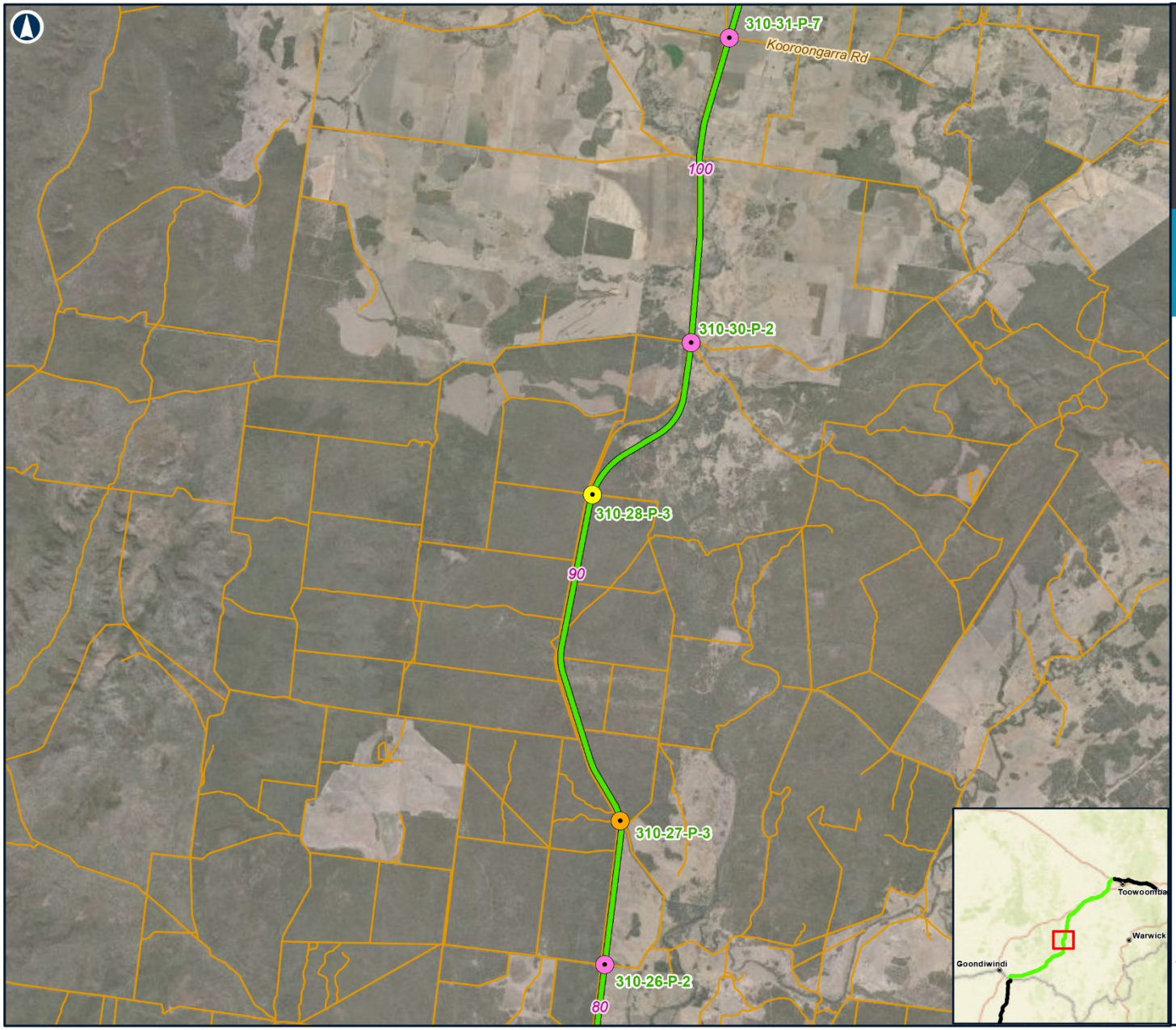

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BORDER TO GOWRIE

Figure 18.2d:
Project road-rail interface locations

LEGEND

- 5 Chainage (km)
- Active level crossing
- Passive level crossing
- Grade separation - Rail over
- E Existing road rail interface
- P Proposed road rail interface
- Border to Gowrie alignment
- Minor roads

0 3 6 km

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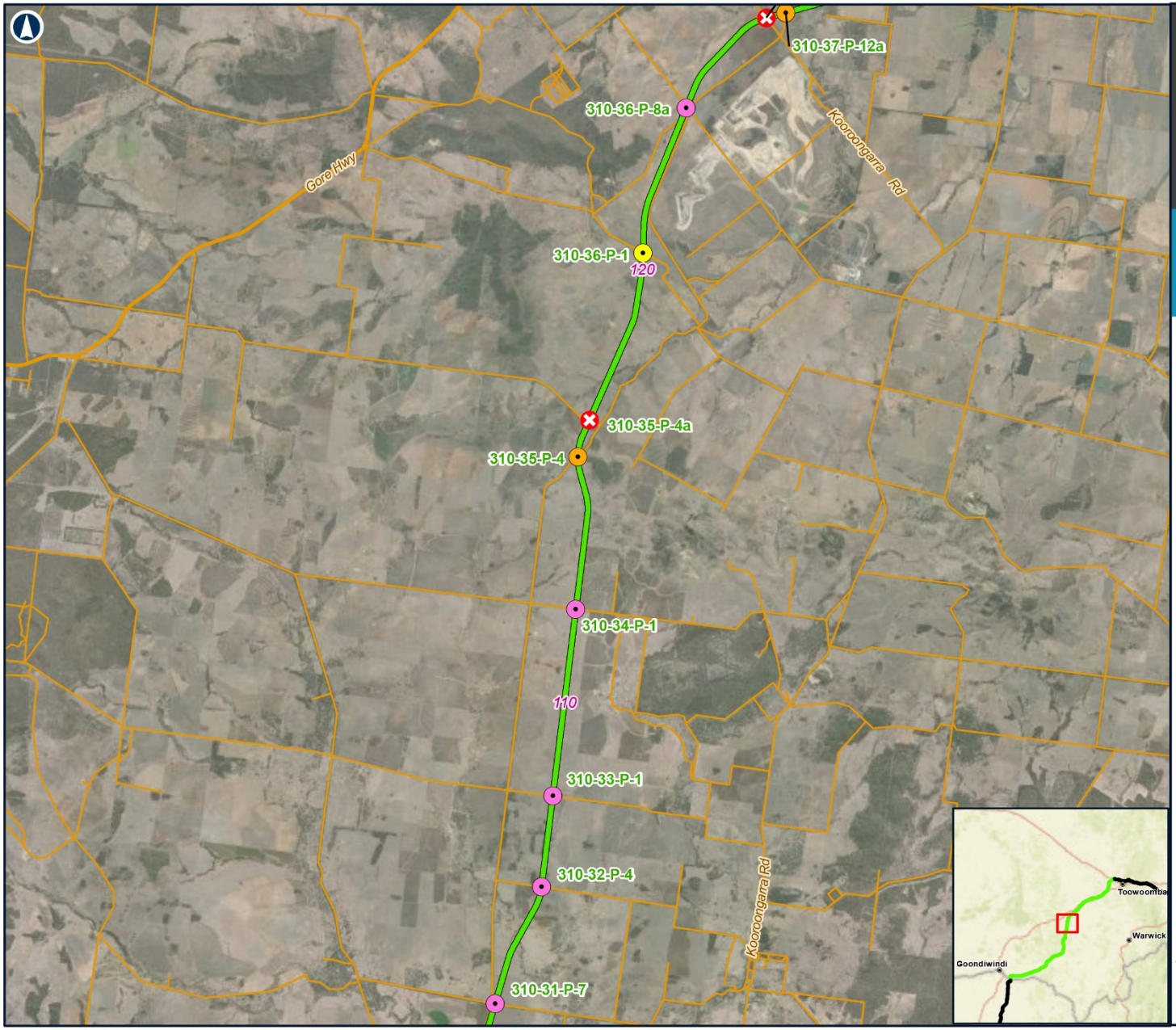

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BORDER TO GOWRIE

Figure 18.2e:
Project road-rail interface locations

LEGEND

- 5 Chainage (km)
- Active level crossing
- Passive level crossing
- Grade separation - Rail over
- No crossing provided
- E Existing road rail interface
- P Proposed road rail interface
- Border to Gowrie alignment
- Major roads
- Minor roads

0 3 6 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 14/05/2020 Paper: A4
Author: FFJV GIS Scale: 1:120,000
Data Sources: FFJV

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BORDER TO GOWRIE

Figure 18.2f:
Project road-rail interface locations

LEGEND

- 5 Chainage (km)
- Localities
- Active level crossing
- Passive level crossing
- Grade separation - Rail over
- Grade separation - Road over
- No crossing provided
- E Existing road rail interface
- P Proposed road rail interface
- Border to Gowrie alignment
- Existing rail (operational)
- Existing rail (non-operational)
- Major roads
- Minor roads

0 3 6 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 14/05/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
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BORDER TO GOWRIE

Figure 18.2g:
Project road-rail interface locations

LEGEND

- 5 Chainage (km)
- Localities
- Active level crossing
- Passive level crossing
- Grade separation - Rail over
- Grade separation - Road over
- No crossing provided
- E Existing road rail interface
- P Proposed road rail interface
- Border to Gowrie alignment
- Existing rail (operational)
- Major roads
- Minor roads

0 3 6 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 14/05/2020
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Data Sources: FFJV

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BORDER TO GOWRIE

Figure 18.2h:
Project road-rail interface locations

LEGEND

- 5 Chainage (km)
- Localities
- Active level crossing
- Passive level crossing
- Grade separation - Rail over
- No crossing provided
- E Existing road rail interface
- P Proposed road rail interface
- Border to Gowrie alignment
- Gowrie to Helidon alignment
- Existing rail (operational)
- Major roads
- Minor roads
- Airport

0 3 6 km

Coordinate System: GDA 1994 MGA Zone 56

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Data Sources: FFJV

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18.4.1.1 Construction transport routes

Transportation of materials, equipment and workforce for the construction of the Project will be via existing State-controlled roads and local government roads. All routes generally follow roads that are proposed to be used for the transport of each material type, considering distance and, where possible, staying on arterial roads and avoiding populated areas such as town centres. All routes passing through or originating in Toowoomba have been formed using haulage routes that were used for construction of the Toowoomba Second Range Crossing (now Toowoomba Bypass) as a guide. The National Heavy Vehicle Regulator (NHVR) journey planner was also used to identify roads suitable for heavy vehicles.

Sleeper routes, which, for the purpose of this assessment, are assumed to originate from NSW, were formulated using the NVHR journey planner, which provided guidance in identifying suitable roads for heavy vehicles. They were then consolidated, where feasible, to minimise the number of roads affected. This was achieved by selecting the same roads, where possible, in circumstances where the alternate route did not increase the route distance significantly. So far, two overarching sleeper routes have been generated for the Project alignment:

- North of Millmerran uses the Pacific, Warrego Highway and Gore Highway, including the new Toowoomba Bypass
- South of Millmerran uses Summerland Way and Bruxner Highway.

It is worth noting that the determination of the final construction and heavy vehicle (HV) routes will be subject to consultation between DTMR, the local government authority and the Principal Contractor during the next phase of the Project and may involve the construction of temporary work and/or amendments to the permanent road network. This is consistent with Section 7.5 of DTMR's GTIA, which states that the traffic impact assessment, '*may be finalised when project contractors are appointed, and final traffic generation is clearer*'.

Figure 18.3 illustrates the proposed primary construction transport routes that the Principal Contractor may use. Although other roads might also be used for the transport of construction activities, these roads would not be the primary construction routes and will have significantly less construction traffic volumes. Impacts associated with the construction of the Project are explored in detail in Section 18.8.

Further details on construction transport routes are included in Appendix X: Traffic Impact Assessment.

18.4.1.2 Operational transport routes

Rail maintenance workforce movement and the transportation of maintenance materials are expected to be the major transport tasks during the operation phase of the Project. Maintenance vehicles will use the access tracks that will be constructed for most of the inspection and maintenance activities. It is expected that the number of vehicle movements during operation of the Project will be very low relative to overall regional traffic volumes. This has been discussed and accepted by TRC, GRC and DTMR during consultation throughout the reference design process.

Impacts associated with the operation of the Project are explored in detail in Section 18.4.3.

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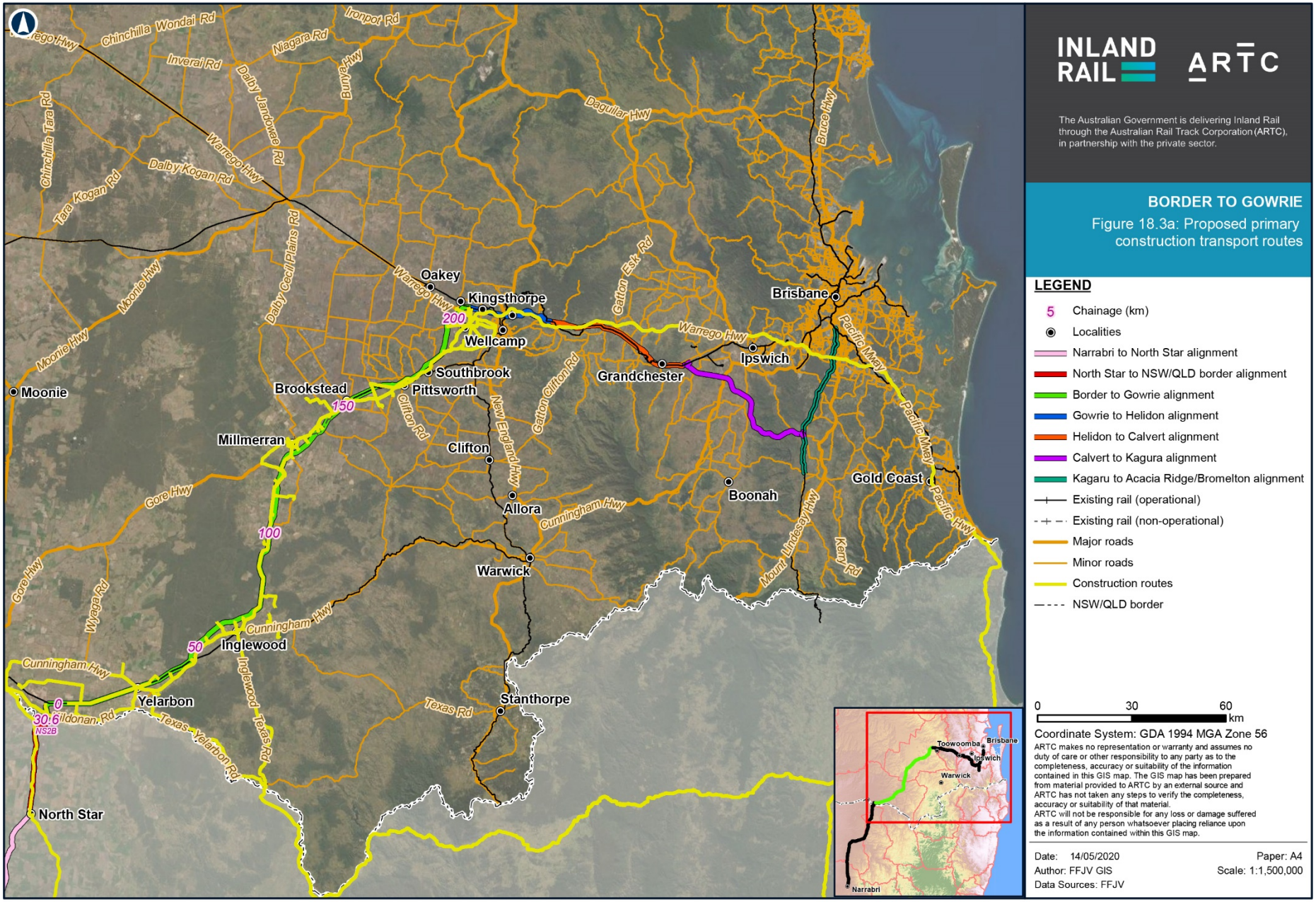

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BORDER TO GOWRIE

Figure 18.3a: Proposed primary construction transport routes

LEGEND

- 5 Chainage (km)
- Localities
- Narrabri to North Star alignment
- North Star to NSW/QLD border alignment
- Border to Gowrie alignment
- Gowrie to Helidon alignment
- Helidon to Calvert alignment
- Calvert to Kagura alignment
- Kagaru to Acacia Ridge/Bromelton alignment
- Existing rail (operational)
- Existing rail (non-operational)
- Major roads
- Minor roads
- Construction routes
- NSW/QLD border

0 30 60 km

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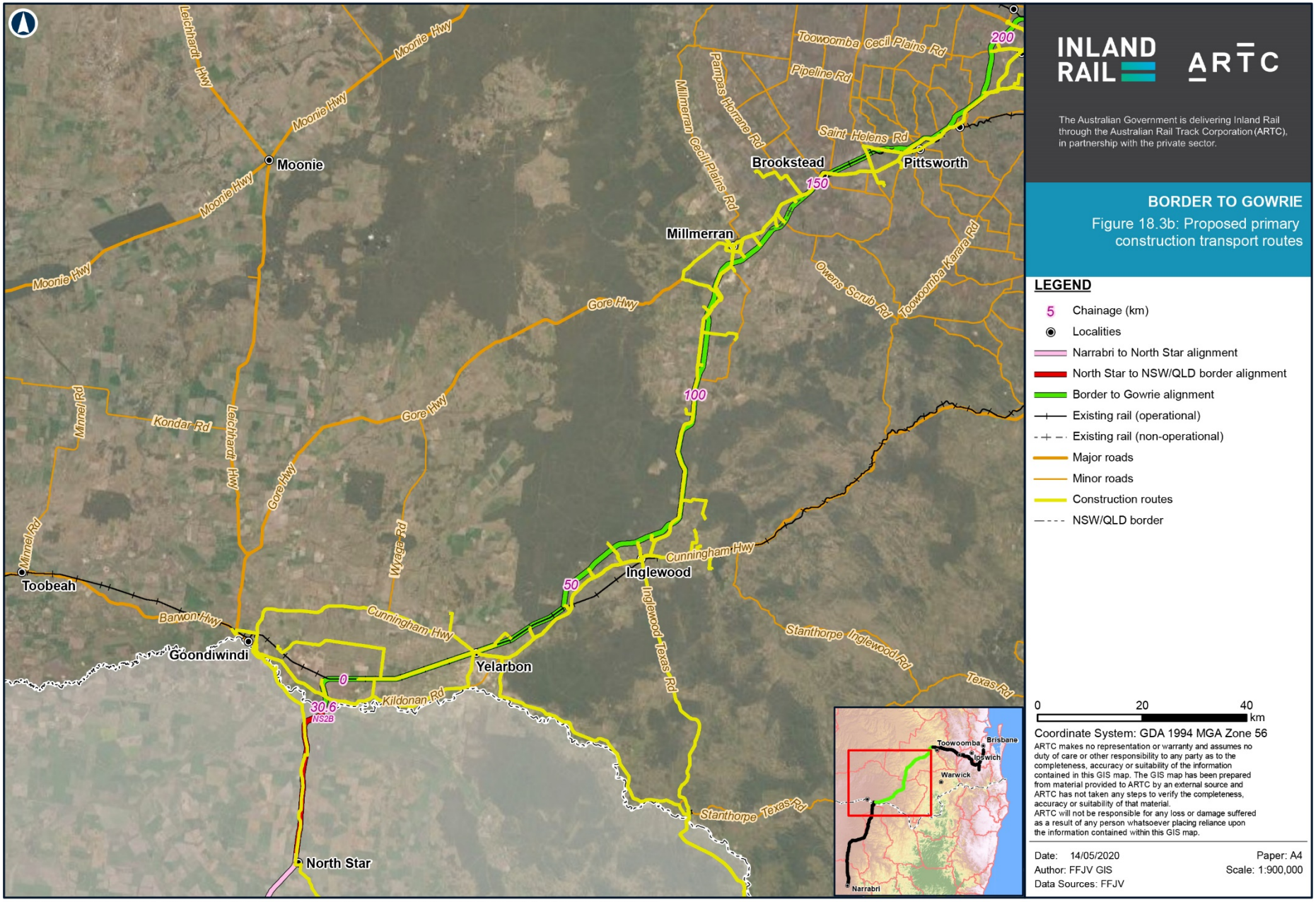

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BORDER TO GOWRIE

Figure 18.3b: Proposed primary construction transport routes

LEGEND

- 5 Chainage (km)
- Localities
- Narrabri to North Star alignment
- North Star to NSW/QLD border alignment
- Border to Gowrie alignment
- Existing rail (operational)
- Existing rail (non-operational)
- Major roads
- Minor roads
- Construction routes
- NSW/QLD border

0 20 40 km

Coordinate System: GDA 1994 MGA Zone 56

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Author: FFJV GIS
Data Sources: FFJV

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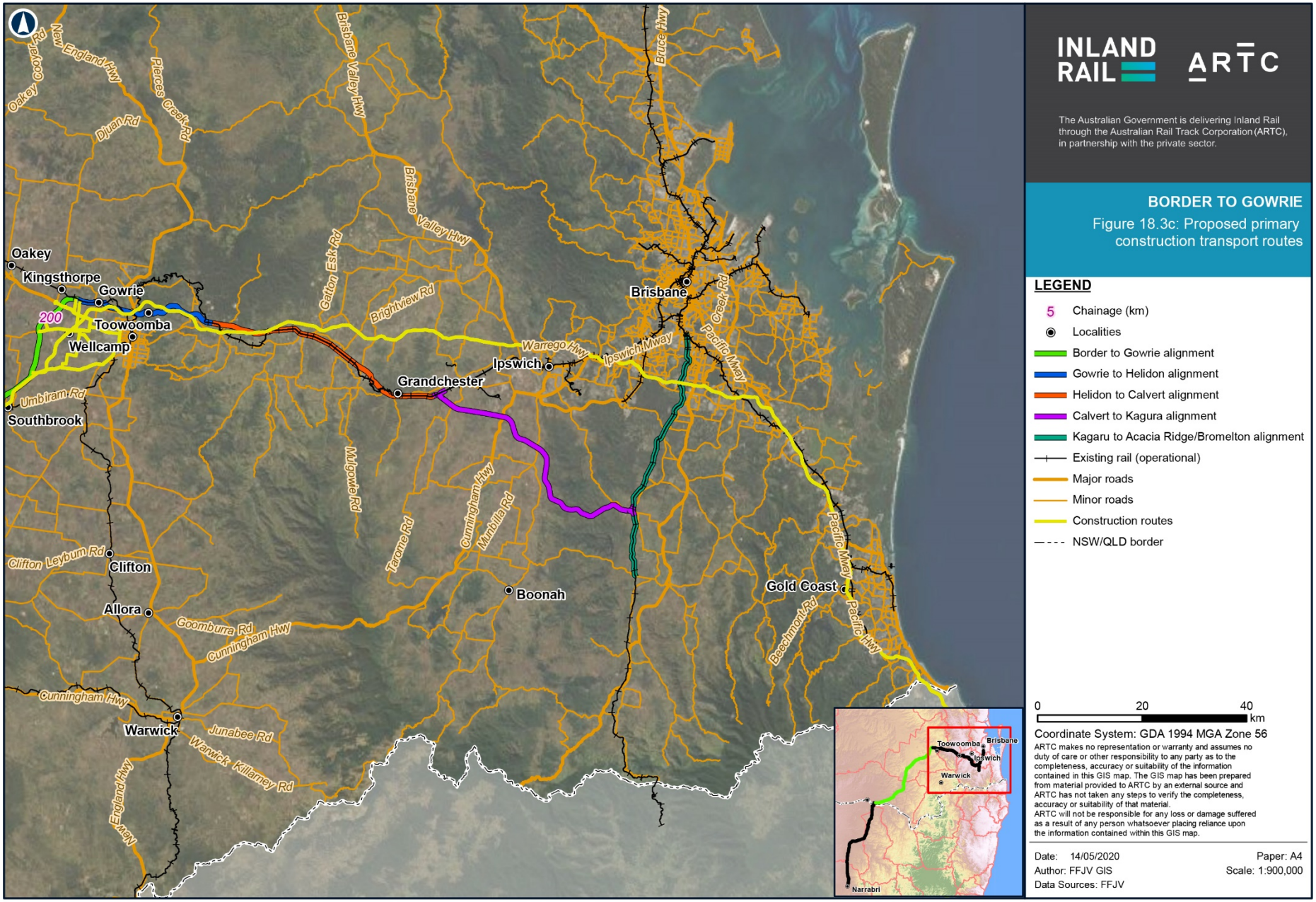

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BORDER TO GOWRIE

Figure 18.3c: Proposed primary construction transport routes

LEGEND

- 5 Chainage (km)
- Localities
- Border to Gowrie alignment
- Gowrie to Helidon alignment
- Helidon to Calvert alignment
- Calvert to Kagura alignment
- Kagaru to Acacia Ridge/Bromelton alignment
- Existing rail (operational)
- Major roads
- Minor roads
- Construction routes
- NSW/QLD border

0 20 40 km

Coordinate System: GDA 1994 MGA Zone 56

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18.4.2 Data sources

The traffic impact assessment has been informed by publicly available data and information provided by the road controlling authorities, being DTMR, NSW Roads and Maritime Services (RMS) and local councils for local government areas (LGAs) within the impact assessment area.

The following information was requested from relevant road controlling authorities:

- Local government/State policies and strategies or relevance to the traffic impact assessment for the Project
- Road configurations and access policies (existing and proposed)
- Road network and hierarchy maps
- Road link capacity thresholds
- Road classification details, including typical cross sections
- Existing traffic data
- Traffic growth projections
- Programmed road works and upgrades
- Future planned road networks
- Approved and future development plans
- Road use management plans
- Designated freight and seasonal traffic routes
- Dangerous goods vehicle routes
- Bus and school bus routes
- Stock routes and travelling stock reserves
- Multi-combination routes and zones
- Standard axle loads and existing pavement conditions
- Prevailing structural integrity issues (i.e. vulnerable structures)
- Structural capacity/life of structures
- Crash data.

Assumptions were made in instances where requested data was not available. Where made, the basis of assumptions has been documented in this chapter and in Appendix X: Traffic Impact Assessment, as appropriate.

Publicly available and supplied information was supplemented by traffic count data collected through surveys for the Project. The purpose of these traffic count surveys was to obtain background traffic data for locations where data was not available or could not be inferred from the surrounding network. Further details on the locations and method of traffic count surveys are provided in Appendix X: Traffic Impact Assessment.

18.4.3 Traffic

The assessment of traffic impacts requires a background 'without' Project traffic scenario to be established for the road networks within the impact assessment area, and for this background to be compared to future scenarios that include construction and operation traffic for the Project (i.e. the 'with Project' scenario).

The assessment of background and Project-induced conditions, summarised in Figure 18.4, includes consideration of the Project's activities and traffic impacts on road safety, access and frontage, intersections, road links, pavement and road–rail interfaces. Following the assessment of potential impacts, suitable mitigation and management measures can be developed and proposed.

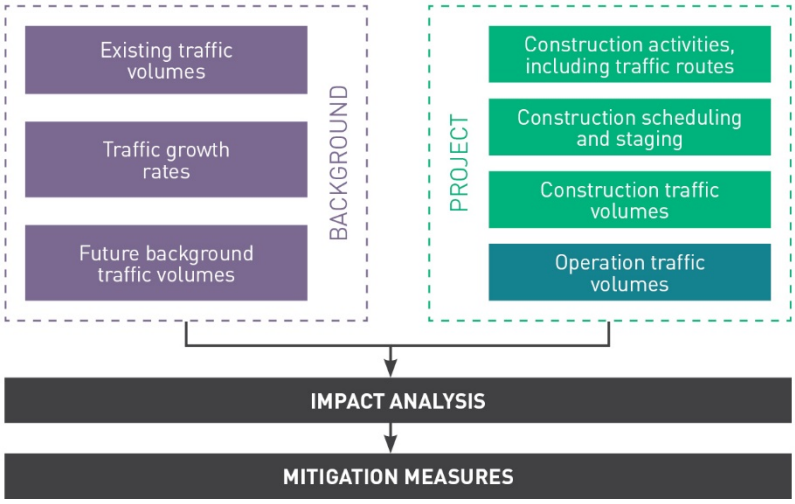


FIGURE 18.4 BACKGROUND TRAFFIC DATA AND PROJECT CONTRIBUTIONS REQUIRED FOR TRAFFIC IMPACT ASSESSMENT

The sections below describe the approach for establishing background traffic conditions for the impact assessment area, as well as traffic contributions from Project activities during construction and operation. A discussion is also provided on the assessment of this data to identify impacts and establish appropriate mitigation measures.

18.4.3.1 Background traffic

The following sections describe the process that has been followed for establishing background traffic volumes for existing conditions and future scenarios without the Project.

Existing traffic volumes

To enable assessment, existing traffic volumes are required for intersections and links in the network that may be used by Project traffic. In the first instance, this information was obtained from road-controlling authorities. Where data was not available, these roads were assessed to determine if background traffic conditions could be reasonably derived from data available on the surrounding network. In these situations, the local government authority was consulted to verify the basis of assumptions that were applied.

In these instances, traffic volumes were assumed by adopting the following process:

- Classify each road segment within the impact assessment area based on the following classification system:
  - Urban local road
  - Urban collector road
  - Urban arterial road
  - Rural local road
  - Rural collector road
  - Rural arterial road
  - Urban motorway (no volumes assumed for motorways)
  - Rural motorway (no volumes assumed for motorways).
- Traffic flow rates were estimated based on the following principles, where the K-value represents the ratio between the 30th highest hourly peak volume and AADT:
  - Urban local road: Volumes derived by assuming level of service (LOS) A with associated AADT of 2,000 vehicles as adopted from the *Guide to Traffic Engineering Practice, Part 2: Roadway Capacity* (Austroads, 1991)
  - Urban collector road: Volumes derived by assuming LOS B with associated AADT of 3,800 as adopted from the *Guide to Traffic Engineering Practice, Part 2: Roadway Capacity* (Austroads, 1991)
  - *U*rban arterial road: Volumes derived by assuming LOS B with K-value of 0.12 with associated AADT of 2,000 vehicles as depicted in *Guide to Traffic Engineering Practice, Part 2: Roadway Capacity* (Austroads, 1991)
  - Rural local road: Volumes derived by assuming 400 AADT based on a review of proximate rural local roads
  - Rural collector road: Volumes derived by assuming LOS A with K-value of 0.12 with associated AADT of 2,000 vehicles as depicted in *Guide to Traffic Engineering Practice, Part 2: Roadway Capacity* (Austroads, 1991)
  - Rural arterial road: Volumes derived by assuming LOS A with K-value of 0.15 with associated AADT of 1,600 vehicles as depicted in *Guide to Traffic Engineering Practice, Part 2: Roadway Capacity* (Austroads, 1991)
- Peak-hour flow rates obtained from various sources and converted to average daily traffic volumes.

The GTIA defines LOS as a qualitative index for ranking operating conditions on roads, as well as pedestrian and cycling movement based on factors such as speed, flow rate, travel time, freedom to manoeuvre, interruptions, comfort, safety, and convenience.

Finally, a gap analysis of received and inferred data was undertaken to identify the need for traffic count surveys. Traffic count surveys were confined to State-controlled roads and survey locations were selected with consideration for:

- Duration of usage for construction traffic (i.e. short: <6 months; moderate: 6–12 months; long: >12 months).
- The indicative increase in traffic volumes due to the Project
- The location of turning manoeuvres for construction traffic.

The use of local government roads for construction traffic is not preferred as these roads are not generally designed for regular heavy vehicle use; therefore, construction planning has, where possible, avoided the use of local government roads unless no practicable alternative route is available.

Future background traffic

In the first instance, traffic growth rates provided by relevant road-controlling authorities were applied to existing traffic volumes to estimate the future background traffic for roads within the impact assessment area.

Where growth rates were not provided, these rates were derived through assessment of historic permanent census traffic data, where available. An evaluation of available traffic growth rates on State-controlled roads identified an overall annual average AADT growth rate of 2 per cent. This linear growth rate was then used to establish future background traffic volumes for all roads where data was not available.

Development of the Project will result in the need for some permanent closures of local government roads (refer Section 18.6.1.2). When assessing impacts of the Project, future background traffic volumes have been redistributed from the closed road by manual reassignment of traffic onto reasonably assumed diversions.

18.4.3.2 Project traffic

The following sections describe the process that has been followed for establishing traffic contributions from construction and operation of the Project.

Construction activities

The main construction transportation activities for the Project that have been accounted for in the traffic impact assessment include:

- Delivery of materials to the Project footprint, such as:
  - Ballast
  - Capping materials
  - Pre-cast concrete
  - Ready mix concrete
  - Rail
  - Consolidated sleepers
  - Earthworks materials.
- Movement of workforce
- Delivery of water
- Transportation/collection of plant, tools and other materials.

Traffic impacts associated with the offsite disposal of waste have not been assessed, as waste volumes generated during construction of the Project are not expected to be significant (refer Chapter 20: Waste Management). Consequently, the number of vehicular movements to transport waste from construction laydown areas to established waste facilities is not expected to significantly increase the number of vehicles per day using the road network.

Similarly, the offsite disposal of spoil material is not considered in the traffic impact assessment. As noted in Chapter 5: Project Description, the material deficit for the Project may be up to 971,237 m^3 depending on the feasibility and success of material treatment options. Due to this material deficit, maximising the onsite reuse of material will be a core principle of the detail design and construction planning for the Project; therefore, offsite disposal of spoil is not foreseen at this stage of Project development and has not been included as a construction transportation activity.

Construction staging

Staging relates to start and end dates of all construction-related activities within the envisaged construction period. Early works is scheduled for commencement in 2021, with construction scheduled to be completed by the beginning of 2026. Inland Rail, and the Project, are scheduled to be operational in 2026. The start and end dates of all associated construction activities have been considered in order to determine the peak construction period for the Project.

Construction-related traffic

The number of trips made by light vehicles and heavy vehicles for each construction activity was estimated based on the volume of materials required to be transported and the duration of activity.

The estimated number of traffic trips were assigned to the corresponding transport route for each construction activity, as shown on Figure 18.3. This allowed for the estimation of the peak construction traffic volume for each construction route as well as for separate component road sections of each route.

For further details on the construction-related traffic generation, distribution and assignment, refer to Appendix X: Traffic Impact Assessment.

Operational traffic

Rail maintenance workforce movements and the delivery of maintenance materials are expected to be the major transport tasks during Project operation. It is anticipated that operational traffic will be insignificant due to low maintenance van movements to/from depots, and transportation of maintenance material within the rail corridor.

18.4.3.3 Traffic impact assessment

The traffic impact assessment process for Projects that are subject to an EIS is specified in the GTIA and is shown in Figure 18.5. This process has principally been established to guide the impact assessment process for the State-controlled road network but can be extended to the local government road network. The process does not apply to private roads. While use of the guidelines is not mandatory for an impact assessment, the guidelines provide a basis for assessing potential impacts from the construction, operation and maintenance of the Project on the local and regional transport network.

The performance criteria specified in the GTIA for assessment of traffic impacts are outlined in Table 18.4. The LOS criteria are defined in the *Guide to Traffic Management: Part 3 Traffic Studies and Analysis* (Austroads, 2020a).

TABLE 18.4 PERFORMANCE CRITERIA

Assessment type	Performance criteria
Traffic impact assessment	An impact occurs if construction and operational traffic generated by the development equals or exceeds 5 per cent of the existing AADT on the road section.
	LOS C can be considered the minimum standard on rural roads; however, LOS D may be accepted in the case of event traffic.
	LOS E should be considered the limit of acceptable traffic for urban area operation, and remedial works would be needed if LOS F would otherwise result.
Pavement impact assessment	Construction and operational traffic generated by the development equals or exceeds 5 per cent of the existing SARs on the road section.

The GTIA provides guidance on the criteria for determining when mitigation measures are required in response to assessed impacts. These criteria are listed in Table 18.5 and have been modified to include reference to NSW RMS.

TABLE 18.5 TRIGGER CRITERIA FOR THE APPLICATION OF MITIGATION MEASURES

Impact type	Trigger criteria for the application of mitigation measures
Road safety	All intersections and road links where the Project traffic exceeds 5 per cent of the base traffic for any movement in the design peak periods in the year of opening of each stage.
Access and frontage	The State-controlled road corridor for the extent of the geometric frontage of the site includes works on both the frontage side and potentially on the opposite side of the road. For the Project, this includes construction accesses and laydown areas on limited access roads in the DTMR and RMS network[1].
Intersection delay	All intersections where the Project traffic exceeds 5 per cent of the base traffic for any movement in the design peak periods, in the year of opening of each stage.
Road link capacity	All road links where the Project traffic exceeds 5 per cent of the base traffic in either direction on the link's AADT in the year of opening of each stage.
Pavement	All road links where the Project SAR exceeds 5 per cent of the base traffic in either direction on the link's SAR in the year of opening of each stage.
Transport infrastructure	All road links where the Project traffic exceeds 5 per cent of the base traffic in either direction on the link's AADT in the year of opening of each stage, or where DTMR or RMS identifies prevailing structural integrity issues of transport infrastructure (e.g. bridges or culverts).

Table note:
1. A road or part of a road declared as such under Section 54 of the *Transport Infrastructure Act 1994* (Qld)

The impact assessment year is the year at which the impacts of the Project are assessed for a structural or operational aspect of the road network. The impact assessment year varies depending on impact type because the effects of development can be quite different for structural and operational aspects of the road network. The impact years that have been assessed were adopted from GTIA and are summarised in Table 18.6.

TABLE 18.6 IMPACT ASSESSMENT YEARS

Impact type	Impact assessment years
Road safety	Each year of construction + year of opening of each stage including the final stage
Access and frontage	Each year of construction + year of opening of each stage including the final stage and 10 years after the year of opening of the final stage for access intersections (includes both new and amended accesses)
Intersection delay	Each year of construction + year of opening of each stage including the final stage
Road link capacity	Each year of construction + year of opening of each stage including the final stage
Pavement	Each year of construction + year of opening of each stage including the final stage over a 20-year design period
Transport infrastructure	Each year of construction + year of opening of each stage including the final stage

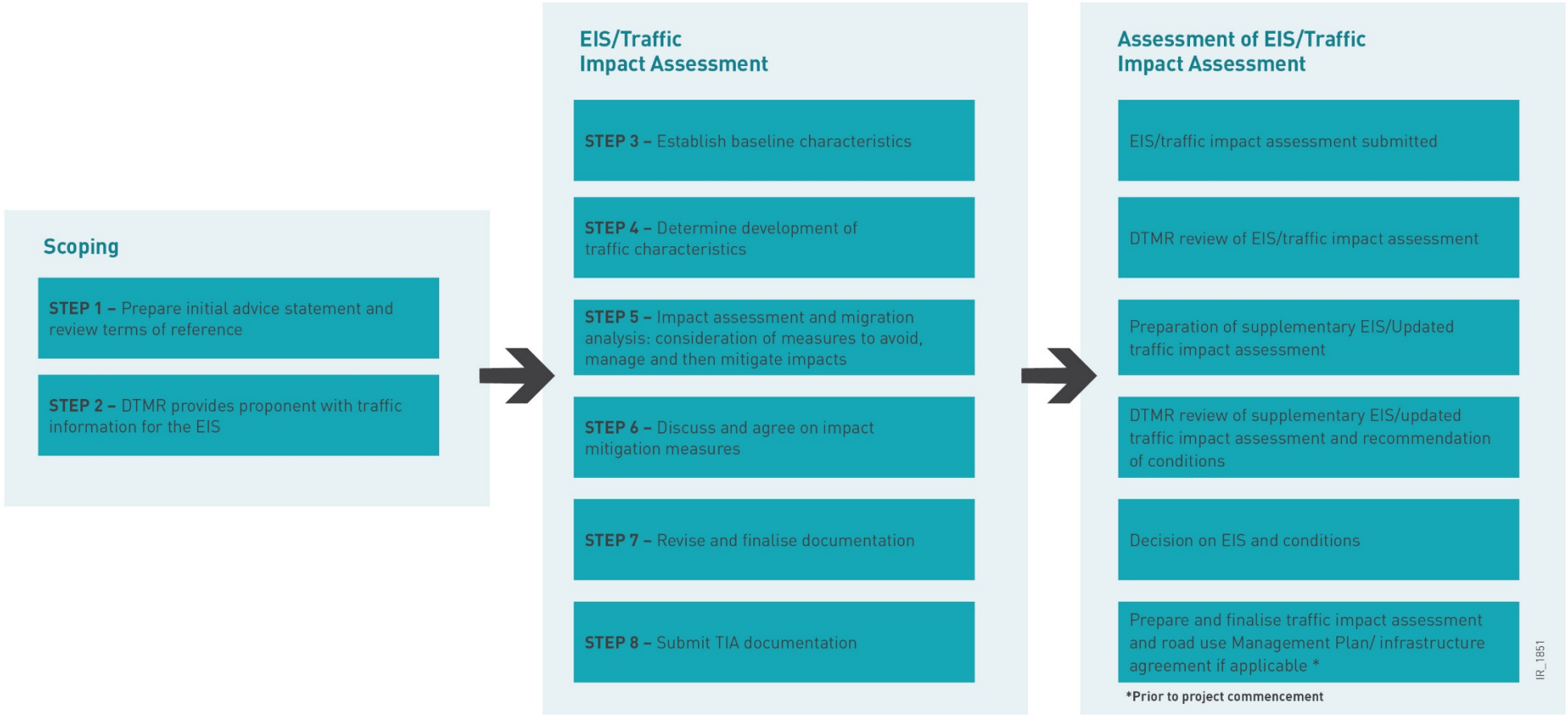


FIGURE 18.5 TRAFFIC IMPACT ASSESSMENT PROCESS IN ACCORDANCE WITH THE GTIA

Source: Adapted from GTIA (DTMR, 2018)

The impact assessment and mitigation process specified in the GTIA was adopted to determine appropriate mitigation measures on identified road impacts. The mitigation framework is provided in Figure 18.6.

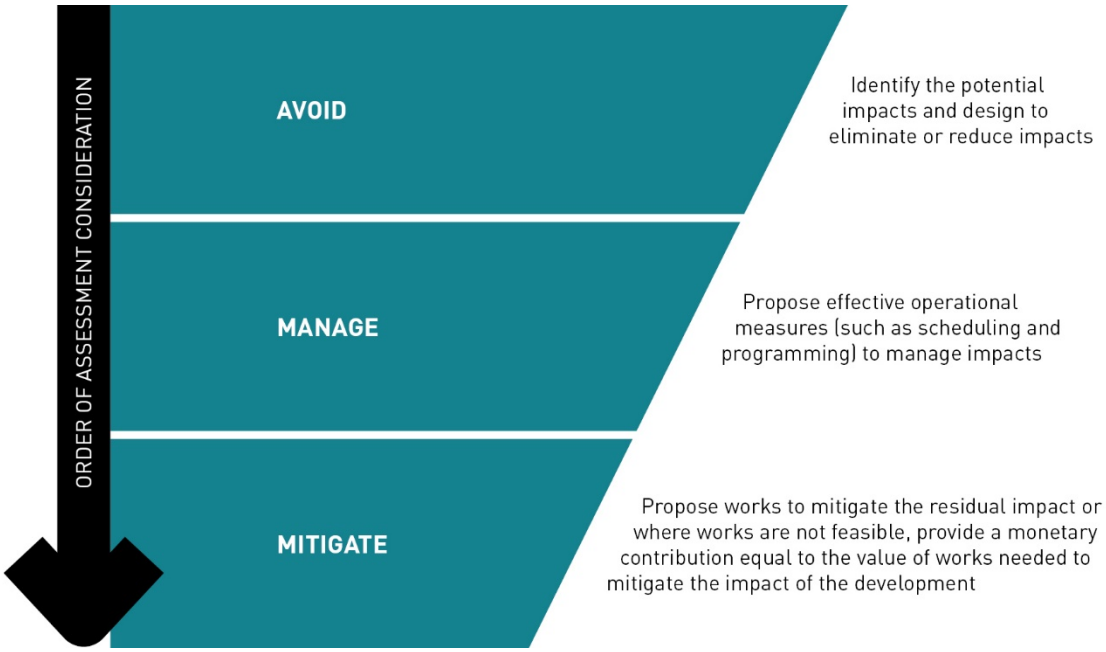


FIGURE 18.6 MITIGATION FRAMEWORK

Source: GTIA (DTMR, 2018)

18.4.4 Rail crossing impact assessment

The rail crossing impact assessment for the Project has centred on vehicle delay and queueing analysis of Project traffic at rail crossings, and at neighbouring closely spaced intersections. This analysis was undertaken for the Project at proposed new rail crossings only and was not extended to the 12 existing operational rail crossings within the impact assessment area. The rail crossing assessment is presented in Section 18.6.1.2.

A safety-based risk assessment was undertaken for the road–rail interfaces proposed for the Project, with a 'high' risk rating assigned to each level crossing location. Mitigation measures have been developed to reduce the risk associated with these crossings, with the proposed measures informed by the key actions and areas of focus of the *Queensland Level Crossing Safety Strategy 2012–2021* (QLCSS) (refer Section 18.7).

18.4.5 Other transport services and modes

In addition to road and rail traffic impacts, the assessment documented in this chapter has considered the following:

- Public transport services
- School bus routes
- Coach services
- Stock routes
- Cycling networks
- Pedestrian networks
- Ports
- Airports.

18.4.6 Stakeholder consultation

Extensive consultation has been undertaken with key stakeholders throughout the reference design and impact assessment process. Outcomes of these discussions have been used to inform progression of the reference design and to confirm assumptions adopted in this assessment.

The stakeholders consulted by ARTC in the development of the reference design for this Project included:

- DTMR
- NSW RMS
- GRC
- TRC
- Inverell Shire Council (NSW)
- Clarence Valley Council (NSW)
- QR
- TransLink.

The stakeholder engagement process included written correspondence in addition to formal meetings. These communications and discussions were used as an opportunity to confirm the acceptability of:

- The proposed traffic impact assessment process
- List of potentially impacted assets included in the assessment
- Guidelines, manuals and policies adhered to for the assessment
- Assumptions (such as traffic growth rates, assumed base volumes, etc.)
- Proposed mitigation measures.

Full details of consultation undertaken with key stakeholders throughout the reference design and impact assessment process are provided in Appendix C: Stakeholder Engagement Report.

18.5 Existing environment

18.5.1 Rail network

Queensland Rail (QR) owns Queensland's regional freight network and operates both suburban and long-distance passenger services for the Queensland government. QR's regional freight network comprises seven different systems in the State. One of these systems, the South Western System, interfaces with the Project. The South Western System runs over approximately 610 km and consists of a primary rail corridor from Toowoomba to Thallon via Warwick, with branch lines from:

- Warwick to Wallangarra
- Wyreema to Millmerran.

The South Western System adjoins the West Moreton System at Toowoomba.

The Project uses approximately 46.8 km of the existing rail corridor for the South Western Line and approximately 24.4 km of the existing rail corridor for the Millmerran Branch Line, both of which are components of the South Western System. Each of these lines are discussed in further detail below.

18.5.1.1 South Western Line

The Project interfaces with the Warwick to Goondiwindi section of the South Western Line, which is a single-track, narrow-gauge railway.

In 2017, an average of 25 trains per month ran up and down track between Yelarbon and Inglewood on the South Western Line, with a monthly maximum of 50 train movements in June 2017 (refer Table 18.7).

TABLE 18.7 SOUTH WESTERN LINE MONTHLY TRAIN MOVEMENTS IN 2017, BETWEEN YELARBON AND INGLEWOOD

Direction	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
Inglewood to Whetstone													
Down	20	22	23	8	23	24	13	5	2	3	3	4	12.5
Up	21	22	23	9	25	25	12	3	3	3	3	4	12.8
Whetstone to Yelarbon													
Down	20	22	23	8	23	25	12	5	2	3	3	4	12.5
Up	21	22	23	9	25	25	11	3	3	3	3	4	12.7
Average (up + down)	41.0	44.0	46.0	17.0	48.0	49.5	24.0	8.0	5.0	6.0	6.0	8.0	25.2

Structural details and operating restrictions for this section of the South Western Line are summarised in Table 18.8.

TABLE 18.8 STRUCTURAL DETAILS AND OPERATING RESTRICTIONS FOR THE WARWICK TO GOONDIWINDI SECTION OF THE SOUTH WESTERN LINE

Component/Restriction	Details
Rail	A combination of continuous welded rail (47 kg/m), long welded rail (41 kg/m) and short welded rail (30 kg/m)
Sleepers	A combination of timber and steel sleepers. Steel sleepers are used at varying ratios of one steel in every two, three or four sleepers.
Crossing loops	▸ Wheatvale ▸ Thane ▸ Karara ▸ Gore ▸ Cobba-da-mana ▸ Inglewood ▸ Whetstone ▸ Yelarbon ▸ Kurumbul ▸ Carrington Cotton ▸ Goondiwindi.
Maximum allowable axle load	The maximum allowable axle load is 15.75 tonne axle load (tal).
Maximum allowable speed	The maximum allowable speed is 80 km/h. Triple-header block trains are restricted to a maximum speed of 60 km/h. A speed limit of 15 km/h applies over select bridges.
Maximum grade	The maximum grade (not compensated for horizontal alignment) that a westbound (up) train will encounter is 1 in 33 while for an eastbound (down) train the maximum grade is 1 in 44.

18.5.1.2 Millmerran Branch Line

The Millmerran Branch Line is a single-track railway that extends from Wyreema to Millmerran. This line is currently non-operational south of Brookstead as a result of flood damage sustained in the 2010/11 flood events. The Project interfaces with the Millmerran Branch Line between Yandilla and Yarranlea.

In 2017, an average of three trains per month ran up and down track, between Brookstead and Wyreema on the Millmerran Branch Line, with a monthly maximum of 19 train movements in August 2017 (refer Table 18.9).

TABLE 18.9 MILLMERRAN BRANCH LINE MONTHLY TRAIN MOVEMENTS IN 2017, BETWEEN BROOKSTEAD AND WYREEMA

Direction	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
Brookstead to Pittsworth													
Down	0	0	0	3	2	0	0	9	0	0	3	0	4.3
Up	0	1	1	3	2	0	0	9	0	0	3	0	3.2
Pittsworth to Wyreema													
Down	0	0	0	3	2	0	0	9	0	0	4	0	4.5
Up	0	1	1	3	2	0	0	10	0	0	4	0	3.5
Average (up + down)	0.0	1.0	1.0	6.0	4.0	0.0	0.0	18.5	0.0	0.0	7.0	0.0	3.1

Structural details and operating restrictions for this section of the Millmerran Branch Line are summarised in Table 18.10.

TABLE 18.10 STRUCTURAL DETAILS AND OPERATING RESTRICTIONS FOR THE MILLMERRAN BRANCH LINE

Component/Restriction	Details
Rail	Short welded rail (30 kg/m)
Sleepers	Mainly timber sleepers with some steel
Crossing loops	Pittsworth Brookstead Millmerran
Maximum allowable axle load	The maximum allowable axle load is 15.75 tal
Maximum allowable speed	The maximum allowable speed is 50 km/h to Brookstead then 30 km/h to Millmerran (when operational)
Maximum grade	The maximum grade (not compensated for horizontal alignment) that a westbound (up) train will encounter is 1 in 50 while for an eastbound (down) train the maximum grade is 1 in 50

18.5.1.3 Sidings and crossing loops

A siding is a low-speed section of track distinct from the main running line. A siding that connects to the main line at both ends is known as a loop.

A crossing loop is a location on a railway where trains travelling in opposite directions can pass each other. A crossing lop is double ended and connected to the main track at both ends. Crossing loops are also sometimes referred to as passing loops.

The Project will use sections of existing rail corridor that accommodate two operational QR crossing loops and three operational sidings. These loops and sidings are located as follows:

- South Western Line:
  - Kurumbul—siding and crossing loop, Ch 6.1 km to Ch 7.0 km
  - Yelarbon—siding and crossing loop, Ch 26.1 km to Ch 27.0 km.
- Millmerran Branch Line:
  - Brookstead—siding, Ch 153.1 km.

18.5.1.4 Existing road–rail interfaces

Road–rail interfaces are points at which the rail alignment intersects a public road. There are currently 12 existing operational level crossings along the Project alignment. Level crossings have either passive or active controls to guide road users, as follows:

- Passive—have static warning signs (e.g. stop and give way signs) that are visible on approach. This signage is unchanging with no mechanical aspects or light devices.
- Active—flashing lights with or without boom barriers for motorists, and automated gates for pedestrians. These devices are activated prior to and during the passage of a train through the level crossing.

Each existing rail crossing of public roads that is located along the Project alignment is listed in Table 18.11, with the type of crossing provided at each location. Interface ID numbers correspond with locations shown in reference design drawings in Volume 3 of the draft EIS.

TABLE 18.11 EXISTING RAIL CROSSINGS (PUBLIC ROADS ONLY)

Interface ID	Road name	Existing QR crossing type
State-controlled roads		
310-11-E-1	Cunningham Highway (Wondalli Street)	Active level crossing
310-40-E-2	Millmerran–Leyburn Road	Passive level crossing
310-44-E-2	Gore Highway	Active level crossing
GRC		
310-4-E-2	South Kurumbul Road	Passive level crossing
310-12-E-1	Suttons Road	Passive level crossing
310-14-E-0	Springborg Road	Passive level crossing
310-16-E-1	Whetstone Access Road	Passive level crossing
TRC		
310-40-E-1	Hall Road	Passive level crossing
310-41-E-6	Gilgai Lane	Passive level crossing
310-42-E-1	Fysh Road	Active level crossing
310-43-E-3	Elsden Road	Passive level crossing
310-45-E-1	Longhurst Road	Passive level crossing

18.5.2 Road network

Several State-controlled roads and local government roads are encompassed in the impact assessment area that are expected to be used as transport routes for construction of the Project. This section does not identify roads that are to be used during the Project's operation, as the origin and destination of operation-phase vehicle movements cannot be foreseen. Operation-phase traffic will comprise of irregular maintenance and emergency service vehicles. The existing road system is envisaged to be used by the operational traffic and account for low-volume traffic with no impact on existing operations.

18.5.2.1 State-controlled roads

Interfaces with the Project

The Project intersects seven State-controlled roads in nine locations, as summarised in Table 18.12 and shown on Figure 18.2a-h.

TABLE 18.12 STATE-CONTROLLED ROADS INTERSECTED BY THE PROJECT

Road name	Road section (DTMR chainages)	Project interface ID[1]
Cunningham Highway (Wondalli Street)	Ch 40.0 to 41.0 km	310-11-E-1
Millmerran–Inglewood Road	Ch 5.0 to 6.0 km Ch 18.0 to 19.0 km Ch 60.0 to 61.0 km	310-24-P-2 310-35-P-4 310-37-P-12a
Millmerran–Leyburn Road	Ch 1.0 to 2.0 km	310-40-E-2
Gore Highway	Ch 55.0 to 56.0 km	310-44-E-2
Oakey–Pittsworth Road	Ch 37.0 to 38.0 km	310-48-P-8
Toowoomba–Cecil Plains Road	Ch 17.0 to 18.0 km	310-55-P-1
Warrego Highway	Ch 16.0 to 17.0 km	310-56-P-2

Table note:
1. Project interface IDs are shown on Figure 18.2a-h

Construction routes

State-controlled roads that are proposed to be used to transport materials, water, equipment and workforce during construction of the Project are listed in Table 18.13. These routes are shown on Figure 18.3.

The construction routes by activity are provided in Appendix X: Traffic Impact Assessment.

TABLE 18.13 STATE-CONTROLLED ROADS: PRIMARY CONSTRUCTION ROUTES FOR THE PROJECT

Road name	Road section to be used by construction traffic
Department of Transport and Main Roads (Queensland)	
Barwon Highway	31A—Between Leichhardt Highway and Town Common Road
Charlton Connection Road	320—Between Toowoomba–Cecil Plains Road and Jordan Court
	320—Between Jordan Court and Warrego Highway
Cunningham Highway	17D—Between NSW/QLD border and Leichhardt Highway
	17D—Between Leichhardt Highway and Wyaga Road
	17D—Between Wyaga Road and Yelarbon–Keetah Road
	17D—Between Yelarbon–Keetah Road and Texas–Yelarbon Road
	17D—Between Texas–Yelarbon Road and Inglewood–Texas Road
	17C—Between Inglewood–Texas Road and Millmerran–Inglewood Road
	17C—Between Millmerran–Inglewood Road and Inglewood Quarry Access Road
	17C—Between Inglewood Quarry Access Road and Coolmunda Dam Access
Gore Highway	28A—Between Blackwell Road and Saleyards Road
	28A—Between Saleyards Road and West Street
	28A—Between West Street and Millmerran–Inglewood Road
	28A—Between Millmerran–Inglewood Road and Millmerran–Leyburn Road
	28A—Between Millmerran–Leyburn Road and Pampas–Horrane Road
	28A—Between Pampas–Horrane Road and Brookstead–Norwin Road
	28A—Between Brookstead–Norwin Road and Tummaville Road
	28A—Between Tummaville Road and Vines Street
	28A—Between Vines Street and Toowoomba Bypass
	28A—Between Toowoomba Bypass and Westbrook Road
	28A—Between Westbrook Road and Warrego Highway

Road name	Road section to be used by construction traffic
Inglewood–Texas Road	231—Between Cunningham Highway and Greenup Limevale Road
	231—Between Greenup Limevale Road and Texas–Yelarbon Road
	231—Between Texas–Yelarbon Road and Stanthorpe Texas Road
	231—Between Stanthorpe Texas Road and Old Texas–Yelarbon Road
	231—Between Old Texas–Yelarbon Road and NSW/QLD border
Ipswich Motorway	17A—Between Cunningham Highway and Logan Motorway
Leichhardt Highway	26C—Between Cunningham Highway and Hunt Street
	26C—Between Hunt Street and Barwon Highway
Logan Motorway (managed by Transurban)	210A—Between Ipswich Motorway and Pacific Motorway
Millmerran–Inglewood Road	337—Between Cunningham Highway and Thornton Road
	337—Between Thornton Road and the LGA boundary
	337—Between the LGA boundary and Kooroongarra Road
	337—Between Kooroongarra Road and Blackwell Road
	337—Between Blackwell Road and Campbell Street
	337—Between Campbell Street and Gore Highway
Millmerran–Leyburn Road	335—Between Gore Highway and Reiche Road
Oakey Pittsworth Road	323—Between Gore Highway and Quibet Road
Pacific Motorway	12A—Between Logan Highway and NSW/QLD border
Pampas–Horrane Road	327—Between Gore Highway and Bostock Road
Pittsworth–Felton Road	332—Between Golf Course Road and Short Street
Texas–Yelarbon Road	2322—Between Cunningham Highway and Old Texas–Yelarbon Road
Toowoomba–Cecil Plains Road	324—Between Warrego Highway and McDougall Street
	324—Between McDougall Street and Boundary Street
	324—Between Boundary Street and Charlton Connection Road
	324—Between Charlton Connection Road and Hursley Road
	324—Between Hursley Road and Hanrahans Road
	324—Between Hanrahans Road and 2 km west of Brimblecombe Road
Toowoomba Bypass	319—Between Gore Highway and Toowoomba–Cecil Plains Road
	319 - Between Toowoomba–Cecil Plains Road and New England Highway
	319—Between New England Highway and Warrego Highway
Warrego Highway	18B—Between Kingsthorpe Haden Road and Toowoomba Bypass
	18B—Between Toowoomba Bypass and Charlton Connection Road
	18B—Between Charlton Connection Road and McDougall Street
	18B—Between McDougall Street and Bridge Street
	18B—Between Bridge Street and Toowoomba–Cecil Plains Road
	18B—Between Toowoomba–Cecil Plains Road and Karrool Street
	18B—Between Karrool Street and Gore Highway
	18B—Between Gore Highway and Fifth Avenue
	18A—Between Toowoomba Bypass and Gatton–Helidon Road
	18A—Between Gatton–Helidon Road and Gatton–Esk Road

Road name	Road section to be used by construction traffic
Warrego Highway (continued)	18A—Between Gatton–Esk Road and Laidley–Plainland Road
	18A—Between Laidley–Plainland Road and Tallegalla Two Tree Hill Road
	18A—Between Tallegalla Two Tree Hill Road and Haigslea–Amberley Road
	18A—Between Haigslea–Amberley Road and Brisbane Valley Highway
	18A—Between Brisbane Valley Road and Mount Crosby Road
	18A—Between Mount Crosby Road and Cunningham Highway
Yelarbon Keetah Road	241—Between Cunningham Highway and Old Warwick Road
Roads and Maritime Services (NSW)	
Bruxner Highway	Between New England Highway and Summerland Way
Gwydir Highway	Between Stephens Road and Delungra Road
	Between Delungra Road and Delungra Bypass Road
	Between Delungra Bypass Road and Copeton Dam Road
	Between Copeton Dam Road and Bannockburn Road
	Between Bannockburn Road and Campbell Street
	Between Campbell Street and Tingha Road
	Between Tingha Road and Elsmore Road
	Between Elsmore Road and Woodstock Road
	Between Woodstock Road and Waterloo Road
	Between Waterloo Road and Coronation Avenue
	Between Coronation Avenue and New England Highway
	Between New England Highway and Shannon Vale Road
	Between Shannon Vale Road and Bald Nob Road
	Between Bald Nob Road and Old Grafton Road
	Between Old Grafton Road and Coombadjha Road
	Between Coombadjha Road and Old Glen Innes Road
	Between Old Glen Innes Road and Rogan Bridge Road
	Between Rogan Bridge Road and Bent Street
New England Highway	Between Bruxner Way and Bruxner Highway
	Between Gwydir Highway (Meade Street) and Gwydir Highway (Ferguson Street)
Newell Highway	Between NSW/QLD border and Bruxner Way
Pacific Motorway	Between NSW/QLD border and Gwydir Highway
Summerland Way	Between Bruxner Highway and Red Lane
	Between Trenayr Road and Turf Street

18.5.2.2 Local government roads

Interfaces with the Project

The Project includes 66 separate locations at which the reference design intersects a public, local government road. Of these intersections, 9 are existing QR crossings. The intersection locations of public, local government roads are summarised in Table 18.14 and shown on Figure 18.2a-h.

TABLE 18.14 INTERSECTION LOCATIONS OF PUBLIC, LOCAL GOVERNMENT ROAD ASSETS

Road ID	Road name	Existing QR crossing type	Reference design interface chainage (km)
Goondiwindi Regional Council			
270-11-P-9a	Stock reserve	Nil	Ch 32.62 (NS2B)
270-12-P-1	Kildonan Road	Nil	Ch 33.10 (NS2B)
270-12-P-2	Kildonan Road—Stock reserve	Nil	Ch 33.07 (NS2B)
270-12-P-4	Eukabilla Road	Nil	Ch 33.37 (NS2B)
270-12-P-6a	Eukabilla Road	Nil	Ch 34.97 (NS2B)
310-4-E-2	South Kurumbul Road	Passive level crossing	Ch 6.08
310-5-P-1	Wondalli–Kurumbul Road	Nil	Ch 7.19
310-8-E-0	Unnamed Road	Nil	Ch 16.15
310-10-P-1	Unnamed Road	Nil	Ch 25.39
310-12-E-1	Suttons Road	Passive level crossing	Ch 30.30
310-14-E-0	Springborg Road	Passive level crossing	Ch 37.67
310-14-E-1	Springborg Road	Nil	Ch 37.70
310-16-E-1	Whetstone Access Road	Passive level crossing	Ch 45.59
310-17-P-7a	McDougalls Crossing Road	Nil	Ch 50.05
310-18-P-8	Cremascos Road	Nil	Ch 54.52
310-19-P-8	Unnamed Road	Nil	Ch 57.79
310-20-P-12	Bybera Road	Nil	Ch 60.55
310-20-P-12z	Bybera Road	Nil	Ch 60.63
310-20-P-7	Unnamed Road	Nil	Ch 59.47
310-21-P-9	Lovells Crossing Road	Nil	Ch 65.78
310-22-P-9	Thornton Road	Nil	Ch 68.67
310-25-P-3	Grays Road	Nil	Ch 78.43
310-26-P-2	Wongavale–Yugilbar Road	Nil	Ch 80.94
310-27-P-3	Unnamed Road	Nil	Ch 84.18
310-28-P-3	Unnamed Road	Nil	Ch 91.80
Toowoomba Regional Council			
310-30-P-2	Unnamed Road	Nil	Ch 96.11
310-31-P-7	Kooroongarra Road	Nil	Ch 103.01
310-32-P-4	Paton Road	Nil	Ch 105.85
310-33-P-1	Nicol Creek Road	Nil	Ch 107.89
310-34-P-1	Millwood Road	Nil	Ch 112.09
310-35-P-4a	Heckendorf Road	Nil	Ch 116.40
310-36-P-1	Blackwell Road	Nil	Ch 120.36
310-36-P-8a	Scraggs Road	Nil	Ch 123.77
310-37-P-12	Schwartens Road	Nil	Ch 126.54
310-38-P-3	Owens Scrub Road	Nil	Ch 129.74
310-39-P-1	Lindenmayer Road	Nil	Ch 133.54
310-40-E-1	Hall Road	Passive level crossing	Ch 138.37

Road ID	Road name	Existing QR crossing type	Reference design interface chainage (km)
310-41-E-6	Gilgai Lane	Passive level crossing	Ch 144.53
310-42-E-0	Harris Road	Nil	Ch 146.83
310-42-E-1	Fysh Road	Active level crossing	Ch 147.31
310-43-E-3	Elsden Road	Passive level crossing	Ch 149.95
310-43-E-8	Mann Silo Road	Nil	Ch 152.174
310-45-E-1	Longhurst Road	Passive level crossing	Ch 157.94
310-46-E-1	Yarranlea Road	Nil	Ch 161.25
310-46-P-3	Roche Road	Nil	Ch 163.29
310-46-P-4c	Murlaggan Road	Nil	Ch 164.14
310-47-P-1	Kahler Road	Nil	Ch 165.56
310-47-P-3	French Road	Nil	Ch 168.26
310-48-P-1	Tip Road	Nil	Ch 169.15
310-48-P-9	Quibet Road	Nil	Ch 171.35
310-48-P-10	Dallman Road	Nil	Ch 171.46
310-49-P-1	Unnamed Road	Nil	Ch 172.29
310-49-P-2	Lochaber Road	Nil	Ch 172.44
310-49-P-6	McEwan Lane	Nil	Ch 173.09
310-49-P-8	Paint Mine Road	Nil	Ch 173.74
310-49-P-11	Linthorpe Road	Nil	Ch 175.88
310-50-P-5	Geitz Road	Nil	Ch 178.51
310-50-P-11	Linthorpe Valley Road	Nil	Ch 180.88
310-51-P-8	Bushy Lane	Nil	Ch 182.82
310-51-P-11z	Biddeston–Southbrook Road	Nil	Ch 183.63
310-52-P-1	Unnamed Road	Nil	Ch 183.96
310-52-P-3	Purcell Road	Nil	Ch 187.20
310-53-P-1	Athol School Road	Nil	Ch 188.06
310-55-P-5	Brimblecombe Road	Nil	Ch 198.73
310-57-P-1	Chamberlain Road	Nil	Ch 204.46
310-57-P-4	Leesons Road	Nil	Ch 206.41

Construction routes

Several local government roads are proposed to be used to transport materials, water, equipment and workforce during construction of the Project. These roads are listed in Table 18.15 and are located within the jurisdiction of the following local government authorities in NSW and Queensland:

- Clarence Valley Council (NSW)
- GRC (Queensland)
- Gywdir Shire Council (NSW)
- Inverell Shire Council (NSW)
- Moree Plains Shire Council (NSW)
- TRC (Queensland).

TABLE 18.15 LOCAL GOVERNMENT ROADS: PRIMARY CONSTRUCTION ROUTES FOR THE PROJECT

Road name	Road section to be used by construction traffic
Clarence Valley Council	
Bent Street	Between Craig Street and Gwydir Highway
Charles Street	Between Bent Street and Pacific Highway
Clarence Street	Between Oliver Street and Craig Street
Clark Road	Full extent
Craig Street	Between Villiers Street and Clarence Street
	Between Clarence Street and Bent Street
Dobie Street	Between Villers Street and Summerland Way
Fry Street	Between Mary Street and Alice Street
Mary Street	Between Fry Street and Oliver Street
Oliver Street	Between Clarence Street and Mary Street
Red Lane	Between Summerland Way and Trenayr Road
Trenayr Road	Between Red Lane and Clark Road
	Between Summerland Way and Clark Road
Villers Street	Between Craig Street and Dobie Street
GRC	
Boodle Street	Between Boodle Street and Hunt Street
Bybera Road	Between Cunningham Highway and private access
	Between private access and Unnamed Road
Cemetery Road	Between Mooroobie Lane and Unnamed Road
Coolmunda Dam Access	Full extent
Cremascos Road	Between Cunningham Highway and 400 m west of private access
East Sawmill Road	Between Cunningham Highway and Springborg Road
Elizabeth Street	Between Cunningham Highway and Callandoon Street
Eukabilla Road	Full extent
Fosters Road	Between Cunningham Highway and Grays Road
Grays Road	Between Millmerran–Inglewood Road and Mosquito Creek Road
Hunt Street	Between Leichhardt Highway and Boodle Street
Inglewood Quarry Access Road	Full extent
Kildonan Road	Between Yelarbon–Keetah Road and Cunningham Highway
Lovells Crossing Road	Between Callandoon Street and Unnamed Road
	Between Unnamed Road and Unnamed Road
McDougalls Crossings Road	Between Cunningham Highway and 800 m west of Cremascos Road
Mooroobie Lane	Between Wondalli–Kurumbul Road and Cemetery Road
Mosquito Creek Road	Between Grays Road and Cunningham Highway
Old Texas–Yelarbon Road	Between Texas–Yelarbon Road and Rocky Creek Road
	Between Rocky Creek Road and Inglewood–Texas Road
Queen Street South	Between Yelarbon–Kurumbul Road and Danes Lane

Road name	Road section to be used by construction traffic
South Kurumbul Road	Between Yelarbon–Kurumbul Road and Kildonan Road
Springborg Road	Between Cunningham Highway and Railway Line
Suttons Road	Between East Sawmill Road and Unnamed Road
Thornton Road	Between Millmerran–Inglewood Road and Unnamed Road
Town Commons Road	Between Waggamba Road and Barwon Highway
Unnamed Road	Between Cunningham Highway and private access
Unnamed Road	Between Cemetery Road and Unnamed Road
Unnamed Road	Between Texas–Yelarbon Road and Private Land
Unnamed Road	Between Woodcocks Road and Queen Street North
Unnamed Road	Between East Sawmill Road and Suttons Road
Unnamed Road	Full extent
Whetstone Access Road	Between Cunningham Highway and 600 m west of Railway Line
Wondalli–Kurumbul Road	Between South Western System (railway) and Bickers Road
Woodcocks Road	Between Cunningham Highway and Unnamed Road
Yelarbon–Kurumbul Road	Yelarbon–Kurumbul Road
Gwydir Shire Council	
Edwards Street	Between North Star Road and I B Bore Road
North Star Road	Between MPSC LGA boundary and Edwards Street
	Between Edward Street and Getta Getta Road
	Between Getta Getta Road and Blue Nobby Road
	Between Blue Nobby Road and Hibernia Road
	Between Hibernia Road and Yallaroi Road
	Between Yallaroi Road and Baroma Road
	Between Baroma Road and Warialda Road
Stephen Street	Between Long Street and Gwydir Highway
Warialda Road	Between North Star Road and Gournama Road
	Between Gournama Road and Oregon Road
	Between Oregon Street and Stephen Street
Inverell Shire Council	
Bruxner Way	Between Texas Bridge Road and Glenrock Road
	Between Glenrock Road and New England Highway
Campbell Street	Between Byron Street and Otho Street
Texas Bridge Road	Between QLD/NSW Border and Bruxner Highway
Moree Plains Shire Council	
Bruxner Way	Between Newell Highway and Tucka Tucka Road
	Between Tucka Tucka Road and North Star Road
North Star Road	Between Bruxner Way and Gwydir Shire Council boundary
River Road	Between Newell Highway and Boggabilla Weir

Road name	Road section to be used by construction traffic
TRC	
Airport Quarry Wellcamp Access Road	Between Toowoomba–Cecil Plains Road and Toowoomba Wellcamp Airport
Alderley Street	Between Greenwattle Street and Gore Highway
	Between Gore Highway and Condamine Street
Athol School Road	Between Gore Highway and Trader Road
Biddeston Southbrook Road	Between Gore Highway and Stower Road
Blackwell Road	Between Millmerran–Inglewood Road and Gore Highway
Blackwell Road	Between Bunkers Hill School Road and Macaulay Road
Bligh Street	Between Six Mile Road and Concrete Millmerran
	Between Concrete Millmerran and Crosby Street
Bostock Road	Between Pampas–Horrane Road and Unnamed Road
Brimblecombe Road	Between Toowoomba–Cecil Plains Road and Gowrie Mountain School Road
Bunkers Hill School Road	Between Gore Highway and Blackwell Road
Bushy Lane West	Between Gore Highway and 650 m west of Gore Highway
Campbell Street	Between Millmerran–Inglewood Road and Commens Street
Chamberlain Road	Between Warrego Highway and Robson Road
Commodore Peak Road	Between Millmerran–Inglewood Road and Blackwell Road
Condamine Street	Full extent
Dieckmann Road	Between Gore Highway and Madelaine Street
Draper Road	Between Steger Road and Leesons Road
Drayton Wellcamp Road	Between Wellcamp Westbrook Road and Boundary Street South
Euston Road	Between Boundary Court and Greenwattle Street
Forestry Road	Between Millmerran–Inglewood Road and Unnamed Road
Fysh Road	Between Gore Highway and Fysh Road
Gap Road	Between Gore Highway and Cypress Street
Geitz Road	Between Gore Highway and Luck Road
Gilgal Lane	Between Gore Highway and Railway Line
Greenwattle Street	Between Euston Road and Alderley Street
Grevillea Street	Full extent
Hall Road	Between Gore Highway and Railway Line
Heckendorf Road	Between Millmerran–Inglewood Road and Bora Creek Road
Kahler Road	Between Murlaggan Road and Glen Devon Road
Kooroongarra Road	Between Millmerran–Inglewood Road and Bliss Road
Kooroongarra Road	Between Millmerran–Inglewood Road and Halls Road
Kooroongarra Road	Between Millwood Road and Cunningham Highway
Leesons Road	Full extent
Lindenmayer Road	Between Gore Highway and Unnamed Road
Linthorpe Road	Between Gore Highway and Loveday Road
Lochaber Road	Between McEwan Lane and Gore Highway
Macaulay Road	Between Blackwell Road and Wellcamp Westbrook Road

Road name	Road section to be used by construction traffic
McDougall Street	Between Toowoomba–Cecil Plains Road and Hursley Road
Millwood Road	Between Millmerran–Inglewood Road and Kooroongarra Road
rmMurlaggan Road	Between Gore Highway and Roche Road
	Between Roche Road and Yarranlea Road
Omara Road	Between Toowoomba–Cecil Plains Road and Warrego Highway
Owens Scrub Road	Between Millmerran–Inglewood Road and Foxwood Road
Paint Mine Road	Between Gore Highway and Loveday Road
Paton Road	Between Millmerran–Inglewood Road and Kooroongarra Road
Pittsworth–Felton Road	Between Cypress Street and Golf Course Road
Railway Street	Between Short Street and Vines Street
Roche Road	Between Murlaggan Road and Saint Helens Road
Saleyards Road	Between Millmerran–Inglewood Road and Gore Highway
Scrubby Road	Between Gore Highway and Jentz Road
Short Street	Between Yandilla Street and Toowoomba Road
Six Mile Road	Between Rodney Road and Bligh Street
Steger Road	Between Warrego Highway and Draper Road
Toowoomba Road	Between Vines Street and Gore Highway
Tummaville Road	Between Gore Highway and Mann Silo Road
Unnamed Road	Between Gore Highway and Millmerran Indoor Sports Centre
Unnamed Road	Between Toowoomba–Cecil Plains Road and Unnamed Road
Unnamed Road	Between Tummaville Road and Scrubby Road
Unnamed Road	Between Drayton Westbrook Road and Unnamed Road
Unnamed Road	Between Bostock Road and Unnamed Road
Unnamed Road	Between Forestry Road and Unnamed Road
Unnamed Road	Between Gore Highway and private access
Ware Street	Between Gore Highway and Railway Line
Wellcamp Westbrook Road	Between Macaulay Road and Toowoomba–Cecil Plains Road
	Between Toowoomba–Cecil Plains Road and Drayton Wellcamp Road
West Street	Between Gore Highway and Rodney Road
Yarranlea Road	Between Gore Highway and Railway Line
	Between Railway Line and Saint Helens Road

18.5.2.3 Crash history

Road crash data is collected and maintained by road controlling authorities to provide statistics for accurate and timely analysis of road-safety programs and for the development of new, effective road-safety initiatives. A review has been undertaken of five-year crash data (between 2012 and 2017) provided by DTMR and NSW Roads and Maritime Services (RMS) to assess the relative safety of proposed construction traffic routes.

A summary of crash history data for State-controlled roads and local government roads proposed to be used for construction traffic is provided in Table 18.16. Only roads that had a crash in the 2012 to 2017 reporting period have been included in this table.

TABLE 18.16 CRASH HISTORY DATA FOR ROADS IDENTIFIED FOR USE DURING CONSTRUCTION OF THE PROJECT

Road name	Length (km)	Background volume (AADT)	Peak construction volume (ADT)	Total five-year crashes	Total five-year crashes			
					Fatal	Hospitalisation	Medical treatment	Minor injury
State-controlled roads: DTMR (Queensland)								
Charlton Connection Road	1.5	2,636	3	2	0	2	0	0
Cunningham Highway	101	1,456 to 2,156	59	45	1	21	17	6
Gore Highway	93	1,980 to 8,824	58	121	5	49	55	12
Inglewood–Texas Road	53	234 to 674	4	8	0	8	0	0
Ipswich Motorway	8.4	108,841	7	104	0	45	41	18
Leichhardt Highway	0.8	2,651	9	5	0	3	2	0
Logan Motorway	30	108,8411	7	264	2	109	129	24
Millmerran–Inglewood Road	68.4	334 to 993	340	8	1	2	3	2
Pacific Motorway	216	157,018	7	496	26	181	205	84
Pittsworth–Felton Road	1.4	2,795	12	5	0	2	3	0
Texas–Yelarbon Road	52.9	189	43	2	0	1	0	1
Toowoomba–Cecil Plains Road	16.5	1,944 to 12,293	21	45	1	16	23	5
Warrego Highway	95.8	10,806 to 57,860	328	500	14	214	218	54
State-controlled roads: Roads and Maritime Services (NSW)								
Bruxner Highway	125	626	7	126	9	38	55	24
Gwydir Highway	316	1,478	5	121	5	37	66	13
New England Highway	5	2,421	7	2	0	0	0	2
Newell Highway	7.6	4,051	59	11	3	3	3	2
Pacific Motorway	216	16,224	7	496	26	181	205	84
Summerland Way	89.5	2,5082	7	53	7	17	25	4
Clarence Valley Council								
Bent Street	0.9	7,600	7	11	0	2	9	0
Clarence Street	0.6	7,600	7	14	0	0	8	2
Craig Street	0.8	24,125	5	7	0	2	1	3
Mary Street	0.2	7,600	7	2	0	0	2	0
Oliver Street	1.2	7,600	7	15	0	2	6	4
Villers Street	1.3	Data unavailable	5	8	0	2	4	2
GRC								
East Sawmill Road	3.7	4,000	215	1	0	0	1	0
Elizabeth Street	0.4	800	94	1	0	0	1	0
Lovells Crossing Road	4.7	7	94	1	0	1	0	0

Road name	Length (km)	Background volume (AADT)	Peak construction volume (ADT)	Total five-year crashes	Total five-year crashes			
					Fatal	Hospitalisation	Medical treatment	Minor injury
Gwydir Shire Council								
North Star Road	70	275	31	1	0	1	0	0
Warialda Road	24	3,200	5	4	0	3	1	0
Inverell Shire Council								
Bruxner Way	128	213	7	10	0	4	4	2
Moree Plains Shire Council								
Bruxner Way	20	272	7	2	0	0	0	2
North Star Road	70	291	31	1	0	1	0	0
TRC								
Alderley Street	1.0	6,234	65	1	0	0	1	0
Bunkers Hill School Road	1.5	522	1	1	0	1	0	0
Drayton Wellcamp Road	61	2,163	67	5	0	2	3	0
Euston Road	1.5	6,037	65	5	0	2	3	0
Greenwattle Street	0.1	4,818	65	2	0	1	1	0
Leesons Road	2.6	73	73	1	0	1	0	0
Omara Road	3.1	3,389	61	1	0	0	1	0
Railway Street	1.1	56	21	2	0	0	2	0
Steger Road	3.2	60	14	1	0	0	1	0
Toowoomba Road	2.9	476	21	3	0	1	2	0

Table note:
1. The AADT for the Logan Motorway was adopted from the Ipswich Motorway due to lack of data

18.5.3 Private access

The Project alignment intersects the following within the bounds of private properties:

- 153 private, unformed access roads or tracks
- 62 private, formed access roads or tracks.

18.5.4 Public transport services

The QR South Western Line and Millmerran Branch Line are not used for passenger rail services; therefore, the assessment of public transport services has been restricted to bus services.

Public bus routes that use roads within the impact assessment area were identified through a review of data sourced from TransLink and Transport for NSW. These existing public transport routes may use roads that:

- Will be intersected by the Project alignment
- Are proposed to be used for construction traffic.

Public bus routes that use roads within the impact assessment area that may interface with Project activities are listed in Table 18.17.

TABLE 18.17 PUBLIC TRANSPORT (BUS) ROUTES WITH POTENTIAL TO INTERFACE WITH PROJECT ACTIVITIES

Bus service	Route (to/from)	State	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
Queensland Public Transport Routes					
529	Ipswich to Toogoolawah	QLD	3 per day	Warrego Highway	-
New South Wales Public Transport Routes					
372	Grafton to Coffs Harbour	NSW	2 per day	Bent Street Craig Street Charles Street	-
373	Grafton to South Grafton via Fairway Drive (Loop Service)	NSW	6 per day	Bent Road Craig Street Charles Street	-
374	Grafton to South Grafton via Bimble Avenue (Loop Service)	NSW	17 per day Hourly off-peak, 30 minutes at peak	Bent Street Craig Street Charles Street	-
375C	Grafton to Westlawn via Grafton Base Hospital (Clockwise Loop)	NSW	10 per day	Oliver Street	-
376	Grafton to Dovedale via Hospital	NSW	9 per day	Oliver Street Mary Street	-
377	Grafton to Junction Hill via Hospital	NSW	4 per day	Turf Street	-
378	Cangai to Grafton via South Grafton	NSW	1 per day	Bent Street Craig Street	-
379	Copmanhurst to Grafton via South Grafton	NSW	1 per day	Bent Street Craig Street	-
380	Yamba—Grafton via Maclean	NSW	8 per day	Bent Street Craig Street Charles Street Pacific Highway (Grafton to Yamba)	-
386	Maclean to Iluka (Loop Service)	NSW	3 per day	Pacific Highway	-

18.5.5 School bus routes

School bus routes that use roads within the impact assessment area were identified through a review of data sourced from DTMR (Queensland) and Transport for NSW (TfNSW) (NSW). These existing school bus routes may use roads that:

- Will be intersected by the Project alignment
- Are proposed to be used for construction traffic.

School bus routes that use roads within the impact assessment area that may interface with Project activities are listed in Table 18.18.

TABLE 18.18 SCHOOL BUS ROUTES WITH POTENTIAL TO INTERFACE WITH PROJECT ACTIVITIES

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
Queensland School Bus Routes			
IP1502 AM and PM Service Hatton Vale, Lowood, Fernvale, Ironbark Area to Ipswich Special Schools	1/AM 1/PM	Warrego Highway	-
IP1503 AM and PM Service Hatton Vale/Marburg Area to Ipswich Special Schools	1/AM 1/PM	Warrego Highway	-
P1070 Lemon Tree to Millmerran State School	1/AM 1/PM	Gore Highway	-
P1072 Billa Billa to Goondiwindi State School	1/AM 1/PM	Leichardt Highway	-
P1082 Koarlo to Goondiwindi State School	1/AM 1/PM	Kildonan Road	270-12-P-1
P124 Southbrook to Southbrook Central State School	1/AM 1/PM	Gore Highway Toowoomba Road Railway Street	-
P1732 AM and PM Service Hatton Vale Area, Hatton Vale State School	1/AM 1/PM	Warrego Highway	-
P1751 AM and PM Service Iredale–Postmans Ridge to Helidon State School	1/AM 1/PM	Warrego Highway	-
P1883 AM and PM Service Athol to Bunker's Hill State School	1/AM 1/PM	Gore Highway Athol School Road	310-53-P-1
P1886 Captains Mt to Millmerran State School	1/AM 1/PM	Gore Highway Saleyards Road	-
P1886 Years 11 and 12 Secondary Re-Run to Millmerran State School	1/AM 1/PM	Gore Highway	-
P1927 AM and PM Service Limevale to Texas State School Service	1/AM 1/PM	Inglewood–Texas Road	-
P450 Seven Mile to Inglewood State School	1/AM 1/PM	Cunningham Highway	-
P451 Seven Mile to Inglewood State School	1/AM 1/PM	Cunningham Highway	-
P473 Yuraraba to Inglewood State School	1/AM 1/PM	Cunningham Highway Millmerran–Inglewood Road Coolmunda Access Road	310-24-P-2
P510 Southbrook North to Southbrook Central State School	1/AM 1/PM	Gore Highway Biddeston–Southbrook Road Linthorpe Valley Road	310-50-P-11 310-51-P-11z

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
P522 Mt Emlyn area to Millmerran State School	1/AM 1/PM	Kooroongarra Road Millmerran–Inglewood Road Campbell Street Gore Highway	310-37-P-12a
P540 Yelarbon to Yelarbon State School	1/AM 1/PM	Cunningham Highway Texas–Yelarbon Road	-
P623 AM and PM Service Summerholm Area, Hatton Vale State School	1/AM 1/PM	Warrego Highway	-
P645 Gooray to Goondiwindi State School	1/AM 1/PM	Barwon Highway	-
P674 Yagaburne to Goondiwindi State School	1/AM 1/PM	Leichardt Highway	-
P733 Goodar to Goondiwindi State School	1/AM 1/PM	Barwon Highway	-
P772 AM and PM Service Tummaville to Millmerran State School	1/AM 1/PM	Gore Highway Millmerran–Leyburn Road	310-40-E-2 310-42-E-1
P787 Primary and Secondary to Millmerran State School	1/AM 1/PM	Gore Highway	-
P809 Kincora to Pittsworth State School	1/AM 1/PM	Gore Highway Railway Street Yandilla Street Scrubby Road Gap Road	-
P821 AM and PM Primary and Secondary Services Glencoe to Gowrie State School	1/AM 1/PM	Gowrie Tilgonda Road Gowrie Lilyvale Road	-
P902 Beebo to Texas State School	1/AM 1/PM	Texas–Yelarbon Road Inglewood–Texas Road	-
P938 Bringalily to Millmerran State School	1/AM 1/PM	Millmerran–Inglewood Road Gore Highway	310-35-P-4 310-37-P-12a
P957 AM and PM Service Ivanhoe to Millmerran State School	1/AM 1/PM	Millmerran–Inglewood Road Koorongarra Road Owens Scrub Road Gore Highway	310-37-P-12a 310-38-P-3
S118 AM and PM Service Pittsworth to Brookstead Area	1/AM 1/PM	Gore Highway Yarranlea Road Gap Road Yandilla Street Short Street Railway Road	310-44-E-2 310-46-E-1

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
S178 Kingsthorpe Secondary to Harristown State High School	1/AM 1/PM	Warrego Highway Charlton Connection Road Toowoomba–Cecil Plains Road	310-56-P-2
S577 Kingsthorpe/Wellcamp to Harristown State High School	1/AM 1/PM	Warrego Highway Charlton Connection Road Toowoomba–Cecil Plains Road	310-56-P-2
S740 AM and PM Service–Millmerran Years 11 and 12 to Pittsworth SHS	1/AM 1/PM	Gore Highway Saleyards Road Campbell Street Gap Road Yandilla Street Railway Street	310-44-E-2 310-46-E-1
S789 Gowrie Mtn–Charlton–Wellcamp to Harristown State High School	1/AM 1/PM	Drayton Wellcamp Road Greenwattle Street Wellcamp Westbrook Road Toowoomba–Cecil Plains Road Omara Road	-
New South Wales School Bus Routes			
Bus 6 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School—Grafton, Clarence Valley Anglican School—Clarenza, Gillwinga Public School, McAuley Catholic College—Clarenza	1/AM 1/PM	Summerland Way Oliver Street	-
Bus 8 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School—Grafton, Clarence Valley Anglican School—Clarenza, Gillwinga Public School, McAuley Catholic College—Clarenza	1/AM 1/PM	Bent Street Craig Street Oliver Street	-
Bus 7 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School—Clarenza, Gillwinga Public School, McAuley Catholic College—Clarenza	1/AM 1/PM	Summerland Way Oliver Street	-
Bus 2 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School—Grafton, Clarence Valley Anglican School – Clarenza, Gillwinga Public School, McAuley Catholic College—Clarenza	1/AM 1/PM	Oliver Street	-
Bus 34 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School—Grafton, Gillwinga Public School, McAuley Catholic College—Clarenza	1/AM 1/PM	Bent Street	-
Bus 12 to Grafton Public School, Grafton Infants School, Clarence Valley Anglican School—Clarenza, Gillwinga Public School	1/AM 1/PM	Bent Street	-

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
Bus 5 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School—Grafton, Gillwinga Public School, McAuley Catholic College—Clarenza	1/AM	Summerland Way	-
Bus 18 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School—Grafton, McAuley Catholic College—Clarenza	1/AM 1/PM	Oliver Street	-
Bus 1 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School, Grafton, Clarence Valley Anglican School, Clarenza, Gillwinga Public School, McAuley Catholic College—Clarenza	1/AM 1/PM	Summerland Way Trenayr Road	-
Bus 9 to Grafton High School	1/AM	Summerland Way Oliver Street	-
Bus 14 to Clarence Valley Anglican School—Grafton, Gillwinga Public School	1/AM	Oliver Street Mary Street	-
Bus 4 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School—Grafton, Clarence Valley Anglican School—Clarenza, Gillwinga Public School	1/AM 1/PM	Oliver Street	-
Bus 10 to Grafton Public School, Grafton Infants School	1/PM	Oliver Street Fry Street Summerland Way	-
Bus 32 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School, Grafton	1/PM	Oliver Street Fry Street Craig Street Bent Street	-
Bus 38 to Grafton Public School, Grafton High School, Grafton Infants School, Clarence Valley Anglican School, Grafton	1/PM	Bent Street Craig Street Charles Street Pacific Highway	-
Bus 43 to Grafton High School, Clarence Valley Anglican School, Clarenza	1/AM 1/PM	Mary Street	-
Bus 27 to McAuley Catholic College—Clarenza	1/AM	Mary Street Oliver Street Craig Street Bent Street Pacific Highway	-
Bus 26 to McAuley Catholic College—Clarenza	1/AM	Oliver Street Craig Street Bent Street Pacific Highway	-
Bus 44 to McAuley Catholic College—Clarenza	1/AM 1/PM	Bent Street Pacific Highway	-

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
Bus 41 to Clarence Valley Anglican School—Clarenza	1/PM	Bent Street Craig Street Oliver Street	-
Bus 37 to Gillwinga Public School	1/AM	Oliver Street Craig Street Bent Street	-
Bus 29 to McAuley Catholic College—Clarenza	1/PM	Bent Street	-
Bus 14 to Gillwinga Public School	1/AM 1/PM	Craig Street Bent Street	-
Bus 21 to Gillwinga Public School	1/AM	Bent Street	-
Bus 5 to McAuley Catholic College—Clarenza	1/AM 1/PM	Oliver Street Craig Street Bent Street Pacific Highway	-
Bus 25 to Gillwinga Public School	1/AM	Bent Street	-
Bus 26 to Gillwinga Public School	1/PM	Bent Street	-
Bus 24 to Chatsworth Island Public School	1/AM 1/PM	Pacific Highway	-
Bus 1 to Cowper Public School	1/AM 1/PM	Pacific Highway	-
Bus 46 to Maclean High School, Maclean Public School	1/AM 1/PM	Pacific Highway	-
Bus 47 to Maclean High School, Maclean Public School	1/AM 1/PM	Pacific Highway	-
Bus 16 to McAuley Catholic College—Clarenza	1/AM	Pacific Highway	-
Bus 11 to McAuley Catholic College—Clarenza	1/AM	Pacific Highway	-
Bus 9 to McAuley Catholic College—Clarenza	1/AM	Pacific Highway	-
Bus 46 to Pacific Valley Christian School	1/AM	Pacific Highway	-
Bus 47 to Pacific Valley Christian School	1/PM	Pacific Highway	-
Bus 7 to Palmers Island Public School	1/PM	Pacific Highway	-
Bus 9 to South Grafton High School	1/AM	Pacific Highway	-
Bus 9 to South Grafton High School	1/PM	Pacific Highway	-
Bus 9 to South Grafton High School	1/PM	Pacific Highway	-
Bus 1 to South Grafton High School	1/PM	Oliver Street Mary Street Summerland Way Trenayr Road	-
Bus 14 to South Grafton High School	1/PM	Craig Street Clarence Street Mary Street	-
Bus 34 to South Grafton High School	1/PM	Bent Street	-

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
Bus 2 to South Grafton High School	1/PM	Mary Street Prince Street	-
Bus 15 to South Grafton High School	1/PM	Bent Street Craig Street Oliver Street Clarence Street	-
Route 378 to South Grafton Infants School	1/AM 1/PM	Bent Street	-
Bus 33 to South Grafton Infants School	1/AM 1/PM	Bent Street	-
Bus 34 to South Grafton Infants School	1/AM 1/PM	Bent Street	-
Bus 37 to South Grafton Infants School	1/AM	Bent Street Craig Street Oliver Street	-
Bus 14 to South Grafton Infants School	1/AM 1/PM	Bent Street Clarence Street Craig Street Fry Street Mary Street Oliver Street	-
Bus 21 to South Grafton Infants School	1/AM	Bent Street	-
Bus 25 to South Grafton Infants School	1/AM	Bent Street	-
Bus 26 to South Grafton Infants School	1/PM	Bent Street	-
Bus 8 to South Grafton Infants School	1/PM	Bent Street Craig Street Oliver Street	-
Bus 4 to South Grafton Infants School	1/PM	Bent Street Craig Street Oliver Street	-
Bus 2 to South Grafton Infants School	1/PM	Fry Street Mary Street Oliver Street	-
Route 377 to South Grafton Infants School	1/AM	Fry Street Mary Street Oliver Street	-
Bus 7 to South Grafton Infants School	1/PM	Mary Street Oliver Street	-
Bus 1 to South Grafton Infants School	1/PM	Mary Street Oliver Street Trenayr Road	-
Bus 6 to South Grafton Infants School	1/AM	Oliver Street	-
Bus 5 to South Grafton Infants School	1/AM	Oliver Street	-

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
Route 376 to South Grafton Infants School	1/AM	Oliver Street	-
Bus 5 to South Grafton Public School	1/AM	Oliver Street	-
Bus 33 to South Grafton Public School	1/AM 1/PM	Bent Street	
Route 378 to South Grafton Public School	1/AM 1/PM	Bent Street	-
Bus 34 to South Grafton Public School	1/AM 1/PM	Bent Street	-
Bus 37 to South Grafton Public School	1/AM	Bent Street Craig Street Oliver Street	-
Bus 14 to South Grafton Public School	1/AM 1/PM	Bent Street Clarence Street Craig Street Fry Street Mary Street Oliver Street	-
Bus 21 to South Grafton Public School	1/AM	Bent Street	-
Bus 25 to South Grafton Public School	1/AM	Bent Street	-
Bus 4 to South Grafton Public School	1/PM	Bent Street Craig Street Oliver Street	-
Bus 26 to South Grafton Public School	1/PM	Bent Street	-
Bus 8 to South Grafton Public School	1/PM	Bent Street Craig Street Oliver Street	-
Bus 6 to South Grafton Public School	1/AM	Oliver Street	-
Bus 2 to St Andrew's Christian School—Clarenza	1/PM	Clarence Street Fry Street Mary Street Oliver Street	-
Bus 27 to St Andrew's Christian School—Clarenza	1/AM	Craig Street Mary Street Oliver Street	-
Bus 5 to St Andrew's Christian School—Clarenza	1/AM 1/PM	Craig Street Oliver Street	-
Bus 26 to St Andrew's Christian School—Clarenza	1/PM	Craig Street Mary Street Oliver Street	-
Route 377 to St Andrew's Christian School—Clarenza	1/AM 1/PM	Fry Street Mary Street Oliver Street	-

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
Bus 1 to St Andrew's Christian School—Clarenza	1/PM	Mary Street Oliver Street	-
Bus 6 to St Andrew's Christian School—Clarenza	1/AM	Oliver Street	-
Bus 7 to St Andrew's Christian School—Clarenza	1/AM	Oliver Street	-
Bus 2 to St Andrew's Christian School—Clarenza	1/PM	Oliver Street	-
Bus 1 to St Andrew's Christian School—Clarenza	1/AM	Oliver Street	-
Bus 26 to St Andrew's Christian School—Clarenza	1/AM	Craig Street Mary Street	-
Bus 5 to St Andrew's Christian School—Clarenza	1/PM	Oliver Street	-
Bus 8 to St Andrew's Christian School—Clarenza	1/PM	Oliver Street	-
Bus 7 to St Andrew's Christian School—Clarenza	1/PM	Oliver Street	
Bus 6 to St Andrew's Christian School—Clarenza	1/PM	Oliver Street	-
Bus 27 to St Andrew's Christian School—Clarenza	1/PM	Oliver Street	-
Bus 10 to St Hames Primary School	1/PM	Clarence Street	-
Bus 7 to St James Primary School	1/PM	Pacific Highway	-
Bus 45 to St Joseph's Primary School (Maclean)	1/AM 1/PM	Charles Street	-
Bus 2 to St Joseph's Primary School (Maclean)	1/AM 1/PM	Clarence Street	-
Bus 46 to St Joseph's Primary School (Maclean)	1/AM 1/PM	Pacific Highway	-
Bus 47 to St Joseph's Primary School (Maclean)	1/AM 1/PM	Pacific Highway	-
Route 378 to St Joseph's Primary School (South Grafton)	1/AM	Bent Street	-
Bus 8 to St Joseph's Primary School (South Grafton)	1/AM	Bent Street Craig Street	-
Bus 33 to St Joseph's Primary School (South Grafton)	1/AM 1/PM	Bent Street	-
Bus 7 to St Joseph's Primary School (South Grafton)	1/AM	Bent Street Craig Street	-
Bus 34 to St Joseph's Primary School (South Grafton)	1/AM 1/PM	Bent Street	-
Bus 37 to St Joseph's Primary School (South Grafton)	1/AM	Bent Street Craig Street	-
Bus 14 to St Joseph's Primary School (South Grafton)	1/AM	Bent Street Craig Street	-
Bus 14 to St Joseph's Primary School (South Grafton)	1/PM	Clarence Street Craig Street	-
Bus 21 to St Joseph's Primary School (South Grafton)	1/AM	Bent Street	-
Bus 25 to St Joseph's Primary School (South Grafton)	1/AM	Bent Street	-

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
Bus 26 to St Joseph's Primary School (South Grafton)	1/PM	Bent Street	-
Route 378 to St Mary's Primary School (Grafton)	1/AM	Bent Street Craig Street	-
Bus 34 to St Mary's Primary School (Grafton)	1/AM 1/PM	Bent Street	-
Bus 12 to St Mary's Primary School (Grafton)	1/AM 1/PM	Bent Street Craig Street	-
Route 373 to St Mary's Primary School (Grafton)	1/AM	Bent Street Craig Street	-
Bus 32 to St Mary's Primary School (Grafton)	1/PM	Bent Street Oliver Street	-
Bus 33 to St Mary's Primary School (Grafton)	1/PM	Bent Street	-
Bus 2 to St Mary's Primary School (Grafton)	1/PM	Clarence Street Fry Street Mary Street Oliver Street	-
Bus 12 to St Mary's Primary School (Grafton)	1/AM 1/PM	Fry Street Oliver Street	-
Bus 18 to St Mary's Primary School (Grafton)	1/PM	Fry Street Mary Street Oliver Street	-
Bus 1 to St Mary's Primary School (Grafton)	1/PM	Mary Street Oliver Street Trenayr Road	-
Bus 8 to St Mary's Primary School (Grafton)	1/AM	Oliver Street	-
Bus 8 to St Mary's Primary School (Grafton)	1/PM	Oliver Street	-
Bus 2 to St Mary's Primary School (Grafton)	1/AM	Oliver Street	-
Route 377 to St Mary's Primary School (Grafton)	1/AM	Oliver Street	-
Bus 1 to St Mary's Primary School (Grafton)	1/AM	Oliver Street	-
Bus 7 to St Mary's Primary School (Grafton)	1/PM	Oliver Street	-
Bus 1 to St Mary's Primary School (Grafton)	1/AM	Trenayr Road	-
Bus 38 to St Mary's Primary School (Grafton)	1/PM	Pacific Highway	-
Bus 1 to Ulmarra Public School	1/AM	Pacific Highway	-
Bus 16 to Ulmarra Public School	1/PM	Pacific Highway	-
Route 378 to Westlawn Public School	1/AM	Bent Street Craig Street	-
Bus 34 to Westlawn Public School	1/AM	Bent Street	-
Bus 12 to Westlawn Public School	1/AM	Bent Street	-
Bus 12 to Westlawn Public School	1/AM	Fry Street Oliver Street	-

Services	Weekday frequency	Roads used by the service and by Project traffic	Interface with the Project alignment
Route 373 to Westlawn Public School	1/AM	Bent Street Craig Street	-
Bus 32 to Westlawn Public School	1/PM	Bent Street Oliver Street	-
Bus 12 to Westlawn Public School	1/PM	Bent Street Craig Street	-
Bus 34 to Westlawn Public School	1/PM	Bent Street	-
Bus 33 to Westlawn Public School	1/PM	Bent Street	-
Bus 2 to Westlawn Public School	1/PM	Clarence Street Fry Street Mary Street Oliver Street	-
Bus 18 to Westlawn Public School	1/PM	Fry Street Oliver Street	-
Bus 1 to Westlawn Public School	1/PM	Mary Street Fry Street Oliver Street Trenayr Road	-
Bus 8 to Westlawn Public School	1/AM	Oliver Street	-
Bus 8 to Westlawn Public School	1/AM	Oliver Street	-
Bus 2 to Westlawn Public School	1/AM	Oliver Street	-
Route 377 to Westlawn Public School	1/AM	Bent Street Craig Street	-
Bus 1 to Westlawn Public School	1/AM	Oliver Street	-
Bus 32 to Westlawn Public School	1/AM	Oliver Street	-
Bus 8 to Westlawn Public School	1/PM	Oliver Street	-
Bus 7 to Westlawn Public School	1/PM	Oliver Street	-
Bus 1 to Westlawn Public School	1/AM	Trenayr Road	-
Bus 14 to Yamba Public School	1/AM	Clarence Street	-
Bus 7 to Yamba Public School	1/PM	Pacific Highway	-

18.5.6 Long-distance coach services

Privately operated long-distance coach services that use roads within the impact assessment area were identified through a review of data sourced from DTMR (Queensland) and TfNSW (NSW). These existing coach service routes may use roads:

- That will be intersected by the Project alignment
- That are proposed to be used for construction traffic.

Long-distance coach services that use roads within the impact assessment area that may interface with Project activities are listed in Table 18.19.

TABLE 18.19 LONG-DISTANCE COACH SERVICES WITH POTENTIAL TO INTERFACE WITH PROJECT ACTIVITIES

Services	Roads used by the service and by Project traffic	Interface with the Project alignment
Brisbane City to Grafton	Pacific Motorway	-
Brisbane City to Mount Isa	Ipswich Motorway National Highway Logan Motorway Cunningham Highway Warrego Highway Tourist Road Mackenzie Street Bridge Street	-
Brisbane City to Charleville	Ipswich Motorway National Highway Logan Motorway Cunningham Highway Warrego Highway Gatton–Helidon Road Tourist Road Mackenzie Street Bridge Street	-
Toowoomba to St George	Hursley Road Leichhardt Highway	-
Toowoomba to Cunnamulla	Hursley Road Toowoomba–Cecil Plains Road Gore Highway Yandilla Street	-
Toowoomba to Rockhampton	Warrego Highway	-
Toowoomba to Lightning Ridge	Gore Highway Barwon Highway Leichhardt Highway	-
Brisbane City to Grafton	Pacific Motorway Summerland Way Villers Street Dobie Street Bent Street Craig Street Charles Street	-
Route 141—Grafton to Moree Town (Transport for NSW Coach Service)	Gwydir Highway	-
Route 142—Moree Town to Grafton (Transport for NSW Coach Service)	Gwydir Highway	-

18.5.7 Stock routes

The Queensland stock route network provides pastoralists with a means of moving stock around Queensland's main pastoral districts as an alternative to motorised transport. Stock routes comprise pathways for moving stock on roads, reserves, unallocated State land and pastoral leases, and have no separate title or tenure information. The stock route network is administered under the *Stock Route Management Act 2002* (Qld), *Land Act 1994* (Qld) and the *Transport Infrastructure Act 1994* (Qld).

The Project interfaces with the State stock route network in 12 locations. Further details on the interface locations, potential impacts and proposed design solutions for each stock route interface are provided in Chapter 7: Land Use and Tenure.

18.5.8 Strategic touring routes

State strategic touring routes are routes of strategic importance to the driving tourism market in Queensland. They are the primary routes that tourists use to travel around Queensland, providing the main connections between tourist destinations and generally supporting high volumes of tourist traffic. State strategic touring routes are recognised nationally through the National Tourism Signage Reference Group and at State level by DTMR and tourism agencies.

Strategic touring routes within the impact assessment area that are proposed to be used for construction traffic are listed in Table 18.20.

TABLE 18.20 STRATEGIC TOURING ROUTES THAT ARE PROPOSED TO BE USED FOR CONSTRUCTION TRAFFIC

Strategic touring route	Section of route proposed to be used by Project traffic
Adventure Way	Warrego Highway, between Haigslea–Amberley Road and Ipswich Motorway
Warrego Way	Warrego Highway, between Haigslea–Amberley Road and Ipswich Motorway
Pacific Coast Way	Pacific Highway between Logan Motorway and Smith Street Motorway
Leichhardt Way	Leichhardt Highway for 800 m between Leichhardt Highway and Lagoon Street
New England Highway	New England Highway between Bruxner Way and Bruxner Highway, and again between Gwydir Highway (Meade Street) and Gwydir Highway (Ferguson Street)
Australian Country Way	New England Highway between Bruxner Way and Bruxner Highway
Legendary Pacific Coast Drive	Pacific Highway between Logan Highway and Gwydir Highway

18.5.9 Cycling and pedestrian network

On-road cycleways that use roads within the impact assessment area were identified through a review of data sourced from the Queensland Principle Cycle Network Plans (PCNP) and the NSW RMS online 'Cycleway Finder' tool. The PCNP is a guide for future cycleway planning and presents the core routes that are required to increase cycling among the population.

Eleven cycleways in Queensland and six within NSW use roads that are proposed to be used for construction traffic. These cycleways are summarised in Table 18.21.

TABLE 18.21 CYCLEWAYS WITH POTENTIAL TO INTERFACE WITH PROJECT ACTIVITIES

Jurisdiction	Cycleway
TRC	Warrego Highway, between Tor Street and Kingsthorpe–Haden Road (Charlton/Gowrie Mountain)
	Toowoomba Bypass, between Mort Street and Toowoomba–Cecil Plains Road (Charlton)
	Toowoomba–Cecil Plains Road, between Warrego Highway and Hanrahan Road (Charlton)
	Charlton Connection Road, between Warrego Highway and Toowoomba–Cecil Plains Road (Charlton)
	McDougall Street, between Toowoomba–Cecil Plains Road and Hursley Road (Charlton)
	Drayton-Wellcamp Road, between Deuble Road and Euston Road (Wellcamp)
	Gore Highway, between Harrow Street and Ferguson Road (Westbrook)
	Railway Street, between Toowoomba Road and Murray Street (Pittsworth)
	Short Street, between Railway Street and Yandilla Street (Pittsworth)
	Yandilla Street between Short Street and Cypress Street (Pittsworth)

Jurisdiction	Cycleway
Ipswich City Council	Warrego Highway, between Wulkuraka Connection Road and Mt Crosby Road
NSW	Oliver Street, between Clarence Street and Mary Street
	Mary Street, between Oliver Street and Fry Street
	Fry Street, between Mary Street and Alice Street
	Summerland Way, between Ecles Street and Bruxner Highway
	Bruxner Way, between Bulwer Street and New England Highway
	New England Highway, between Bruxner Highway and Rouse Street

Several of the proposed construction routes use roads that also have a moderate-to-high volume of pedestrian activity. This is particularly true for construction routes that are aligned through the towns of Toowoomba, Pittsworth, Millmerran, Inglewood, Yelarbon and Grafton.

Given the largely rural and semi-rural nature of the Project footprint, there is little in the way of dedicated pedestrian infrastructure. Instead, pedestrian movements are largely via co-usage of local government roads. Locations where pedestrians currently have access, via public road, from one side of the proposed Project alignment to the other are listed in Table 18.14. Locations that have an existing QR level crossing are also identified in the table.

18.5.10 Airports and ports

No strategic airports or aviation facilities are directly traversed by the Project footprint. The closest strategic airport is the Toowoomba Wellcamp Airport. At its closest point, the northern limit of the runway for Toowoomba Wellcamp Airport is approximately 865 m from the Project footprint and 1 km from the Project alignment.

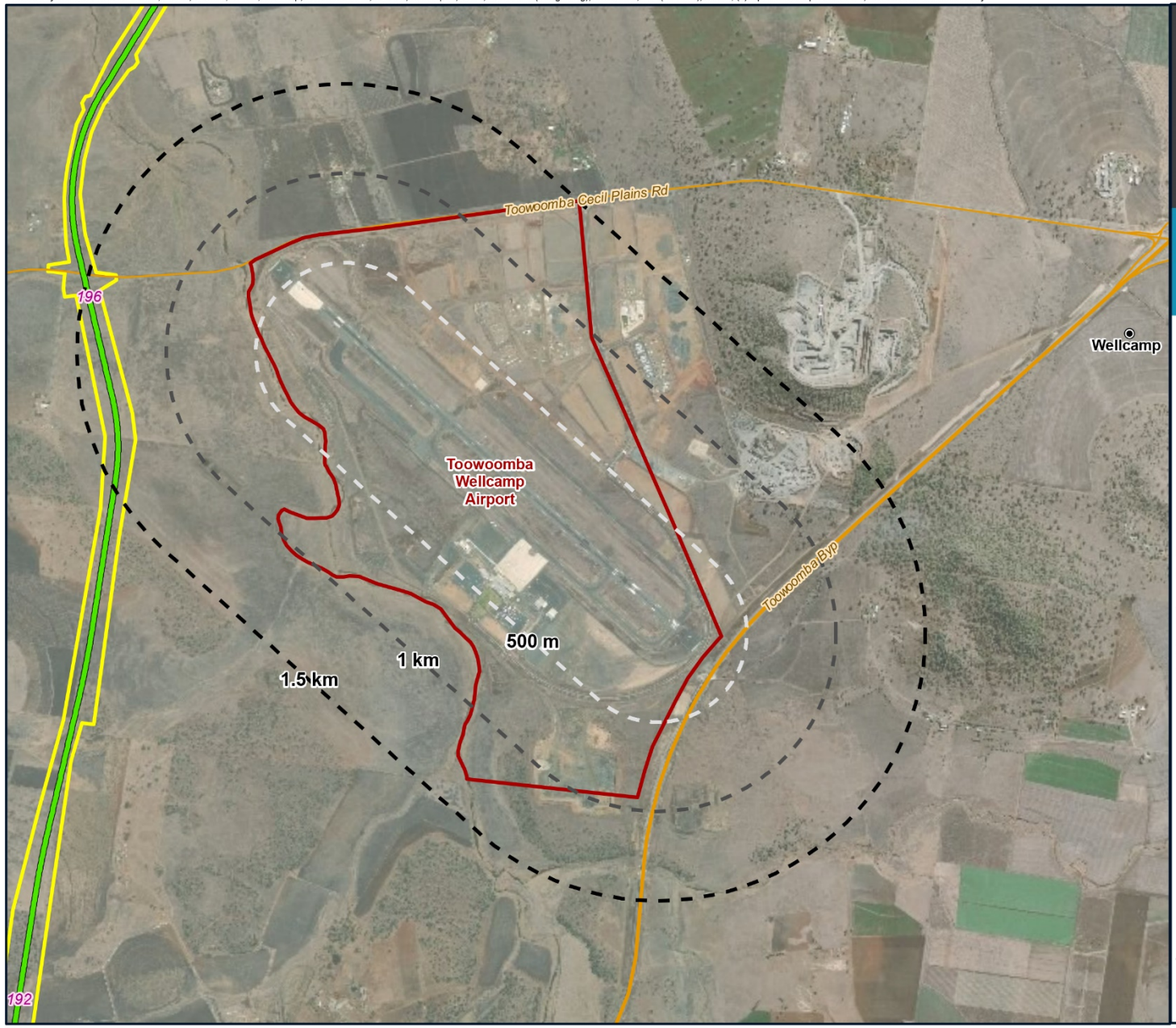
Other aviation facilities and airfields in proximity to the Project footprint are as follows:

- Army Aviation Centre Oakey—11.4 km from the Project alignment
- Inglewood airfield (not certified or registered)—4 km from the Project alignment
- Millmerran airfield (not certified or registered)—3.9 km from the Project alignment
- Pittsworth airfield (not certified or registered)—2.5 km from the Project alignment
- Southbrook airfield (not certified or registered)—2.4 km from the Project alignment
- Wyreema airfield (not certified or registered)—10 km from the Project alignment
- Cambooya airfield (not certified or registered)—13.5 km from the Project alignment
- Colanya airfield (not certified or registered)—6 km from the Project alignment.

The locations of airports and airfields in relation to the Project alignment are shown in Figure 18.1. The location of the Project alignment relative to the Toowoomba Wellcamp Airport is shown in greater details in Figure 18.7.

The Project will not directly impact on the operation or throughputs at any ports; therefore, port facilities are not considered further in this assessment.

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



INLAND RAIL

ARTC

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

BORDER TO GOWRIE

Figure 18.7: Proximity of the Project to Toowoomba Wellcamp Airport

LEGEND

- Localities
- Border to Gowrie alignment
- Major roads
- Minor roads
- Project footprint
- Toowoomba Wellcamp Airport
- 1,500 m runway buffer
- 1,000 m runway buffer
- 500 m runway buffer

0 0.75 1.5 km

Coordinate System: GDA 1994 MGA Zone 56

Date: 07/07/2020
Author: FFJV GIS
Data Sources: FFJV

Paper: A4
Scale: 1:30,000

Map by: KG Z:\GIS\GIS_310_B2G\Tasks\310-ITR-201903071702_Transport\310-ITR-201903071702_ARTC_Fig18.7_Toowoomba_Wellcamp_Airport.mxd Date: 8/07/2020 16:29

18.6 Potential impacts

This section provides discussion of potential impacts to existing transport infrastructure, as described in Section 18.5, that may arise due to the Project. Where appropriate, potential impacts have been presented separately for the construction and operation of the Project.

As stated in Section 18.4.3.2, the main construction transportation activities for the Project that have been accounted for in the traffic impact assessment include the delivery of materials to the Project footprint, the movement of workforce, the delivery of water and the transportation/collection of plant, tools and other materials.

The construction program will generally be based on the following worksite hours:

- General construction activities:
  - Monday to Friday—6.30 am to 6.00 pm
  - Saturday—6.30 am to 1.00 pm
  - No work planned on Sundays or public holiday.
- Track possessions may occur on a 7-day/24-hour calendar basis, subject to agreement with QR.

Track possession of QR assets will generally be allocated over weekend periods, with extended track possession occurring over holiday periods.

There may be circumstances where work outside the above standard hours, including night works, will be required, e.g. for the delivery of materials. Work outside standard hours will only be undertaken where consultation with the local community is demonstrated.

It is anticipated that the ongoing operation and maintenance of the Project will require a workforce of approximately 10-to-15 FTE. The operational workforce will be based at provisioning centres outside the immediate vicinity of the Project and will drive to locations along the Project alignment, as required, to undertake maintenance tasks.

18.6.1 Rail network

18.6.1.1 Construction

Rail infrastructure

The Project uses approximately 46.8 km of the existing rail corridor for the South Western Line and approximately 24.4 km of the existing rail corridor for the Millmerran Branch Line.

The South Western System is a critical link in agricultural export supply chains (particularly grain), supporting the movement of significant volumes of commodities to the Port of Brisbane. Planning of exports to international markets involves significant lead times to coordinate landside logistics, shipping schedules and client demand. Supply chain stakeholders will need sufficient time to develop contingencies to mitigate potential disruption.

Poorly timed track closures and inadequate consultation and communication could have significant adverse impacts (cost and potentially reputational) for Queensland stakeholders in international supply chains currently reliant on the South Western System.

Online construction of the new railway, being a direct replacement of the existing rail infrastructure, is the preferred construction approach for sections of the Project within existing rail corridor. This approach would require agreement with QR, in the form of an interface agreement, and would result in short- to medium-term possession of the rail corridor to enable construction. This online construction approach would result in the existing railway being non-operational to rail movements for the duration of the possession. Consequently, alternative means of transportation will be required during these periods for freight that would otherwise be transported via rail.

Offline construction is the alternative method within existing rail corridors. This approach would involve the new railway being constructed immediately adjacent to the existing rail infrastructure—the benefit of this approach being that the existing railway could remain operational during the construction period; however, this construction approach would introduce safety and logistical challenges that would be preferable to avoid.

The staging of the works within existing rail corridors, and their associated impacts, will be the subject of an interface agreement between ARTC and QR. The timing of works within existing rail corridors will need to be determined in consultation with QR and key supply chain stakeholders in order to identify periods of minimum disruption.

In accordance with Section 255 of the TI Act, works cannot commence within the existing rail corridor without QR's written approval. If the construction of Project components within the existing rail corridor is completed during a temporary possession of the rail corridor, works will be completed in accordance with the conditions of the temporary possession and/or wayleave agreement granted to ARTC by QR.

ARTC will continue to consult with QR as the Project progresses through detail design and construction planning regarding the identification of an acceptable construction method within existing rail corridor.

Existing sidings and loops

The Project will provide for continued connectivity to existing sidings and loops. As a result, impacts to these features is expected to be confined to the construction phase of the Project while the adjoining rail network is replaced and upgraded. The impacts of temporary access restrictions to crossing loops and sidings is expected to be limited as the adjoining main line will be non-operational while under the temporary possession of ARTC for construction purposes. Alternative means of transportation will be required during these periods for freight that would otherwise be loaded or unloaded at sidings along the Project alignment, such as grain at the sidings in Yelarbon and Brookstead.

Rail deliveries

Approximately 37,260 tonnes of rail are required for the Project. It is assumed that rail will be supplied by a single source and will be distributed via the existing QR rail network (Western Line, Millmerran Branch and the South Western Line) to designated laydown areas along the Project alignment. Where further transportation is required to distribute rail to designated areas along the Project alignment, road networks will be used to achieve this.

In 2017, the South Western Line had a maximum of 50 monthly train movements (June 2017) and a minimum of five monthly train movements (September 2017). In the same year, the Millmerran Branch Line had a maximum of 19 train movements (August 2017) and a minimum of zero train movements (six of the twelve months). Based on the total numbers and monthly variance of train movements on both of these existing rail lines (refer Sections 18.5.1.1 and 18.5.1.2), it is anticipated that if rail deliveries to site are via existing rail network, that the additional rail movements would be within the operational capacity of the networks used and would not result in network impacts.

The delivery of the rail in full lengths via the QR network will require further investigation and consultation with QR during the construction planning process (detail design phase). The objective of this consultation will be to agree on routes to be used, size and frequency of locomotives and the scheduling of deliveries with consideration for monthly variances in background network usage.

18.6.1.2 Operation

Road–rail intersections

The Project alignment crosses several State-controlled roads and local government roads. A summary of the number of intersections with each public road type is presented in Table 18.22.

TABLE 18.22 PUBLIC ROAD INTERSECTIONS INCLUDED IN THE REFERENCE DESIGN FOR THE PROJECT

Road type	Number of intersections[1]
State-controlled	9
GRC	18
TRC	26

Table note:
1. Only includes locations where a crossing solution is provided. Excludes intersection locations where no crossing is provided in the reference design

Each intersection between rail and road requires a design treatment. Design treatments for public road–rail intersections that are included in the reference design have been categorised as:

- Grade separated crossings—road and rail cross each other at different heights so that traffic flow is not affected. Grade separations are either road-over-rail, or rail-over-road.
- Level crossings—road and rail cross each other at the same level. Level crossings have either passive or active controls to guide road users (refer Section 18.5.1.4).
- Crossing consolidation, relocation, diversion or realignment—existing road–rail interfaces may be closed, consolidated into fewer crossing points, relocated or diverted. Roads will only be closed where the impact of diversions or consolidations is considered acceptable, or the existing location is not considered safe and cannot reasonably be made safe. Approval for closures, where required, will be progressed in accordance with the requirements of the relevant legislation.

The appropriate design treatment for each road–rail interface has been assessed on a case-by-case basis, with consideration given to current and future usage of the existing road asset, its location relative to other crossings of the rail corridor and the road and rail geometry at the crossing location.

Assessment of each road–rail interface (existing and proposed) has been conducted using a national system called the Australian Level Crossing Assessment Model (ALCAM). ALCAM is an assessment tool used to identify key potential risks at level crossings and to assist in the prioritisation of crossings for upgrades. The risk model is used to support a decision-making process for both road and pedestrian level crossings and to help determine the most cost-effective treatments. The ALCAM model considers factors such as future road traffic numbers, vehicle types, train numbers, speeds and sighting distances to create a unique risk score for each road–rail interface, if it were to be a level crossing. The road–rail intersection risk assessment and treatment decision process has also considered other factors that are not included in the ALCAM model, such as:

- Collision and near-collision history
- Engineering experience, for road and rail
- Local knowledge of driver and pedestrian behaviour
- Social and economic function of an intersection location.

In the development of the proposed treatments, ARTC have also taken into consideration State and national guidelines and strategies, specifically the following:

- *ONRSR Policy: Level Crossings* (ONRSR, 2019a)
- *ONRSR Guideline: Meaning of duty to ensure safety so far as is reasonably practicable* (ONRSR, 2016b)
- *Queensland Level Crossing Safety Strategy 2012–2021* (DTMR, 2012)

Both the ONRSR Policy and QLCSS focus on avoiding, where possible, the installation of new level crossings. The ONRSR Policy acknowledges that for lower risk level crossings, operators may be able to demonstrate that alternative controls minimise the risk to safety SFAIRP, as defined in ONRSR Guideline (ONRSR, 2016b). The reference design has been developed to limit the number of new level crossings; however, there are instances where the road–rail interface treatment assessment has concluded that the risk to safety SFAIRP can be achieved through the provision of level crossings in lower risk locations.

The ONRSR has undertaken a detailed audit of the reference design for the Project against the *Rail Safety National Law (Queensland) Act 2017* (Qld) and the intent of the *ONRSR Policy: Level Crossings* (ONRSR, 2019a). This audit concluded that the reference design complies with the Rail Safety National Law and that the design minimises safety risks SFARIP.

ARTC has conducted, and will continue to undertake, consultation with DTMR and local governments in relation to the preferred road–rail interface treatments for each location, but specifically for Millmerran-Inglewood Road (310-24-P-2), Millmerran-Leyburn Road (310-40-E-2) and Purcell Road (310-52-P-3)/Athol School Road (310-53-P-1) (refer Table 18.23 and Table 18.24). A summary of ARTC engagement with DTMR during development of the reference design and draft EIS is provided in Appendix C: Stakeholder Engagement Report. Further explanation of the methodology used in determining road–rail interface treatments is included in Appendix X: Traffic Impact Assessment.

The reference design includes locations where there are existing road–rail intersections, as well locations where new road–rail intersections will be required. Existing public road–rail intersection locations along the Project alignment are summarised in Table 18.23, with a description of the proposed reference design treatment for each. These locations are shown on Figure 18.2a-h.

TABLE 18.23 EXISTING PUBLIC ROAD–RAIL INTERSECTIONS AND PROPOSED DESIGN TREATMENTS

Interface ID[1]	Road name	Existing QR crossing type	Proposed treatment in the reference design
State-controlled roads			
310-11-E-1	Cunningham Highway (Wondalli Street)	Active level crossing	No crossing provided at this location—relocated
310-40-E-2	Millmerran–Leyburn Road	Passive level crossing	Active level crossing
310-44-E-2	Gore Highway	Active level crossing	Grade separation: road-over-rail
Goondiwindi Regional Council			
310-4-E-2	South Kurumbul Road	Passive level crossing	Active level crossing
310-12-E-1	Suttons Road	Passive level crossing	Passive level crossing
310-14-E-0	Springborg Road	Passive level crossing	Passive level crossing
310-16-E-1	Whetstone Access Road	Passive level crossing	Active level crossing
Toowoomba Regional Council			
310-40-E-1	Hall Road	Passive level crossing	Passive level crossing
310-41-E-6	Gilgai Lane	Passive level crossing	Passive level crossing
310-42-E-1	Fysh Road	Active level crossing	No crossing provided at this location—relocated
310-43-E-3	Elsden Road	Passive level crossing	Active level crossing
310-45-E-1	Longhurst Road	Passive level crossing	Active level crossing

Table note:
1. Interface IDs shown on Figure 18.2a-h

The proposed public road–rail interface locations and road closures associated with the Project are listed in Table 18.24. These are locations without an existing road–rail interface and are shown on Figure 18.2a-h.

TABLE 18.24 PROPOSED PUBLIC ROAD–RAIL INTERFACE AND DESIGN TREATMENTS

Interface ID[1]	Road name	Proposed treatment in the reference design
State-controlled roads		
310-11-P-0	Cunningham Highway (Wondalli Street)	Grade separation: road-over-rail
310-24-P-2	Millmerran–Inglewood Road	Active level crossing
310-35-P-4	Millmerran–Inglewood Road	Grade separation: rail-over-road (bridge)
310-37-P-12a	Millmerran–Inglewood Road	Grade separation: rail-over-road (bridge)
310-48-P-8	Oakey–Pittsworth Road	Grade separation: rail-over-road (bridge)
310-55-P-1	Toowoomba–Cecil Plains Road	Grade separation: rail-over-road (bridge)
310-56-P-2	Warrego Highway	Grade separation: rail-over-road (bridge)

Interface ID[1]	Road name	Proposed treatment in the reference design
Goondiwindi Regional Council		
270-11-P-9a	Stock Reserve	Grade separation: rail-over-road (bridge)
270-12-P-1	Kildonan Road	Active level crossing
270-12-P-2	Kildonan Road—Stock Reserve	No crossing provided at this location—relocated
270-12-P-4	Eukabilla Road	No crossing provided at this location—road diverted/re-aligned
270-12-P-6a	Eukabilla Road	No crossing provided at this location—road diverted/re-aligned
310-5-P-1	Wondalli–Kurumbul Road	Passive level crossing
310-8-E-0	Unnamed Road	Passive level crossing
310-10-P-1	Unnamed Road	Passive level crossing
310-14-E-1	Springborg Road	No crossing provided at this location—relocated
310-17-P-7a	McDougalls Crossing Road	Active level crossing
310-18-P-8	Cremascos Road	Active level crossing
310-19-P-8	Unnamed Road	No crossing provided at this location—consolidated
310-20-P-7	Unnamed Road	No crossing provided at this location—consolidated
310-20-P-12	Bybera Road	No crossing provided at this location—relocated
310-20-P-12z	Bybera Road	Passive level crossing
310-21-P-9	Lovells Crossing Road	Active level crossing
310-22-P-9	Thornton Road	Active level crossing
310-25-P-3	Grays Road	Passive level crossing
310-26-P-2	Wongavale–Yugilbar Road	Passive level crossing
310-27-P-3	Unnamed Road	Grade separation: rail-over-road (culverts)
310-28-P-3	Unnamed Road	Active level crossing
Toowoomba Regional Council		
310-30-P-2	Unnamed Road	Passive level crossing
310-31-P-7	Kooroongarra Road	Passive level crossing
310-32-P-4	Paton Road	Passive level crossing
310-33-P-1	Nicol Creek Road	Passive level crossing
310-34-P-1	Millwood Road	Passive level crossing
310-35-P-4a	Heckendorf Road	No crossing provided at this location—road diverted/re-aligned
310-36-P-1	Blackwell Road	Active level crossing
310-36-P-8a	Scraggs Road	Passive level crossing
310-37-P-12	Schwartens Road	No crossing provided at this location—consolidated
310-38-P-3	Owens Scrub Road	Active level crossing
310-39-P-1	Lindenmayer Road	Passive level crossing
310-42-E-0	Harris Road	Active level crossing
310-43-E-8	Mann Silo Road	Passive level crossing
310-46-E-1	Yarranlea Road	Grade separation: rail-over-road (bridge)

Interface ID[1]	Road name	Proposed treatment in the reference design
310-46-P-3	Roche Road	Grade separation: rail-over-road (bridge)
310-46-P-4c	Murlaggan Road	No crossing provided at this location—relocated
310-47-P-1	Kahler Road	No crossing provided at this location—consolidated
310-47-P-3	French Road	No crossing provided at this location—road diverted/re-aligned
310-48-P-1	Tip Road	Active level crossing
310-48-P-9	Quibet Road	No crossing provided at this location—road diverted/re-aligned
310-48-P-10	Dallman Road	No crossing provided at this location—road diverted/re-aligned
310-49-P-1	Unnamed Road	No crossing provided at this location—road diverted/re-aligned
310-49-P-2	Lochaber Road	Grade separation: rail-over-road (bridge)
310-49-P-6	McEwan Lane	No crossing provided at this location—consolidated
310-49-P-8	Paint Mine Road	No crossing provided at this location—road diverted/re-aligned
310-49-P-11	Linthorpe Road	Grade separation: road-over-rail
310-50-P-5	Geitz Road	No crossing provided at this location – consolidated
310-50-P-11	Linthorpe Valley Road	Passive level crossing
310-51-P-8	Bushy Lane	No crossing provided at this location—road diverted/re-aligned
310-51-P-11z	Biddeston–Southbrook Road	Grade separation: rail-over-road (bridge)
310-52-P-1	Unnamed Road	No crossing provided at this location—road diverted/re-aligned
310-52-P-3	Purcell Road	Passive level crossing
310-53-P-1	Athol School Road	No crossing provided at this location—consolidated
310-55-P-5	Brimblecombe Road	Grade separation: rail-over-road (bridge)
310-57-P-1	Chamberlain Road	Grade separation: rail-over-road (bridge)
310-57-P-4	Leesons Road	Active level crossing

Table note:
1. Interface IDs shown on Figure 18.2

Road traffic will be required to stop and wait at level crossings to enable the pass-by of trains. Where there is an existing road crossing of the QR rail network, wait times with the Project may differ from those experienced at present due to a change in rail operating conditions. Where level crossings are newly established for the Project, wait times for road vehicles will be a new inconvenience.

The anticipated vehicle wait times at proposed level crossings during a train pass-by have been calculated and are presented in Table 18.25. These wait times have been calculated based on an 1,800 m train moving at 115 km/h. A full list of analysis assumptions is presented in Appendix X: Traffic Impact Assessment.

TABLE 18.25 VEHICLE WAIT TIMES AT PROPOSED LEVEL CROSSING LOCATIONS

Interface ID[1]	Road name	Proposed treatment	Total wait time per closure (seconds)
Department Transport and Main Roads			
310-24-P-2	Millmerran–Inglewood Road	Active level crossing	101
310-40-E-2	Millmerran–Leyburn Road	Active level crossing	91
TRC			
310-30-P-2	Unnamed Road	Passive level crossing	81
310-31-P-7	Kooroongarra Road	Passive level crossing	78
310-32-P-4	Paton Road	Passive level crossing	78
310-33-P-1	Nicol Creek Road	Passive level crossing	78
310-34-P-1	Millwood Road	Passive level crossing	78
310-36-P-1	Blackwell Road	Active level crossing	91
310-36-P-8a	Scraggs Road	Passive level crossing	78
310-38-P-3	Owens Scrub Road	Active level crossing	199
310-39-P-1	Lindenmayer Road	Passive level crossing	126
310-40-E-1	Hall Road	Passive level crossing	78
310-41-E-6	Gilgai Lane	Passive level crossing	78
310-42-E-0	Harris Road	Active level crossing	91
310-43-E-3	Elsden Road	Active level crossing	91
310-43-E-8	Mann Silo Road	Passive level crossing	78
310-45-E-1	Longhurst Road	Active level crossing	91
310-48-P-1	Tip Road	Active level crossing	91
310-50-P-11	Linthorpe Valley Road	Passive level crossing	88
310-52-P-3	Purcell Road	Passive level crossing	78
310-57-P-4	Leesons Road	Active level crossing	91
GRC			
270-12-P-1	Kildonan Road	Active level crossing	97
310-4-E-2	South Kurumbul Road	Active level crossing	101
310-5-P-1	Wondalli–Kurumbul Road	Passive level crossing	78
310-8-E-0	Unnamed Road	Passive level crossing	174
310-10-P-1	Unnamed Road	Passive level crossing	78
310-12-E-1	Suttons Road	Passive level crossing	78
310-14-E-0	Springborg Road	Passive level crossing	78
310-16-E-1	Whetstone Access Road	Active level crossing	104
310-17-P-7a	McDougalls Crossing Road	Active level crossing	190
310-18-P-8	Cremascos Road	Active level crossing	133
310-20-P-12z	Bybera Road	Passive level crossing	78
310-21-P-9	Lovells Crossing Road	Active level crossing	101
310-22-P-9	Thornton Road	Active level crossing	101
310-25-P-3	Grays Road	Passive level crossing	78
310-26-P-2	Wongavale-Yugilbar Road	Passive level crossing	78
310-28-P-3	Unnamed Road	Active level crossing	182

Table note:
1. As shown on Figure 18.2a-h

The number of train pass-bys per day will also increase with the Project, thereby increasing the frequency that road traffic needs to stop at these level crossings. The South Western Line currently has an average of 25 train movements per month (refer Table 18.7) and the Millmerran Branch Line currently has an average of three train movements per month (refer Table 18.9). It is estimated that once operational, the Project will involve an annual average of about 14 train services per day in 2026. This is likely to increase to an average of 20 trains per day in 2040, and up to 25 per day during peak operational periods. The potential social impacts of train pass-by are discussed in Chapter 15: Social.

The operational performance of new and existing level crossings included in the reference design (refer Table 18.25) were assessed to provide an understanding of the potential impacts on road network performance as a result of the Project. For this purpose, active and passive level crossings along the Project alignment were analysed using SIDRA INTERSECTION (SIDRA), which is a software package that is commonly used for modelling of individual intersections in a road network. The SIDRA analysis considered vehicle delays and queueing at level crossings to assess how development of the Project will impact on the performance of these crossings. Analyses were not undertaken at locations that only serve low levels of local traffic.

Two future year scenarios were analysed—2026 (day one rail operations) and 2040 (peak Project operation). For each year, both AM and PM peak-hour analysis was conducted based on the estimated number of train movements, forecast background traffic and any diversions to the surrounding road network as a result of the Project. This approach is consistent with the requirements of AS 1742.7:2016 *Manual of uniform traffic control devices: Part 7 (*Standards Australia, 2016b) and the *Manual of Uniform Traffic Control Devices Part 7: Railway Crossings* (DTMR, 2019e).

The estimated queue lengths, journey delays and LOS for each level crossing across the two future year scenarios are presented in Table 18.26 and have been calculated in reference to a 1,800 m train travelling at 115 km/h. A delay in this context is the additional moving time required for a vehicle to get from one side of the rail corridor to the other and is separate to the stationary wait time, as shown in Table 18.25.

The results indicate that all but two of the level crossings included in the reference design would operate at a LOS A in the AM and PM peak periods in 2026 and 2040. The two remaining level crossings, at Owens Scrub Road and McDougalls Crossing Road, would operate at a LOS B in 2026 and 2040.

The analysis indicates that the length of queueing at each level crossing will be negligible (one car or less) in most instances. Queue lengths will be greatest at Owens Scrub Road, where queues of 34.1 m (approximately six light vehicles) in 2026 and 45.5 m (approximately eight light vehicles) in 2040 are predicted.

The analysis indicates that delays at level crossings will, in most instances, be five seconds or less. Owens Scrub Road will have the longest level crossing delays, with 12.1 seconds predicted for 2026 and 12.2 seconds predicted for 2040.

Further discussion on the implication of queue lengths for the design of each crossing, particularly in regard to short-stacking issues, is presented in Appendix X: Traffic Impact Assessment.

TABLE 18.26 PROPOSED LEVEL RAIL CROSSINGS—SIDRA ANALYSIS RESULTS

		Year 2026 (1,800 m train length)				Year 2040 (1,800 m train length)			
		With Project				With Project			
Road–rail interface location		Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS	Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS
310-24-P-2: Millmerran–Inglewood Road									
AM	Millmerran–Inglewood Road (N)	20	*8.8*	*3.2*	A	26	*11.6*	*3.3*	A
	Millmerran–Inglewood Road (S)	21	*9.7*	*3.3*	A	28	*12.8*	*3.3*	A
PM	Millmerran–Inglewood Road (N)	17	*7.7*	*3.2*	A	23	*10.2*	*2.7*	A
	Millmerran–Inglewood Road (S)	17	*7.9*	*3.2*	A	23	10.5	2.7	A
310-40-E-2: Millmerran–Leyburn Road									
AM	Millmerran–Leyburn Road (N)	10	*Negligible***	2.7	A	13	*Negligible***	2.7	A
	Millmerran–Leyburn Road (S)	11	*Negligible***	2.7	A	15	*6*	2.7	A
PM	Millmerran–Leyburn Road (N)	15	*6.3*	2.7	A	20	*8.3*	2.7	A
	Millmerran–Leyburn Road (S)	12	*Negligible***	2.7	A	16	6.7	2.7	A
310-30-P-2: Unnamed Road									
AM	Unnamed Road (E)	1	*Negligible***	2.6	A	2	*Negligible***	2.6	A
	Unnamed Road (W)	1	*Negligible***	2.6	A	2	*Negligible***	2.6	A
PM	Unnamed Road (E)	1	*Negligible***	2.6	A	2	*Negligible***	2.6	A
	Unnamed Road (W)	1	*Negligible***	2.6	A	2	*Negligible***	*2.6*	A
310-31-P-7: Kooroongarra Road									
AM	Kooroongarra Road (E)	2	*Negligible***	2.0	A	3	*Negligible***	2.0	A
	Kooroongarra Road (W)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
PM	Kooroongarra Road (E)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Kooroongarra Road (W)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
310-32-P-4: Paton Road									
AM	Paton Road (E)	5	*Negligible***	2.0	A	7	*Negligible***	2.0	A
	Paton Road (W)	5	*Negligible***	2.0	A	7	*Negligible***	2.0	A
PM	Paton Road (E)	2	*Negligible***	2.0	A	3	*Negligible***	2.0	A
	Paton Road (W)	2	*Negligible***	2.0	A	3	*Negligible***	2.0	A

Road–rail interface location		Year 2026 (1,800 m train length) With Project				Year 2040 (1,800 m train length) With Project			
		Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS	Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS
310-33-P-1: Nicol Creek Road									
AM	Nicol Creek Road (E)	4	*Negligible***	*2.0*	A	5	*Negligible***	*2.0*	A
	Nicol Creek Road (W)	5	*Negligible***	*2.0*	A	7	*Negligible***	*2.0*	A
PM	Nicol Creek Road (E)	2	*Negligible***	*2.0*	A	3	*Negligible***	*2.0*	A
	Nicol Creek Road (W)	4	*Negligible***	*2.0*	A	5	*Negligible***	*2.0*	A
310-34-P-1: Millwood Road									
AM	Millwood Road (E)	4	*Negligible***	*2.0*	A	5	*Negligible***	*2.0*	A
	Millwood Road (W)	2	*Negligible***	*2.0*	A	3	*Negligible***	*2.0*	A
PM	Millwood Road (E)	2	*Negligible***	*2.0*	A	3	*Negligible***	*2.0*	A
	Millwood Road (W)	4	*Negligible***	*2.0*	A	5	*Negligible***	*2.0*	A
310-36-P-1: Blackwell Road									
AM	Blackwell Road (E)	5	*Negligible***	*2.6*	A	7	*Negligible***	*2.6*	A
	Blackwell Road (W)	1	*Negligible***	*2.6*	A	2	*Negligible***	*2.6*	A
PM	Blackwell Road (E)	1	*Negligible***	*2.6*	A	2	*Negligible***	*2.6*	A
	Blackwell Road (W)	2	*Negligible***	*2.6*	A	3	*Negligible***	*2.6*	A
310-36-P-8a: Scraggs Road									
AM	Scraggs Road N)	1	*Negligible***	*2.0*	A	2	*Negligible***	*2.0*	A
	Scraggs Road (S)	5	*Negligible***	*2.0*	A	7	*Negligible***	*2.0*	A
PM	Scraggs Road N)	2	*Negligible***	*2.0*	A	3	*Negligible***	*2.0*	A
	Scraggs Road (S)	1	Negligible**	*2.0*	A	2	*Negligible***	*2.0*	A
310-38-P-3: Owens Scrub Road									
AM	Owens Scrub Road (N)	43	33.5	12.1	B	57	44.6	12.2	B
	Owens Scrub Road (S)	22	16.4	11.9	B	29	21.7	12.0	B
PM	Owens Scrub Road (N)	33	25.7	12.0	B	44	34.1	12.1	B
	Owens Scrub Road (S)	46	34.1	12.1	B	60	45.5	12.2	B

Road–rail interface location		Year 2026 (1,800 m train length) With Project				Year 2040 (1,800 m train length) With Project			
		Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS	Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS
310-39-P-1: Lindenmayer Road									
AM	Lindenmayer Road N)	10	*Negligible***	4.9	A	13	*6.2*	4.9	A
	Lindenmayer Road (S)	2	*Negligible***	4.9	A	3	*Negligible***	4.9	A
PM	Lindenmayer Road N)	2	*Negligible***	4.9	A	3	*Negligible***	4.9	A
	Lindenmayer Road (S)	9	*Negligible***	4.9	A	11	*Negligible***	4.9	A
310-40-E-1: Hall Road									
AM	Hall Road N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Hall Road (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
PM	Hall Road N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Hall Road (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
310-41-E-6: Gilgai Lane									
AM	Gilgai Lane (N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Gilgai Lane (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
PM	Gilgai Lane (N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Gilgai Lane (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
310-42-E-0: Harris Road									
AM	Harris Road (N)	7	*Negligible***	2.6	A	10	*Negligible***	2.7	A
	Harris Road (S)	11	*Negligible***	2.7	A	15	*Negligible***	2.7	A
PM	Harris Road (N)	9	*Negligible***	2.6	A	11	*Negligible***	2.7	A
	Harris Road (S)	10	*Negligible***	2.7	A	12	*Negligible***	2.7	A
310-43-E-3: Elsden Road									
AM	Elsden Road (N)	1	*Negligible***	2.6	A	2	*Negligible***	2.6	A
	Elsden Road (S)	1	*Negligible***	2.6	A	2	*Negligible***	2.6	A
PM	Elsden Road (N)	2	*Negligible***	2.6	A	3	*Negligible***	2.6	A
	Elsden Road (S)	1	*Negligible***	2.6	A	2	*Negligible***	2.6	A

Road–rail interface location		Year 2026 (1,800 m train length) With Project				Year 2040 (1,800 m train length) With Project			
		Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS	Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS
310-43-E-8: Mann Silo Road									
AM	Mann Silo Road (N)	6	*Negligible***	2.0	A	8	*Negligible***	2.0	A
	Mann Silo Road (S)	4	*Negligible***	2.0	A	5	*Negligible***	2.0	A
PM	Mann Silo Road (N)	5	*Negligible***	2.0	A	7	*Negligible***	2.0	A
	Mann Silo Road (S)	5	*Negligible***	2.0	A	7	*Negligible***	2.0	A
310-45-E-1: Longhurst Road									
AM	Longhurst Road (N)	15	8.0	2.7	A	20	10.6	2.7	A
	Longhurst Road (S)	15	7.9	2.7	A	20	10.5	2.7	A
PM	Longhurst Road (N)	12	6.7	2.7	A	16	8.8	2.7	A
	Longhurst Road (S)	14	7.2	2.7	A	18	9.6	2.7	A
310-48-P-1: Tip Road									
AM	Tip Road (N)	2	*Negligible***	2.6	A	3	*Negligible***	2.6	A
	Tip Road (S)	4	*Negligible***	2.6	A	5	*Negligible***	2.6	A
PM	Tip Road (N)	5	*Negligible***	2.6	A	7	*Negligible***	2.6	A
	Tip Road (S)	4	*Negligible***	2.6	A	5	*Negligible***	2.6	A
310-50-P-11: Linthorpe Valley Road									
AM	Linthorpe Valley Road (E)	6	*Negligible***	2.5	A	8	*Negligible***	2.5	A
	Linthorpe Valley Road (W)	6	*Negligible***	2.5	A	8	*Negligible***	2.5	A
PM	Linthorpe Valley Road (E)	5	*Negligible***	2.5	A	6	*Negligible***	2.5	A
	Linthorpe Valley Road (W)	7	*Negligible***	2.5	A	9	*Negligible***	2.5	A
310-52-P-3: Purcell Road									
AM	Purcell Road (E)	9	*Negligible***	2.0	A	11	*Negligible***	2.0	A
	Purcell Road (W)	12	*Negligible***	2.0	A	16	*Negligible***	2.0	A
PM	Purcell Road (E)	12	*Negligible***	2.0	A	16	*Negligible***	2.0	A
	Purcell Road (W)	10	*Negligible***	2.0	A	13	*Negligible***	2.0	A

Road–rail interface location		Year 2026 (1,800 m train length) With Project				Year 2040 (1,800 m train length) With Project			
		Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS	Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS
310-57-P-4: Leesons Road									
AM	Leesons Road (N)	6	*Negligible***	2.6	A	8	*Negligible***	2.6	A
	Leesons Road (S)	2	*Negligible***	2.6	A	3	*Negligible***	2.6	A
PM	Leesons Road (N)	4	*Negligible***	2.6	A	5	*Negligible***	2.6	A
	Leesons Road (S)	7	*Negligible***	2.6	A	10	*Negligible***	2.7	A
270-12-P-1: Kildonan Road									
AM	Kildonan Road (E)	12	*Negligible***	3.0	A	16	6.6	3.0	A
	Kildonan Road (W)	12	*Negligible***	3.0	A	16	6.8	3.0	A
PM	Kildonan Road (E)	14	*Negligible***	3.0	A	16	7.3	3.0	A
	Kildonan Road (W)	14	*Negligible***	3.0	A	16	7.5	3.0	A
310-4-E-2: South Kurumbul Road									
AM	South Kurumbul Road (N)	4	*Negligible***	3.2	A	5	*Negligible***	3.2	A
	South Kurumbul Road (S)	2	*Negligible***	3.2	A	3	*Negligible***	3.2	A
PM	South Kurumbul Road (N)	4	*Negligible***	3.2	A	5	*Negligible***	3.2	A
	South Kurumbul Road (S)	6	*Negligible***	3.2	A	8	*Negligible***	3.2	A
310-5-P-1: Wondalli–Kurumbul Road									
AM	Wondalli Kurumbul Road (N)	4	*Negligible***	2.0	A	5	*Negligible***	2.0	A
	Wondalli Kurumbul Road (S)	2	*Negligible***	2.0	A	3	*Negligible***	2.0	A
PM	Wondalli Kurumbul Road (N)	4	*Negligible***	2.0	A	5	*Negligible***	2.0	A
	Wondalli Kurumbul Road (S)	6	*Negligible***	2.0	A	8	*Negligible***	2.0	A
310-8-E-0: Unnamed Road									
AM	Unnamed Road (N)	4	*Negligible***	9.1	A	5	*Negligible***	9.1	A
	Unnamed Road (S)	2	*Negligible***	9.1	A	3	*Negligible***	9.1	A
PM	Unnamed Road (N)	4	*Negligible***	9.1	A	5	*Negligible***	9.1	A
	Unnamed Road (S)	6	*Negligible***	9.1	A	8	*Negligible***	9.1	A

Road–rail interface location		Year 2026 (1,800 m train length) With Project				Year 2040 (1,800 m train length) With Project			
		Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS	Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS
310-10-P-1: Unnamed Road									
AM	Unnamed Road (N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Unnamed Road (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
PM	Unnamed Road (N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Unnamed Road (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
310-12-E-1: Suttons Road									
AM	Suttons Road (N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Suttons Road (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
PM	Suttons Road (N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Suttons Road (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
310-14-E-0: Springborg Road									
AM	Springborg Road (N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Springborg Road (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
PM	Springborg Road (N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Springborg Road (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
310-16-E-1: Whetstone Access Road									
AM	Whetstone Access Road (E)	2	*Negligible***	3.4	A	3	*Negligible***	3.4	A
	Whetstone Access Road (W)	1	*Negligible***	3.4	A	2	*Negligible***	3.4	A
PM	Whetstone Access Road (E)	1	*Negligible***	3.4	A	2	*Negligible***	3.4	A
	Whetstone Access Road (W)	2	*Negligible***	3.4	A	3	*Negligible***	3.4	A
310-17-P-7a: McDougalls Crossing Road									
AM	McDougalls Crossing Road (N)	2	*Negligible***	10.8	B	3	*Negligible***	10.8	B
	McDougalls Crossing Road (S)	1	*Negligible***	10.8	B	2	*Negligible***	10.8	B
PM	McDougalls Crossing Road (N)	1	*Negligible***	10.8	B	2	*Negligible***	10.8	B
	McDougalls Crossing Road (S)	2	*Negligible***	10.8	B	3	*Negligible***	10.8	B

		Year 2026 (1,800 m train length)				Year 2040 (1,800 m train length)			
		With Project				With Project			
Road–rail interface location		Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS	Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS
310-18-P-8: Cremascos Road									
AM	Cremascos Road (N)	25	14.4	5.5	A	33	19.1	5.5	A
	Cremascos Road (S)	5	*Negligible***	5.4	A	7	*Negligible***	5.4	A
PM	Cremascos Road (N)	5	*Negligible***	5.4	A	7	*Negligible***	5.4	A
	Cremascos Road (S)	16	9.3	5.5	A	21	12.4	5.5	A
310-20-P-12z: Bybera Road									
AM	Bybera Road (N)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Bybera Road (S)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
PM	Bybera Road (N)	2	*Negligible***	2.0	A	3	*Negligible***	2.0	A
	Bybera Road (S)	2	*Negligible***	2.0	A	4	*Negligible***	2.0	A
310-21-P-9: Lovells Crossing Road									
AM	Lovells Crossing Road (N)	1	*Negligible***	3.2	A	2	*Negligible***	3.2	A
	Lovells Crossing Road (S)	1	*Negligible***	3.2	A	2	*Negligible***	3.2	A
PM	Lovells Crossing Road (N)	1	*Negligible***	3.2	A	2	*Negligible***	3.2	A
	Lovells Crossing Road (S)	1	*Negligible***	3.2	A	2	*Negligible***	3.2	A
310-22-P-9: Thornton Road									
AM	Thornton Road (N)	1	*Negligible***	3.2	A	2	*Negligible***	3.2	A
	Thornton Road (S)	1	*Negligible***	3.2	A	2	*Negligible***	3.2	A
PM	Thornton Road (N)	1	*Negligible***	3.2	A	2	*Negligible***	3.2	A
	Thornton Road (S)	1	*Negligible***	3.2	A	2	*Negligible***	3.2	A
310-25-P-3: Grays Road									
AM	Grays Road (E)	2	*Negligible***	2.0	A	3	*Negligible***	2.0	A
	Grays Road (W)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
PM	Grays Road (E)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Grays Road (W)	2	*Negligible***	2.0	A	3	*Negligible***	2.0	A

Road–rail interface location		Year 2026 (1,800 m train length) With Project Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS	Year 2040 (1,800 m train length) With Project Volume* (veh/h)	Queue (m)	Delays (seconds)	LOS
310-26-P-2: Wongavale–Yugilbar Road									
AM	Wongavale–Yugilbar Road (E)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Wongavale–Yugilbar Road (W)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
PM	Wongavale–Yugilbar Road (E)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
	Wongavale–Yugilbar Road (W)	1	*Negligible***	2.0	A	2	*Negligible***	2.0	A
310-28-P-3: Unnamed Road									
AM	Unnamed Road (E)	1	*Negligible***	9.9	A	2	*Negligible***	9.9	A
	Unnamed Road (W)	1	*Negligible***	9.9	A	2	*Negligible***	9.9	A
PM	Unnamed Road (E)	1	*Negligible***	9.9	A	2	*Negligible***	9.9	A
	Unnamed Road (W)	1	*Negligible***	9.9	A	2	*Negligible***	9.9	A

Table notes:
* SIDRA modelled volumes may differ slightly from inputs due to rounding
** Queue length less than one car length (6 m)

Short stacking

The reference design has been developed to prevent short stacking issues with the Project alignment. Short stacking occurs when a long vehicle does not have enough space to completely clear a rail crossing and stops while part of the vehicle is still within the rail corridor. Short stacking issues have been avoided through development of the reference design by maintaining a minimum separation distance between the outer rail of the Project alignment and the centreline of the nearest parallel road, in accordance with section 5.4 of AS 1742.7:2016—*Manual of uniform traffic control devices: Part 7 (*Standards Australia, 2016b) and with *the Manual of Uniform Traffic Control Devices Part 7: Railway Crossings* (DTMR, 2019e).

The appropriate separation distance for inclusion in the reference design was determined as the sum of the minimum offset distance, as per AS 1742.7-2016, and the minimum set back distance, as per DTMR's *Road Planning and Design Manual—Edition 2: Volume 3, Supplement to Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (DTMR, 2014). These two distances are shown in Figure 18.8.

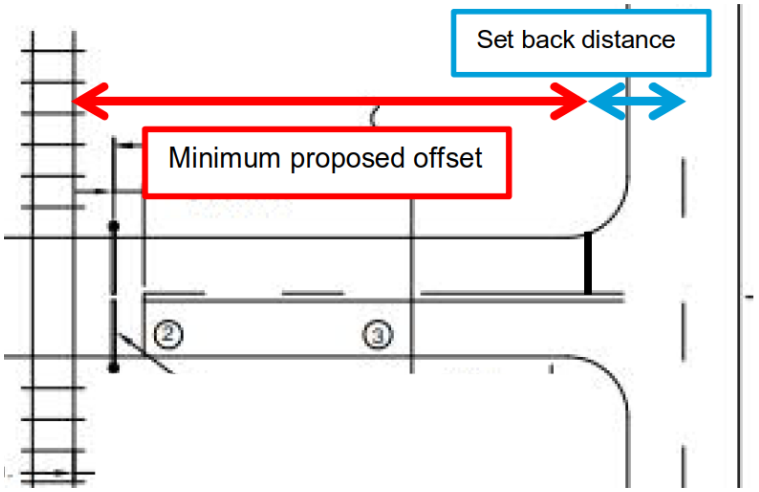


FIGURE 18.8 MINIMUM PROPOSED OFFSET AND SET BACK DISTANCE

Source: Modified from AS 1742.7-2016

Section 5.4 of AS 1742.7-2016 states that the minimum offset distance needs to be long enough to accommodate the design vehicle plus a factor of safety of 5 m at the intersection. The longest vehicle type for roads in proximity to the Project alignment was determined through review of the Performance Based Standards classification (National Transport Commission, 2020), the National Heavy Vehicle Regulator Route Planner (NHVR, n.d.) and the road and bridge access limitations of the surrounding road network. It was determined that the longest vehicle type to use the roads in proximity to the Project alignment is a 36.5 m Type 1 road train.

DTMR's *Road Planning and Design Manual—Edition 2: Volume 3, Supplement to Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (*DTMR, 2014) specifies that the set-back distance from the downstream intersection stop, or give-way line to the inside edge line of a 3.5 m through lane (oncoming traffic), is a maximum of 8 m.

*B*ased on the above, the minimum proposed offset plus set-back distance was established to be 49.5 m (5 m + 36.5 m + 8 m); therefore, a minimum separation distance of 49.5 m between the outer rail of the Project alignment and the centreline of the nearest parallel road has been included in the reference design, to avoid short stacking.

In consultation through the development of the reference design, DTMR requested that separation distances be sufficient to allow for storage of two 42.5 m A-triple vehicles. As discussed above, assessment of the existing road network indicates that 42.5 m A-triple vehicles do not use roads in proximity to the Project alignment; therefore, ARTC has retained a minimum separation distance of 49.5 m for the purpose of the reference design.

DTMR has provided ARTC with standard drawings showing acceptable separation distances for short stacking. The reference design has been compared to these standard drawings and the Project is considered by ARTC to conform to the short stacking requirements in all locations. ARTC will continue to consult with DTMR through the development of the detail design to identify opportunities to accommodate, where possible, greater separation distances between rail and neighbouring roads. A summary of ARTC engagement with DTMR during development of the reference design and draft EIS is provided in Appendix C: Stakeholder Engagement Report.

Signalling and communications

A Direct Traffic Control signalling system is currently used on the existing South Western Line and Millmerran Branch Line. Train movements on these lines are controlled and communicated via QR's Control Centre in Brisbane.

The Project will be operated using Advanced Train Management System (ATMS), a communications-based safeworking signalling system currently being developed by ARTC. The ATMS will consist of signalling and communications equipment to ensure the safe movement of trains on the Inland Rail network. This system will consist of signals, indicators, signs, detection, monitoring and control equipment on track, beside the track and in enclosures in the rail corridor.

ATMS will provide significantly upgraded capabilities to the rail industry of Australia. It is designed to support ARTC's objectives of improving rail network capacity, operational flexibility, train service availability, transit times, rail safety and system reliability. The safeworking system will be monitored and controlled by one or more of ARTC's network control centres currently located in Adelaide, Junee and Newcastle.

The ATMS will replace the Direct Traffic Control signalling system operation on sections of replaced QR track. This will interrupt the current continuous Direct Traffic Control operation along QR's network. The interoperability of the ATMS with QR's network will be confirmed through consultation with QR and incorporated into the detail design for the Project.

The design and installation of the ATMS safeworking signalling system will be completed in parallel with the design and construction of the track and civil structures of the Project. The construction, procurement and testing program will be integrated into the track and civil programs to ensure both activities are carried out, so commissioning activities can be undertaken at the same time.

Earthworks requirements for signalling infrastructure, including signalling hut and solar charging panels, have been included in the design of crossing loops and maintenance sidings. A single signalling hut is able to service multiple turnouts where the turnouts are no more than 150 m from the proposed hut site. Signal hut locations associated with turnouts at passing loops and maintenance sidings are shown in the general arrangement drawings included in Volume 3 of this draft EIS.

18.6.2 Traffic impact assessment

This section provides discussion on the potential impacts of the construction and operation of the Project on the background traffic and road conditions within the impact assessment area.

Generally, the following impacts may arise because of the increased number of vehicle movements on the existing road network during construction:

- Increased journey times on road linkages used by construction traffic
- Reduced LOS on road links used by construction traffic
- Increased waiting time at intersections used by construction traffic
- Accelerated degradation of road pavements due to increased volume of traffic and greater axle load.

In addition, road users may experience temporarily altered driving conditions in proximity to construction areas, such as reduced speed limits, mobile traffic lights and lane reconfigurations. Altered driving conditions will result in increased travel times through sections of the road network where such controls are implemented.

As is discussed in Section 18.6.2.1, the potential traffic impacts as a consequence of vehicle movements in support of operation and maintenance of the Project are expected to be negligible. The potential for traffic delays at road–rail intersections has been assessed in Section 18.6.1.2.

18.6.2.1 Existing traffic volumes

State-controlled roads and local government roads that are proposed to be used for construction routes have been identified in Section 18.5.2.1 and Section 18.5.2.2. The existing traffic volumes for roads that are proposed to be used for construction routes are presented in Table 18.27. These existing traffic volumes have been combined with predicted traffic growth rates (refer Section 18.6.2.3) to forecast future background traffic volumes.

TABLE 18.27 EXISTING TRAFFIC VOLUMES FOR ROADS PROPOSED TO BE USED FOR CONSTRUCTION ROUTES

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
State Controlled Roads: Department Transport and Main Roads								
Barwon Highway	31A—Between Leichhardt Highway and Town Common Road	Urban Collector	H	2017	727.5	32%	727.5	32%
Charlton Connection Road	320—Between Toowoomba–Cecil Plains Road and Jordan Court	Urban Collector	H	2017	1,318	28%	1,318	28%
	320—Between Jordan Court and Warrego Highway	Urban Collector	H	2017	1,318	28%	1,318	28%
Cunningham Highway	17D—Between QLD/NSW Border and Leichhardt Highway	Rural Arterial	A	2017	1,536	43%	1,601	45%
	17D—Between Leichhardt Highway and Wyaga Road	Rural Arterial	A	2017	705	47%	751	50%
	17D—Between Wyaga Road and Yelarbon–Keetah Road	Rural Arterial	A	2017	705	47%	751	50%
	17D—Between Yelarbon–Keetah Road and Texas–Yelarbon Road	Rural Arterial	A	2017	776	45%	820	45%
	17D—Between Texas–Yelarbon Road and Inglewood–Texas Road	Rural Arterial	A	2017	776	45%	820	45%
	17C—Between Inglewood–Texas Road and Millmerran–Inglewood Road	Rural Arterial	A	2017	1,038	41%	1,118	40%
	17C - Between Millmerran–Inglewood Road and Inglewood Quarry Access Road	Rural Arterial	A	2017	806	45%	841	44%
	17C—Between Inglewood Quarry Access Road and Coolmunda Dam Access	Rural Arterial	A	2017	806	45%	841	44%
Gore Highway	28A—Between Blackwell Road and Saleyards Road	Rural Arterial	H	2017	990	37%	990	37%
	28A—Between Saleyards Road and West Street	Rural Arterial	H	2017	990	37%	990	37%
	28A—Between West Street and Millmerran–Inglewood Road	Rural Arterial	H	2017	990	37%	990	37%
	28A—Between Millmerran–Inglewood Road and Millmerran–Leyburn Road	Rural Arterial	A	2017	1,429	32%	1,398	33%
	28A—Between Millmerran–Leyburn Road and Pampas–Horrane Road	Rural Arterial	A	2017	1,429	32%	1,398	33%
	28A—Between Pampas–Horrane Road and Brookstead–Norwin Road	Rural Arterial	A	2017	1,429	32%	1,398	33%
	28A—Between Brookstead–Norwin Road and Tummaville Road	Rural Arterial	A	2017	1,429	32%	1,398	33%
	28A—Between Tummaville Road and Vines Street	Rural Arterial	A	2017	1,429	32%	1,398	33%
	28A—Between Vines Street and Toowoomba Bypass	Rural Arterial	A	2017	2,394	20%	2,427	20%
	28A—Between Toowoomba Bypass and Westbrook Road	Rural Arterial	A	2017	2,394	20%	2,427	20%
	28A—Between Westbrook Road and Warrego Highway	Rural Arterial	A	2017	4,478	15%	4,346	18%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
Inglewood–Texas Road	231—Between Cunningham Highway and Greenup Limevale Road	Rural Collector	A	2017	113	29%	121	29%
	231—Between Greenup Limevale Road and Texas–Yelarbon Road	Rural Collector	A	2017	113	29%	121	29%
	231—Between Texas–Yelarbon Road and Stanthorpe–Texas Road	Urban Collector	A	2017	331	23%	343	19%
Inglewood–Texas Road	231—Between Stanthorpe–Texas Road and Old Texas–Yelarbon Road	Urban Collector	A	2017	378	17%	374	18%
	231 - Between Old Texas–Yelarbon Road and QLD/NSW Border	Urban Collector	A	2017	378	17%	374	18%
Ipswich Motorway	17A—Between Cunningham Highway and Logan Motorway	Urban Motorway	A	2017	54,594	5%	54,247	3%
Leichhardt Highway	26C—Between Cunningham Highway and Hunt Street	Rural Arterial	A	2017	1,251	45%	1,400	43%
	26C—Between Hunt Street and Barwon Highway	Rural Arterial	A	2017	1,251	45%	1,400	43%
Logan Motorway (managed by Transurban)	210A—Between Ipswich Motorway and Pacific Motorway	Urban Motorway	G	2017	54,594	5%	54,247	5%
Millmerran–Inglewood Road	337—Between Cunningham Highway and Thornton Road	Rural Arterial	A	2017	167	35%	167	32%
	337—Between Thornton Road and the LGA boundary	Rural Arterial	A	2017	167	35%	167	32%
	337—Between the LGA boundary and Kooroongarra Road	Rural Arterial	A	2017	493	29%	500	23%
	337—Between Kooroongarra Road and Blackwell Road	Rural Collector	A	2017	493	29%	500	23%
	337—Between Blackwell Road and Campbell Street	Rural Arterial	A	2017	493	29%	500	23%
	337—Between Campbell Street and Gore Highway	Rural Arterial	A	2017	345	29%	347	31%
Millmerran–Leyburn Road	335—Between Gore Highway and Reiche Road	Rural Collector	A	2017	113	32%	114	31%
Oakey–Pittsworth Road	323—Between Gore Highway and Quibet Road	Rural Collector	A	2017	391	21%	383	23%
Pacific Motorway	12A—Between Logan Highway and NSW/QLD border	Urban Motorway	G	2017	78,160	8%	78,858	8%
Pampas–Horrane Road	327—Between Gore Highway and Bostock Road	Rural Arterial	H	2017	64	44%	64	44%
Pittsworth–Felton Road	332—Between Golf Course Road and Short Street	Urban Arterial	H	2017	1,397.5	10%	1,397.5	10%
Texas–Yelarbon Road	2322—Between Cunningham Highway and Old Texas–Yelarbon Road	Rural Arterial	A	2017	96	47%	93	42%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
Toowoomba–Cecil Plains Road	324—Between Warrego Highway and McDougall Street	Urban Arterial	A	2017	6,172	22%	6,121	21%
	324—Between McDougall Street and Boundary Street	Urban Collector	A	2017	6,172	22%	6,121	21%
	324—Between Boundary Street and Charlton Connection Road	Urban Collector	A	2017	2,874	25%	2,598	30%
	324—Between Charlton Connection Road and Hursley Road	Urban Collector	A	2017	1,569	18%	1,548	18%
	324—Between Hursley Road and Hanrahans Road	Rural Arterial	A	2017	1,569	18%	1,548	18%
	324—Between Hanrahans Road and 2 km west of Brimblecombe Road	Rural Arterial	A	2017	1,002	16%	942	18%
Toowoomba Bypass (previously Toowoomba Second Range Crossing)	319—Between Gore Highway and Toowoomba–Cecil Plains Road	Rural Arterial	I	2019	1,459	46%	1,459	46%
	319—Between Toowoomba–Cecil Plains Road and New England Highway	Rural Arterial	I	2019	1,459	46%	1,459	46%
	319—Between New England Highway and Warrego Highway	Rural Arterial	I	2019	1,459	46%	1,459	46%
Warrego Highway	18B—Between Kingsthorpe Haden Road and Toowoomba Bypass	Urban Arterial	A	2017	6,319	0%	6,283	0%
	18B—Between Toowoomba Bypass and Charlton Connection Road	Urban Arterial	A	2017	6,319	0%	6,283	0%
	18B—Between Charlton Connection Road and McDougall Street	Urban Arterial	A	2017	6,947	12%	7,750	11%
	18B—Between McDougall Street and Bridge Street	Urban Arterial	A	2017	9,854	7%	10,321	8%
	18B—Between Bridge Street and Toowoomba–Cecil Plains Road	Urban Arterial	A	2017	5,811	8%	4,995	7%
	18B—Between Toowoomba–Cecil Plains Road and Karrool Street	Urban Arterial	A	2017	7,162	19%	7,306	19%
	18B—Between Karrool Street and Gore Highway	Urban Arterial	A	2017	7,162	19%	7,306	19%
	18B—Between Gore Highway and Fifth Avenue	Urban Arterial	A	2017	7,162	19%	7,306	19%
	18A—Between Toowoomba Bypass and Gatton–Helidon Road	Rural Motorway	A	2017	10,238	17%	9,821	18%
	18A—Between Gatton–Helidon Road and Gatton–Esk Road	Rural Motorway	A	2017	7,329	19%	8,402	21%
	18A—Between Gatton–Esk Road and Laidley–Plainland Road	Rural Motorway	A	2017	11,410	19%	11,297	20%
	18A—Between Laidley–Plainland Road and Tallegalla Two Tree Hill Road	Rural Motorway	A	2017	11,410	19%	11,297	20%
	18A—Between Tallegalla Two Tree Hill Road and Haigslea Amberley Road	Rural Motorway	A	2017	15,252	21%	14,884	18%
	18A—Between Haigslea Amberley Road and Brisbane Valley Highway	Rural Motorway	A	2017	17,087	15%	15,819	15%
	18A—Between Brisbane Valley Road and Mount Crosby Road	Urban Motorway	A	2017	23,696	14%	21,237	17%
	18A—Between Mount Crosby Road and Cunningham Highway	Urban Motorway	A	2017	29,392	14%	28,468	15%
Yelarbon–Keetah Road	241—Between Cunningham Highway and Old Warwick Road	Rural Arterial	H	2017	67	26%	67	26%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
State-controlled roads: Roads and Maritime Services								
Bruxner Highway	Between New England Highway and Summerland Way	Rural Arterial	C	2012	406	9%	420	10%
Gwydir Highway	Between Stephens Road and Delungra Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Delungra Road and Delungra Bypass Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Delungra Bypass Road and Copeton Dam Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Copeton Dam Road and Bannockburn Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Bannockburn Road and Campbell Street	Rural Arterial	C	2017	739	21%	739	23%
	Between Campbell Street and Tingha Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Tingha Road and Elsmore Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Elsmore Road and Woodstock Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Woodstock Road and Waterloo Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Waterloo Road and Coronation Avenue	Rural Arterial	C	2017	739	21%	739	23%
	Between Coronation Avenue and New England Highway	Rural Arterial	C	2017	739	21%	739	23%
	Between New England Highway and Shannon Vale Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Shannon Vale Road and Bald Nob Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Bald Nob Road and Old Grafton Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Old Grafton Road and Coombadjha Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Coombadjha Road and Old Glen Innes Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Old Glen Innes Road and Rogan Bridge Road	Rural Arterial	C	2017	739	21%	739	23%
	Between Rogan Bridge Road and Bent Street	Rural Arterial	C	2017	739	21%	739	23%
New England Highway	Between Bruxner Way and Bruxner Highway	Rural Motorway	C	2011	1,219	17%	1,202	34%
	Between Gwydir Highway and Gwydir Highway	Rural Arterial	C	2017	1,061	22%	1,107	25%
Newell Highway	Between NSW/QLD border and Bruxner Way	Rural Arterial	C	2017	2,048	32%	2,003	33%
Pacific Motorway	Between QLD/ NSW border and Gwydir Highway	Urban Motorway	C	2017	7,242	24%	8,982	23%
Summerland Way	Between Bruxner Highway and Red Lane	Rural Arterial	C	2017	12,553	5%	12,529	5%
	Between Trenayr Road and Turf Street	Rural Arterial	C	2017	1,677	15%	1,676	16%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
Clarence Valley Council								
Bent Street	Between Craig Street and Gwydir Highway	Urban Collector	C	2019	12,102	15%	12,023	15%
Charles Street	Between Bent Street and Pacific Highway	Urban Arterial	E	2019	2,000	15%	2,000	15%
Clarence Street	Between Oliver Street and Craig Street	Urban Collector	D	2019	3,800	15%	3,800	15%
Clark Road	Full Extent	Rural Local	D	2019	400	15%	400	15%
Craig Street	Between Villiers Street and Clarence Street	Urban Collector	C	2019	12,102	15%	12,023	15%
	Between Clarence Street and Bent Street	Urban Collector	C	2019	12,102	15%	12,023	15%
Dobie Street	Between Villers Street and Summerland Way	Urban Collector	D	2018	3,800	15%	3,800	15%
Fry Street	Between Mary Street and Alice Street	Urban Collector	D	2019	3,800	15%	3,800	15%
Mary Street	Between Fry Street and Oliver Street	Urban Collector	D	2019	3,800	15%	3,800	15%
Oliver Street	Between Clarence Street and Mary Street	Urban Collector	D	2019	3,800	15%	3,800	15%
Red Lane	Between Summerland Way and Trenayr Road	Rural Local	D	2019	400	15%	400	15%
Trenayr Road	Between Red Lane and Clark Road	Rural Collector	D	2019	2,000	15%	2,000	15%
	Between Summerland Way and Clark Road	Rural Collector	D	2018	2,000	15%	2,000	15%
Villers Street	Between Craig Street and Dobie Street	Urban Collector	D	2018	3,800	15%	3,800	15%
GRC								
Boodle Street	Between Boodle Street and Hunt Street	Urban Local	D	2018	3,800	15%	3,800	15%
Bybera Road	Between Cunningham Highway and Private Access	Rural Collector	F	2018	10	35%	12	32%
	Between Private Access and Unnamed Road	Rural Local	F	2018	10	35%	12	32%
Cemetery Road	Between Mooroobie Lane and Unnamed Road	Rural Local	I	2007	64.5	15%	64.5	15%
Coolmunda Dam Access	Full Extent	Rural Local	I	2015	33.5	25%	33.5	25%
Cremascos Road	Between Cunningham Highway and 400 m west of Private Access	Rural Local	F	2018	63	33%	62	32%
East Sawmill Road	Between Cunningham Highway and Springborg Road	Rural Collector	D	2019	2,000	15%	2,000	15%
Elizabeth Street	Between Cunningham Highway and Callandoon Street	Rural Collector	D	2019	2,000	15%	2,000	15%
Eukabilla Road	Full Extent	Rural Local	D	2019	400	15%	400	15%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
Fosters Road	Between Cunningham Highway and Grays Road	Rural Local	I	2010	11.5	8%	11.5	8%
Grays Road	Between Millmerran–Inglewood Road and Mosquito Creek Road	Rural Local	I	2007	11	8%	11	8%
Hunt Street	Between Leichhardt Highway and Boodle Street	Urban Collector	D	2018	3,800	15%	3,800	15%
Inglewood Quarry Access Road	Full Extent	Rural Local	D	2019	400	15%	400	15%
Kildonan Road	Between Yelarbon–Keetah Road and Cunningham Highway	Rural Arterial	F	2018	110	23%	105	25%
Lovells Crossing Road	Between Callandoon Street and Unnamed Road	Rural Collector	F	2018	4	33%	3	25%
	Between Unnamed Road and Unnamed Road	Rural Collector	F	2018	4	33%	3	25%
McDougalls Crossings Road	Between Cunningham Highway and 800 m west of Cremascos Road	Rural Collector	D	2019	2,000	15%	2,000	15%
Mooroobie Lane	Between Wondalli–Kurumbul Road and Cemetery Road	Rural Local	I	2009	11	17%	11	17%
Mosquito Creek Road	Between Grays Road and Cunningham Highway	Rural Local	I	2010	8.5	13%	8.5	13%
Old Texas–Yelarbon Road	Between Texas–Yelarbon Road and Rocky Creek Road	Urban Collector	I	2007	34	19%	34	19%
	Between Rocky Creek Road and Inglewood–Texas Road	Urban Collector	I	2007	34	19%	34	19%
Queen Street South	Between Yelarbon–Kurumbul Road and Danes Lane	Rural Local	D	2019	400	15%	400	15%
South Kurumbul Road	Between Yelarbon–Kurumbul Road and Kildonan Road	Rural Local	D	2019	400	15%	400	15%
Springborg Road	Between Cunningham Highway and Railway Line	Rural Local	F	2018	5	23%	5	11%
Suttons Road	Between East Sawmill Road and Unnamed Road	Rural Local	F	2018	4	59%	5	74%
Thornton Road	Between Millmerran–Inglewood Road and Unnamed Road	Rural Collector	F	2018	3	25%	3	5%
Town Commons Road	Between Waggamba Road and Barwon Highway	Urban Local	I	2006	174	29%	174	29%
Unnamed Road	Between Cunningham Highway and Private Access	Rural Local	D	2019	400	15%	400	15%
Unnamed Road	Between Cemetery Road and Unnamed Road	Rural Local	D	2019	400	15%	400	15%
Unnamed Road	Between Texas–Yelarbon Road and Private Land	Rural Local	D	2019	400	15%	400	15%
Unnamed Road	Between Woodcocks Road and Queen Street North	Rural Local	D	2019	400	15%	400	15%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
Unnamed Road	Between East Sawmill Road and Suttons Road	Rural Local	D	2019	400	15%	400	15%
Unnamed Road	Full extent	Rural Local	D	2019	400	15%	400	15%
Whetstone Access Road	Between Cunningham Highway and 600 m west of Railway Line	Rural Local	F	2018	10	16%	10	39%
Wondalli–Kurumbul Road	Between South Western System (Railway) and Bickers Road	Rural Local	I	2007	6	19%	6	19%
Woodcocks Road	Between Cunningham Highway and Unnamed Road	Rural Collector	D	2019	2,000	15%	2,000	15%
Yelarbon–Kurumbul Road	Yelarbon–Kurumbul Road	Rural Collector	I	2004	10.5	11%	10.5	11%
Gwydir Shire Council (GSC)								
Edwards Street	Between North Star Road and I B Bore Road	Rural Arterial	G	2018	184	26%	202	30%
North Star Road	Between MPSC LGA boundary and Edwards Street	Rural Arterial	F	2018	134	22%	141	25%
	Between Edward Street and Getta Getta Road	Rural Arterial	F	2018	134	22%	141	25%
	Between Getta Getta Road and Blue Nobby Road	Rural Arterial	F	2018	134	22%	141	25%
	Between Blue Nobby Road and Hibernia Road	Rural Arterial	F	2018	134	22%	141	25%
	Between Hibernia Road and Yallaroi Road	Rural Arterial	F	2018	134	22%	141	25%
	Between Yallaroi Road and Baroma Road	Rural Arterial	F	2018	134	22%	141	25%
	Between Baroma Road and Warialda Road	Rural Arterial	F	2018	134	22%	141	25%
Stephen Street	Between Long Street and Gwydir Highway	Rural Arterial	E	2018	1,600	15%	1,600	15%
Warialda Road	Between North Star Road and Gournama Road	Rural Arterial	E	2018	1,600	15%	1,600	15%
	Between Gournama Road and Oregon Road	Rural Arterial	E	2018	1,600	15%	1,600	15%
Warialda Road	Between Oregon Street and Stephen Street	Rural Arterial	E	2018	1,600	15%	1,600	15%
Inverell Shire Council (ISC)								
Bruxner Way	Between Texas Bridge Road and Glenrock Road	Rural Motorway	C	2011	112	21%	101	24%
	Between Glenrock Road and New England Highway	Rural Motorway	C	2011	112	21%	101	24%
Campbell Street	Between Byron Street and Otho Street	Urban Local	D	2018	2,000	15%	2,000	15%
Texas Bridge Road	Between QLD/NSW Border and Bruxner Highway	Rural Arterial	E	2019	1,600	15%	1,600	15%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
Moree Plains Shire Council (MPSC)								
Bruxner Way	Between Newell Highway and Tucka Tucka Road	Rural Arterial	F	2018	137	26%	135	24%
	Between Tucka Tucka Road and North Star Road	Rural Arterial	F	2018	137	26%	135	24%
North Star Road	Between Bruxner Way and Gwydir Shire Council boundary	Rural Arterial	F	2018	144	23%	147	27%
River Road	Between Newell Highway and Boggabilla Weir	Rural Local	D	2018	400	15%	400	15%
TRC								
Airport Quarry Wellcamp Access Road (Privately owned road)	Between Toowoomba–Cecil Plains Road and Toowoomba Wellcamp Airport	Rural Local	D	2019	400	15%	400	15%
Alderley Street	Between Greenwattle Street and Gore Highway	Urban Collector	I	2014	3,117	11%	3,117	11%
	Between Gore Highway and Condamine Street	Urban Collector	I	2014	3,117	11%	3,117	11%
Athol School Road	Between Gore Highway and Trader Road	Rural Collector	I	2017	96	10%	96	10%
Biddeston Southbrook Road	Between Gore Highway and Stower Road	Rural Collector	I	2017	106	22%	106	22%
Blackwell Road	Between Millmerran–Inglewood Road and Gore Highway	Rural Arterial	I	2017	12	8%	12	8%
Blackwell Road	Between Bunkers Hill School Road and Macaulay Road	Rural Local	I	2017	263	26%	263	26%
Bligh Street	Between Six Mile Road and Concrete Millmerran	Rural Arterial	E	2019	1,600	15%	1,600	15%
	Between Concrete Millmerran and Crosby Street	Rural Arterial	E	2019	1,600	15%	1,600	15%
Bostock Road	Between Pampas–Horrane Road and Unnamed Road	Rural Collector	I	2015	41.5	24%	41.5	24%
Brimblecombe Road	Between Toowoomba–Cecil Plains Road and Gowrie Mountain School Road	Rural Collector	I	2013	51	29%	51	29%
Bunkers Hill School Road	Between Gore Highway and Blackwell Road	Rural Local	I	2017	261	21%	261	21%
Bushy Lane West	Between Gore Highway and 650 m west of Gore Highway	Rural Local	D	2019	400	15%	400	15%
Campbell Street	Between Millmerran–Inglewood Road and Commens Street	Urban Collector	I	2013	428	16%	438	16%
Chamberlain Road	Between Warrego Highway and Robson Road	Rural Local	D	2019	400	15%	400	15%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
Commodore Peak Road	Between Millmerran–Inglewood Road and Blackwell Road	Rural Local	I	2017	14	13%	14	13%
Condamine Street	Full Extent	Urban Collector	I	2016	497	16%	497	16%
Dieckmann Road	Between Gore Highway and Madelaine Street	Rural Local	D	2019	400	15%	400	15%
Draper Road	Between Steger Road and Leesons Road	Urban Collector	I	2013	30	10%	30	10%
Drayton Wellcamp Road	Between Wellcamp–Westbrook Road and Boundary Street South	Urban Collector	I	2015	1,081	15%	1,081	15%
Euston Road	Between Boundary Court and Greenwattle Street	Urban Collector	I	2016	3,018	10%	3,018	10%
Forestry Road	Between Millmerran–Inglewood Road and Unnamed Road	Rural Local	D	2019	400	15%	400	15%
Fysh Road	Between Gore Highway and Fysh Road	Rural Local	D	2019	400	15%	400	15%
Gap Road	Between Gore Highway and Cypress Street	Rural Collector	I	2015	540	30%	540	30%
Geitz Road	Between Gore Highway and Luck Road	Rural Local	D	2019	400	15%	400	15%
Gilgal Lane	Between Gore Highway and Railway Line	Rural Collector	D	2019	2,000	15%	2,000	15%
Greenwattle Street	Between Euston Road and Alderley Street	Urban Arterial	I	2013	2,409	8%	2,409	8%
Grevillea Street	Full Extent	Rural Local	D	2019	400	15%	400	15%
Hall Road	Between Gore Highway and Railway Line	Rural Collector	D	2019	2,000	15%	2,000	15%
Heckendorf Road	Between Millmerran–Inglewood Road and Bora Creek Road	Rural Local	I	2017	12	13%	12	13%
Kahler Road	Between Murlaggan Road and Glen Devon Road	Rural Local	D	2019	400	15%	400	15%
Kooroongarra Road	Between Millmerran–Inglewood Road and Bliss Road	Rural Collector	I	2014	38	13%	38	13%
Kooroongarra Road	Between Millmerran–Inglewood Road and Halls Road	Rural Collector	I	2014	38	13%	38	13%
Kooroongarra Road	Between Millwood Road and Cunningham Highway	Rural Collector	I	2016	36	19%	36	19%
Leesons Road	Full Extent	Rural Collector	I	2016	36	19%	36	19%
Lindenmayer Road	Between Gore Highway and Unnamed Road	Rural Collector	D	2019	2,000	15%	2,000	15%
Linthorpe Road	Between Gore Highway and Loveday Road	Rural Collector	I	2014	92	14%	92	14%
Lochaber Road	Between McEwan Lane and Gore Highway	Rural Arterial	I	2015	216	9%	216	9%
Macaulay Road	Between Blackwell Road and Wellcamp–Westbrook Road	Rural Local	I	2017	292	19%	292	19%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
McDougall Street	Between Toowoomba–Cecil Plains Road and Hursley Road	Urban Collector	I	2015	3,026	20%	3,026	20%
Millwood Road	Between Millmerran–Inglewood Road and Kooroongarra Road	Rural Local	I	2015	12	21%	12	21%
Murlaggan Road	Between Gore Highway and Roche Road	Rural Collector	I	2017	24	24%	24	24%
	Between Roche Road and Yarranlea Road	Rural Arterial	I	2017	24	24%	24	24%
Omara Road	Between Toowoomba–Cecil Plains Road and Warrego Highway	Rural Collector	I	2018	1,695	25%	1,695	25%
Owens Scrub Road	Between Millmerran–Inglewood Road and Foxwood Road	Rural Local	I	2015	67	21%	67	21%
Paint Mine Road	Between Gore Highway and Loveday Road	Rural Local	D	2019	400	15%	400	15%
Paton Road	Between Millmerran–Inglewood Road and Kooroongarra Road	Rural Local	D	2019	400	15%	400	15%
Pittsworth–Felton Road	Between Cypress Street and Golf Course Road	Urban Arterial	E	2019	2,000	15%	2,000	15%
Railway Street	Between Short Street and Vines Street	Urban Collector	I	2017	28	18%	28	18%
Roche Road	Between Murlaggan Road and Saint Helens Road	Rural Arterial	D	2019	1,600	15%	1,600	15%
Saleyards Road	Between Millmerran–Inglewood Road and Gore Highway	Rural Arterial	I	2015	123	30%	123	30%
Scrubby Road	Between Gore Highway and Jentz Road	Rural Collector	I	2017	104	55%	104	55%
Short Street	Between Yandilla Street and Toowoomba Road	Urban Collector	I	2015	385	8%	385	8%
Six Mile Road	Between Rodney Road and Bligh Street	Rural Collector	I	2017	14	16%	14	16%
Steger Road	Between Warrego Highway and Draper Road	Urban Collector	I	2013	30	10%	30	10%
Toowoomba Road	Between Vines Street and Gore Highway	Urban Collector	I	2013	238	10%	238	10%
Tummaville Road	Between Gore Highway and Mann Silo Road	Rural Local	I	2014	49	24%	49	24%
Unnamed Road	Between Gore Highway and Millmerran Indoor Sports Centre	Urban Local	D	2019	2,000	15%	2,000	15%
Unnamed Road	Between Toowoomba–Cecil Plains Road and Unnamed Road	Rural Local	D	2019	400	15%	400	15%
Unnamed Road	Between Tummaville Road and Scrubby Road	Rural Local	D	2019	400	15%	400	15%
Unnamed Road	Between Drayton Westbrook Road and Unnamed Road	Rural Local	D	2019	400	15%	400	15%
Unnamed Road	Between Bostock Road and Unnamed Road	Rural Local	D	2019	400	15%	400	15%
Unnamed Road	Between Forestry Road and Unnamed Road	Rural Local	D	2019	400	15%	400	15%
Unnamed Road	Between Gore Highway and Private Access	Rural Local	D	2019	400	15%	400	15%

Road name	Road section	Road hierarchy	Data source	Traffic volume base year	Gazettal/ Northbound/Eastbound		Anti-Gazettal/ Southbound/Westbound	
					AADT	% heavy vehicles	AADT	% heavy vehicles
Ware Street	Between Gore Highway and Railway Line	Rural Local	D	2019	400	15%	400	15%
Wellcamp–Westbrook Road	Between Macaulay Road and Toowoomba–Cecil Plains Road	Rural Local	I	2017	357	15%	357	15%
	Between Toowoomba–Cecil Plains Road and Drayton Wellcamp Road	Urban Collector	I	2017	461	24%	461	24%
West Street	Between Gore Highway and Rodney Road	Urban Collector	I	2017	50	46%	50	46%
Yarranlea Road	Between Gore Highway and Railway Line	Rural Arterial	I	2014	15	22%	15	22%
	Between Railway Line and Saint Helens Road	Rural Arterial	I	2014	15	22%	15	22%

18.6.2.2 Transportation task

The Project-related traffic is expected to consist of traffic generated by both construction and operational activities.

During operation of the Project, small maintenance crews may need to inspect the new track up to once a month. These inspections will mainly be conducted within the rail corridor itself, using the rail maintenance access roads. These activities are likely to be infrequent and the related traffic volumes are likely to be minimal, with no envisaged impact to operational conditions of the surrounding road network. It is assumed that no new trips will be generated, as existing trips would be accounted for in traffic growth rates and the dispersed nature of these trips across the road network would have a minimal impact on road network operational performance. Therefore, the operational impacts from the Project are expected to be less than 5 per cent in addition to baseline AADT, and detailed analysis of impacts on the road network is not required.

It is anticipated that traffic-related impacts would primarily be experienced during the construction phase of the Project due to increased total and heavy vehicle movements on the existing road network. Most construction materials are expected to be delivered to laydown areas, primarily via the existing road network in conjunction with access tracks within the Project footprint. Access points into the Project footprint from the public road network will be located to ensure that adequate sight distance and a safe access/egress path are available. Further investigation of access locations is required once detail around the planned construction methodology is known, which would occur during the detail design phase.

Designated laydown areas will be used as delivery points and will have accessibility, safe manoeuvrability and off-loading provisions for transportation vehicles. Each designated laydown area will act as a temporary point of storage for materials and plant prior to being distributed to operational work fronts as the need arises. Laydown areas have been nominated for the Project that would need to be accessed directly off a State-controlled road, including:

- Cunningham Highway
- Millmerran–Inglewood Road
- Gore Highway
- Warrego Highway
- Pittsworth–Tummaville Road.

Each construction site, laydown area or non-resident workforce accommodation facility requiring access directly off/onto a State-controlled road will need to be negotiated with and approved by DTMR.

From designated laydown areas, construction materials will be distributed to the surrounding smaller construction laydown areas and work fronts. This re-distribution of material will be via the construction access road network within the rail corridor, in the first instance. The public road network will only be used if required. Figure 18.3 illustrates the construction routes that have been identified for use by the Project.

The total number of trips required for each construction activity has been derived for each road section, from the preliminary material requirements and construction schedule established for the Project (refer Chapter 5: Project Description). These total trips have been summarised in Table 18.28 by activity and year of construction for the Project.

Buffer factors have been applied to each transportation task to allow for additional journeys that may be required as a result of factors such as material quality compliance issues, breakages, etc. These buffer factors also cater for potential minor changes to material volumes resulting from design and rail alignment updates (horizontal or vertical). The proposed buffers are considered conservative and are provided in Table 18.28.

TABLE 18.28 TOTAL CONSTRUCTION VEHICLE MOVEMENTS BY ACTIVITY, PER YEAR

Transportation task[1]	2021	2022	2023	2024	2025	2026	Buffer included for traffic assessment
Movement of workforce to/from non-resident workforce accommodation facilities	141,727	142,299	142,299	142,299	135,435	22,573	0%
Material movement: cut to fill	34,285	88,505	33,947	5,860	0	0	10%
Material movement: cut to spoil[2]	28,402	78,288	58,579	0	0	0	10%
Material movement: general fill	45,298	71,523	20,472	2,559	0	0	5%
Delivery of precast concrete bridge components	23	229	717	572	8	0	2.5%
Delivery of material from quarries	1,433	9,282	3,927	26,035	30,593	0	7.5%
Delivery of sleepers	0	0	100	976	3,503	292	2.5%
Delivery of water	2,6538	45,095	37,971	19,630	8,957	15	10%
Delivery of precast concrete culverts	323	1,982	686	0	0	0	2.5%
Delivery of in-situ concrete for culverts	479	3,116	1,536	0	0	0	5%
Delivery of in-situ concrete for bridges	0	3,225	8,884	3,595	40	0	5%
Movement of plant, equipment and tools	1,810	1,810	1,810	1,810	1,810	302	0%

Table notes

1. Traffic impacts associated with the offsite disposal of waste have not been assessed, as waste volumes generated during construction of the Project are not expected to be significant (refer Chapter 20: Waste Management)
2. Spoil is indicative of material that is expected to be unusable for use in the rail formation without treatment. Opportunities for reuse of this material within the Project footprint will be investigated prior to offsite disposal.

The total number of trips for each transportation task over the construction period have been assigned to construction routes that are proposed to be used for each task. This has enabled the average number of daily construction movements on each road section to be determined across the whole construction period. The peak period of use by construction traffic has also been identified for each road section. This analysis is presented in Table 18.29.

TABLE 18.29 PEAK DAILY NUMBER OF CONSTRUCTION TRAFFIC MOVEMENTS OVER THE CONSTRUCTION PERIOD PER ROAD SECTION

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
State-controlled roads: Department Transport and Main Roads								
Barwon Highway	31A—Between Leichhardt Highway and Town Common Road	2	8	0	0	0	0	May 2022 to August 2022
Charlton Connection Road	320—Between Toowoomba–Cecil Plains Road and Jordan Court	0	1	3	3	1	0	October 2023 to May 2024
	320—Between Jordan Court and Warrego Highway	0	1	3	3	1	0	October 2023 to May 2024
Cunningham Highway	17D—Between NSW/QLD border and Leichhardt Highway	59	41	31	31	1	0	June 2021 to June 2021
	17D—Between Leichhardt Highway and Wyaga Road	2	8	0	0	0	0	May 2022 to August 2022
	17D—Between Wyaga Road and Yelarbon–Keetah Road	108	164	164	77	89	62	November 2022 to January 2023
	17D—Between Yelarbon–Keetah Road and Texas–Yelarbon Road	270	270	147	36	51	17	December 2021 to February 2022
	17D—Between Texas–Yelarbon Road and Inglewood–Texas Road	565	565	215	109	113	45	December 2021 to January 2022
	17C—Between Inglewood–Texas Road and Millmerran–Inglewood Road	550	550	235	155	150	86	December 2021 to January 2022
	17C—Between Millmerran–Inglewood Road and Inglewood Quarry Access Road	224	282	165	128	92	0	March 2022 to July 2022
	17C—Between Inglewood Quarry Access Road and Coolmunda Dam Access	64	72	19	50	12	0	March 2022 to July 2022
Gore Highway	28A—Between Blackwell Road and Saleyards Road	0	0	0	9	58	0	January 2025 to March 2025
	28A—Between Saleyards Road and West Street	1	1	1	4	30	0	January 2025 to March 2025
	28A—Between West Street and Millmerran–Inglewood Road	214	221	222	216	242	212	January 2025 to March 2025
	28A—Between Millmerran–Inglewood Road and Millmerran–Leyburn Road	145	174	308	278	170	136	June 2023 to June 2023
	28A—Between Millmerran–Leyburn Road and Pampas–Horrane Road	103	137	277	245	100	96	June 2023 to June 2023

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Gore Highway	28A—Between Pampas–Horrane Road and Brookstead–Norwin Road	93	242	265	241	117	90	July 2023 to July 2023
	28A—Between Brookstead–Norwin Road and Tummaville Road	58	189	213	191	82	56	July 2023 to July 2023
	28A—Between Tummaville Road and Vines Street	337	699	224	198	82	57	April 2022 to April 2022
	28A—Between Vines Street and Toowoomba Bypass (previously Toowoomba Second Range Crossing)	369	732	141	121	125	87	April 2022 to April 2022
	28A—Between Toowoomba Bypass (previously Toowoomba Second Range Crossing) and Westbrook Road	95	123	123	102	94	88	June 2022 to November 2022
	28A—Between Westbrook Road and Warrego Highway	94	122	122	101	94	88	April 2023 to May 2023
Inglewood–Texas Road	231—Between Cunningham Highway and Greenup Limevale Road	0	0	0	4	4	4	October 2024 to January 2026
	231—Between Greenup Limevale Road and Texas–Yelarbon Road	0	0	0	4	4	4	October 2024 to January 2026
	231—Between Texas–Yelarbon Road and Stanthorpe–Texas Road	0	0	0	4	4	4	October 2024 to January 2026
	231—Between Stanthorpe–Texas Road and Old Texas–Yelarbon Road	0	0	0	4	4	4	October 2024 to January 2026
	231—Between Old Texas–Yelarbon Road and QLD/NSW Border	0	0	0	7	7	7	October 2024 to January 2026
Ipswich Motorway	17A—Between Cunningham Highway and Logan Motorway	0	0	0	7	7	7	October 2024 to January 2026
Leichhardt Highway	26C—Between Cunningham Highway and Hunt Street	3	9	5	0	0	0	May 2022 to August 2022
	26C—Between Hunt Street and Barwon Highway	2	8	0	0	0	0	May 2022 to August 2022
Logan Motorway (managed by Transurban)	210A—Between Ipswich Motorway and Pacific Motorway	0	0	0	7	7	7	October 2024 to January 2026
Millmerran–Inglewood Road	337—Between Cunningham Highway and Thornton Road	340	340	75	128	86	59	December 2021 to January 2022
	337—Between Thornton Road and the LGA boundary	321	321	134	187	86	52	December 2021 to January 2022
	337—Between the LGA boundary and Kooroongarra Road	29	148	70	123	37	24	June 2022 to June 2022

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Millmerran–Inglewood Road	337—Between Kooroongarra Road and Blackwell Road	65	210	401	321	137	59	June 2023 to June 2023
	337—Between Blackwell Road and Campbell Street	86	363	498	218	81	80	July 2023 to July 2023
	337—Between Campbell Street and Gore Highway	19	38	170	149	45	12	June 2023 to June 2023
Millmerran–Leyburn Road	335—Between Gore Highway and Reiche Road	8	12	13	7	7	7	April 2023 to June 2023
Oakey–Pittsworth Road	323—Between Gore Highway and Quibet Road	7	7	13	7	7	7	October 2023 to October 2023
Pacific Motorway	12A—Between Logan Highway and NSW/QLD border	0	0	0	7	7	7	October 2024 to January 2026
Pampas–Horrane Road	327—Between Gore Highway and Bostock Road	5	36	36	12	5	0	December 2022 to May 2023
Pittsworth–Felton Road	332—Between Golf Course Road and Short Street	2	12	12	2	2	0	December 2022 to May 2023
Texas–Yelarbon Road	2322—Between Cunningham Highway and Old Texas–Yelarbon Road	43	43	0	3	3	3	June 2021 to April 2022
Toowoomba–Cecil Plains Road	324—Between Warrego Highway and McDougall Street	21	21	21	21	21	21	January 2021 to February 2026
	324—Between McDougall Street and Boundary Street	27	30	29	26	21	21	May 2022 to October 2022
	324—Between Boundary Street and Charlton Connection Road	27	30	29	26	21	21	May 2022 to October 2022
	324—Between Charlton Connection Road and Hursley Road	27	29	28	23	21	21	April 2022 to October 2022
	324—Between Hursley Road and Hanrahans Road	38	73	93	89	58	22	March 2023 to March 2023
	324—Between Hanrahans Road and 2 km west of Brimblecombe Road	27	55	57	36	84	22	March 2025 to April 2025
Toowoomba Bypass	319—Between Gore Highway and Toowoomba–Cecil Plains Road	278	279	4	11	30	6	March 2022 to October 2022
	319—Between Toowoomba–Cecil Plains Road and New England Highway	272	272	0	7	7	7	December 2021 to October 2022
	319—Between New England Highway and Warrego Highway	0	0	0	7	7	7	October 2024 to January 2026
Warrego Highway	18B—Between Kingsthorpe Haden Road and Toowoomba Bypass (previously Toowoomba Second Range Crossing)	319	328	288	106	50	42	May 2022 to October 2022
	18B—Between Toowoomba Bypass (previously Toowoomba Second Range Crossing) and Charlton Connection Road	40	49	68	99	43	35	May 2024 to May 2024

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Warrego Highway	18B—Between Charlton Connection Road and McDougall Street	41	41	41	41	41	41	January 2021 to February 2026
	18B—Between McDougall Street and Bridge Street	41	41	41	41	41	41	January 2021 to February 2026
	18B—Between Bridge Street and Toowoomba–Cecil Plains Road	41	41	41	41	41	41	January 2021 to February 2026
	18B—Between Toowoomba–Cecil Plains Road and Karrool Street	62	62	62	62	62	62	January 2021 to February 2026
	18B—Between Karrool Street and Gore Highway	62	62	62	62	62	62	January 2021 to February 2026
	18B—Between Gore Highway and Fifth Avenue	62	62	62	62	62	62	January 2021 to February 2026
	18A—Between Toowoomba Bypass (previously Toowoomba Second Range Crossing) and Gatton–Helidon Road	0	0	0	7	7	7	October 2024 to January 2026
	18A—Between Gatton–Helidon Road and Gatton–Esk Road	0	0	0	7	7	7	October 2024 to January 2026
	18A—Between Gatton–Esk Road and Laidley–Plainland Road	0	0	0	7	7	7	October 2024 to January 2026
	18A—Between Laidley–Plainland Road and Tallegalla Two Tree Hill Road	0	0	0	7	7	7	October 2024 to January 2026
	18A - Between Tallegalla Two Tree Hill Road and Haigslea Amberley Road	0	0	0	7	7	7	October 2024 to January 2026
	18A—Between Haigslea Amberley Road and Brisbane Valley Highway	0	0	0	7	7	7	October 2024 to January 2026
	18A—Between Brisbane Valley Road and Mount Crosby Road	0	0	0	7	7	7	October 2024 to January 2026
	18A—Between Mount Crosby Road and Cunningham Highway	0	0	0	7	7	7	October 2024 to January 2026
Yelarbon–Keetah Road	241—Between Cunningham Highway and Old Warwick Road	209	209	8	16	0	0	December 2021 to February 2022

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
State-controlled roads: Roads and Maritime Services								
Bruxner Highway	Between New England Highway and Summerland Way	0	0	0	7	7	7	October 2024 to January 2026
Gwydir Highway	Between Stephens Road and Delungra Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Delungra Road and Delungra Bypass Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Delungra Bypass Road and Copeton Dam Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Copeton Dam Road and Bannockburn Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Bannockburn Road and Campbell Street	0	0	5	5	0	0	December 2023 to January 2024
	Between Campbell Street and Tingha Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Tingha Road and Elsmore Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Elsmore Road and Woodstock Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Woodstock Road and Waterloo Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Waterloo Road and Coronation Avenue	0	0	5	5	0	0	December 2023 to January 2024
	Between Coronation Avenue and New England Highway	0	0	5	5	0	0	December 2023 to January 2024
	Between New England Highway and Shannon Vale Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Shannon Vale Road and Bald Nob Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Bald Nob Road and Old Grafton Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Old Grafton Road and Coombadjha Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Coombadjha Road and Old Glen Innes Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Old Glen Innes Road and Rogan Bridge Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Rogan Bridge Road and Bent Street	0	0	5	5	0	0	December 2023 to January 2024
New England Highway	Between Bruxner Way and Bruxner Highway	0	0	0	7	7	7	October 2024 to January 2026
	Between Gwydir Highway and Gwydir Highway	0	0	5	5	0	0	December 2023 to January 2024
Newell Highway	Between NSW/QLD border and Bruxner Way	59	40	31	31	1	0	June 2021 to June 2021
Pacific Motorway	Between QLD/NSW border and Gwydir Highway	0	0	0	7	7	7	October 2024 to January 2026
Summerland Way	Between Bruxner Highway and Red Lane	0	0	0	7	7	7	October 2024 to January 2026
	Between Trenayr Road and Turf Street	0	0	5	5	0	0	December 2023 to January 2024

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Clarence Valley Council								
Bent Street	Between Craig Street and Gwydir Highway	0	0	5	7	7	7	October 2024 to January 2026
Charles Street	Between Bent Street and Pacific Highway	0	0	0	7	7	7	October 2024 to January 2026
Clarence Street	Between Oliver Street and Craig Street	0	0	0	7	7	7	October 2024 to January 2026
Clark Road	Full Extent	0	0	5	7	7	7	October 2024 to January 2026
Craig Street	Between Villiers Street and Clarence Street	0	0	5	5	0	0	December 2023 to January 2024
	Between Clarence Street and Bent Street	0	0	5	7	7	7	October 2024 to January 2026
Dobie Street	Between Villers Street and Summerland Way	0	0	5	5	0	0	December 2023 to January 2024
Fry Street	Between Mary Street and Alice Street	0	0	0	7	7	7	October 2024 to January 2026
Mary Street	Between Fry Street and Oliver Street	0	0	0	7	7	7	October 2024 to January 2026
Oliver Street	Between Clarence Street and Mary Street	0	0	0	7	7	7	October 2024 to January 2026
Red Lane	Between Summerland Way and Trenayr Road	0	0	0	7	7	7	October 2024 to January 2026
Trenayr Road	Between Red Lane and Clark Road	0	0	0	7	7	7	October 2024 to January 2026
	Between Summerland Way and Clark Road	0	0	5	5	0	0	December 2023 to January 2024
Villers Street	Between Craig Street and Dobie Street	0	0	5	5	0	0	December 2023 to January 2024
GRC								
Boodle Street	Between Boodle Street and Hunt Street	1	5	5	0	0	0	September 2022 to July 2023
Bybera Road	Between Cunningham Highway and Private Access	403	403	11	48	17	7	September 2021 to January 2022
	Between Private Access and Unnamed Road	96	210	0	0	0	0	March 2022 to September 2022
Cemetery Road	Between Mooroobie Lane and Unnamed Road	43	43	0	0	0	0	June 2021 to April 2022
Coolmunda Dam Access	Full Extent	64	72	19	50	12	0	March 2022 to July 2022
Cremascos Road	Between Cunningham Highway and 400 m west of private access	14	20	20	14	14	14	December 2022 to January 2023
East Sawmill Road	Between Cunningham Highway and Springborg Road	215	215	31	23	13	7	December 2021 to February 2022

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Elizabeth Street	Between Cunningham Highway and Callandoon Street	82	82	82	94	86	82	May 2024 to July 2024
Eukabilla Road	Full Extent	13	13	12	12	0	0	December 2021 to February 2022
Fosters Road	Between Cunningham Highway and Grays Road	96	210	0	0	0	0	March 2022 to September 2022
Grays Road	Between Millmerran–Inglewood Road and Mosquito Creek Road	7	75	75	7	7	7	August 2022 to March 2023
Hunt Street	Between Leichhardt Highway and Boodle Street	1	5	5	0	0	0	September 2022 to July 2023
Inglewood Quarry Access Road	Full Extent	65	146	146	83	80	0	November 2022 to January 2023
Kildonan Road	Between Yelarbon–Keetah Road and Cunningham Highway	250	250	39	47	1	0	December 2021 to February 2022
Lovells Crossing Road	Between Callandoon Street and Unnamed Road	82	82	82	94	86	82	May 2024 to July 2024
	Between Unnamed Road and Unnamed Road	14	14	14	26	17	14	May 2024 to July 2024
McDougalls Crossings Road	Between Cunningham Highway and 800 m west of Cremascos Road	46	46	12	35	18	7	September 2021 to January 2022
Mooroobie Lane	Between Wondalli–Kurumbul Road and Cemetery Road	86	86	0	0	0	0	June 2021 to April 2022
Mosquito Creek Road	Between Grays Road and Cunningham Highway	0	68	68	0	0	0	August 2022 to March 2023
Old Texas–Yelarbon Road	Between Texas–Yelarbon Road and Rocky Creek Road	0	0	0	3	3	3	October 2024 to January 2026
	Between Rocky Creek Road and Inglewood–Texas Road	0	0	0	3	3	3	October 2024 to January 2026
Queen Street South	Between Yelarbon–Kurumbul Road and Danes Lane	0	0	0	0	0	0	January 2021 to February 2026
South Kurumbul Road	Between Yelarbon–Kurumbul Road and Kildonan Road	33	2	1	1	1	0	June 2021 to June 2021
Springborg Road	Between Cunningham Highway and Railway Line	48	28	28	12	14	8	June 2021 to June 2021
Suttons Road	Between East Sawmill Road and Unnamed Road	143	143	0	0	0	0	July 2021 to February 2022
Thornton Road	Between Millmerran–Inglewood Road and Unnamed Road	22	123	10	25	13	8	March 2022 to September 2022
Town Commons Road	Between Waggamba Road and Barwon Highway	2	8	0	0	0	0	May 2022 to August 2022
Unnamed Road	Between Cunningham Highway and Private Access	3	9	7	2	0	0	December 2022 to December 2022

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Unnamed Road	Between Cemetery Road and Unnamed Road	43	43	0	0	0	0	June 2021 to April 2022
Unnamed Road	Between Texas–Yelarbon Road and Private Land	43	43	0	0	0	0	June 2021 to April 2022
Unnamed Road	Between Woodcocks Road and Queen Street North	43	43	0	0	0	0	June 2021 to April 2022
Unnamed Road	Between East Sawmill Road and Suttons Road	100	39	0	0	0	0	July 2021 to July 2021
Unnamed Road	Full extent	143	143	0	0	0	0	July 2021 to February 2022
Whetstone Access Road	Between Cunningham Highway and 600 m west of Railway Line	23	23	11	32	15	7	May 2024 to July 2024
Wondalli–Kurumbul Road	Between South Western Line (Railway) and Bickers Road	86	86	0	0	0	0	June 2021 to April 2022
Woodcocks Road	Between Cunningham Highway and Unnamed Road	43	43	0	0	0	0	June 2021 to April 2022
Yelarbon–Kurumbul Road	Yelarbon–Kurumbul Road	151	174	174	64	78	44	November 2022 to January 2023
Gwydir Shire Council								
Edwards Street	Between North Star Road and I B Bore Road	26	26	31	31	0	0	December 2023 to January 2024
North Star Road	Between MPSC LGA boundary and Edwards Street	26	26	31	31	0	0	December 2023 to January 2024
	Between Edward Street and Getta Getta Road	26	26	31	31	0	0	December 2023 to January 2024
	Between Getta Getta Road and Blue Nobby Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Blue Nobby Road and Hibernia Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Hibernia Road and Yallaroi Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Yallaroi Road and Baroma Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Baroma Road and Warialda Road	0	0	5	5	0	0	December 2023 to January 2024
Stephen Street	Between Long Street and Gwydir Highway	0	0	5	5	0	0	December 2023 to January 2024
Warialda Road	Between North Star Road and Gournama Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Gournama Road and Oregon Road	0	0	5	5	0	0	December 2023 to January 2024
	Between Oregon Street and Stephen Street	0	0	5	5	0	0	December 2023 to January 2024

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Inverell Shire Council								
Bruxner Way	Between Texas Bridge Road and Glenrock Road	0	0	0	7	7	7	October 2024 to January 2026
	Between Glenrock Road and New England Highway	0	0	0	7	7	7	October 2024 to January 2026
Campbell Street	Between Byron Street and Otho Street	0	0	5	5	0	0	December 2023 to January 2024
Texas Bridge Road	Between QLD/NSW Border and Bruxner Highway	0	0	0	7	7	7	October 2024 to January 2026
Moree Plains Shire Council								
Bruxner Way	Between Newell Highway and Tucka Tucka Road	26	26	31	31	0	0	December 2023 to January 2024
	Between Tucka Tucka Road and North Star Road	26	26	31	31	0	0	December 2023 to January 2024
North Star Road	Between Bruxner Way and Gwydir Shire Council boundary	26	26	31	31	0	0	December 2023 to January 2024
River Road	Between Newell Highway and Boggabilla Weir	33	14	1	1	1	0	June 2021 to June 2021
TRC								
Airport Quarry Wellcamp Access Road (Privately owned road)	Between Toowoomba–Cecil Plains Road and Toowoomba Wellcamp Airport	0	0	0	5	24	0	March 2025 to April 2025
Alderley Street	Between Greenwattle Street and Gore Highway	12	45	65	13	12	1	January 2023 to May 2023
	Between Gore Highway and Condamine Street	0	1	1	0	0	0	April 2022 to June 2023
Athol School Road	Between Gore Highway and Trader Road	11	31	31	15	24	8	April 2023 to May 2023
Biddeston Southbrook Road	Between Gore Highway and Stower Road	9	17	17	16	9	7	June 2022 to May 2023
Blackwell Road	Between Millmerran–Inglewood Road and Gore Highway	15	20	20	82	162	14	January 2025 to March 2025
Blackwell Road	Between Bunkers Hill School Road and Macaulay Road	1	1	0	0	0	0	December 2021 to November 2022
Bligh Street	Between Six Mile Road and Concrete Millmerran	2	9	11	4	0	0	April 2023 to May 2023
	Between Concrete Millmerran and Crosby Street	2	9	11	4	0	0	April 2023 to May 2023
Bostock Road	Between Pampas–Horrane Road and Unnamed Road	5	36	36	12	5	0	December 2022 to May 2023

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Brimblecombe Road	Between Toowoomba–Cecil Plains Road and Gowrie Mountain School Road	14	14	16	17	14	14	February 2024 to February 2024
Bunkers Hill School Road	Between Gore Highway and Blackwell Road	1	1	0	0	0	0	December 2021 to November 2022
Bushy Lane West	Between Gore Highway and 650 m west of Gore Highway	14	14	14	22	17	14	July 2024 to September 2024
Campbell Street	Between Millmerran–Inglewood Road and Commens Street	83	90	92	87	111	82	January 2025 to March 2025
Chamberlain Road	Between Warrego Highway and Robson Road	7	7	10	10	7	7	March 2024 to May 2024
Commodore Peak Road	Between Millmerran–Inglewood Road and Blackwell Road	0	133	133	0	0	0	August 2022 to October 2023
Condamine Street	Full Extent	0	1	1	0	0	0	April 2022 to June 2023
Dieckmann Road	Between Gore Highway and Madelaine Street	1	4	21	3	1	0	July 2023 to July 2023
Draper Road	Between Steger Road and Leesons Road	14	14	14	14	14	14	January 2021 to February 2026
Drayton Wellcamp Road	Between Wellcamp–Westbrook Road and Boundary Street South	12	45	65	67	15	1	May 2024 to May 2024
Euston Road	Between Boundary Court and Greenwattle Street	12	45	65	13	12	1	January 2023 to May 2023
Forestry Road	Between Millmerran–Inglewood Road and Unnamed Road	0	118	68	0	0	0	June 2022 to June 2022
Fysh Road	Between Gore Highway and Fysh Road	0	0	0	4	23	0	January 2025 to March 2025
Gap Road	Between Gore Highway and Cypress Street	6	35	35	11	6	0	December 2022 to February 2023
Geitz Road	Between Gore Highway and Luck Road	7	138	7	19	10	7	April 2022 to November 2022
Gilgal Lane	Between Gore Highway and Railway Line	7	7	16	17	7	7	May 2024 to July 2024
Greenwattle Street	Between Euston Road and Alderley Street	12	45	65	13	12	1	January 2023 to May 2023
Grevillea Street	Full Extent	0	1	7	5	0	0	October 2023 to October 2023
Hall Road	Between Gore Highway and Railway Line	8	21	21	14	8	7	December 2022 to June 2023
Heckendorf Road	Between Millmerran–Inglewood Road and Bora Creek Road	1	1	30	29	14	0	April 2023 to July 2023
Kahler Road	Between Murlaggan Road and Glen Devon Road	7	7	7	8	9	7	July 2025 to August 2025

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Kooroongarra Road	Between Millmerran–Inglewood Road and Bliss Road	0	0	133	133	0	0	April 2023 to February 2024
Kooroongarra Road	Between Millmerran–Inglewood Road and Halls Road	0	266	266	0	0	0	August 2022 to October 2023
Kooroongarra Road	Between Millwood Road and Cunningham Highway	0	0	29	29	0	0	April 2023 to February 2024
Leesons Road	Full Extent	17	18	37	73	21	14	May 2024 to May 2024
Lindenmayer Road	Between Gore Highway and Unnamed Road	14	14	14	18	44	14	January 2025 to March 2025
Linthorpe Road	Between Gore Highway and Loveday Road	11	241	28	28	14	8	April 2022 to April 2022
Lochaber Road	Between McEwan Lane and Gore Highway	7	7	9	7	7	7	December 2023 to December 2023
Macaulay Road	Between Blackwell Road and Wellcamp–Westbrook Road	1	1	0	0	0	0	December 2021 to November 2022
McDougall Street	Between Toowoomba–Cecil Plains Road and Hursley Road	5	8	5	0	0	0	May 2022 to October 2022
Millwood Road	Between Millmerran–Inglewood Road and Kooroongarra Road	15	155	184	45	34	14	April 2023 to July 2023
Murlaggan Road	Between Gore Highway and Roche Road	300	300	161	161	32	28	February 2022 to October 2022
	Between Roche Road and Yarranlea Road	0	0	5	0	0	0	September 2023 to September 2023
Omara Road	Between Toowoomba–Cecil Plains Road and Warrego Highway	6	13	33	61	9	1	May 2024 to May 2024
Owens Scrub Road	Between Millmerran–Inglewood Road and Foxwood Road	10	23	23	15	39	7	January 2025 to March 2025
Paint Mine Road	Between Gore Highway and Loveday Road	7	7	7	7	7	7	February 2022 to February 2023
Paton Road	Between Millmerran–Inglewood Road and Kooroongarra Road	14	14	15	18	52	14	January 2025 to March 2025
Pittsworth–Felton Road	Between Cypress Street and Golf Course Road	2	12	12	2	2	0	December 2022 to May 2023
Railway Street	Between Short Street and Vines Street	4	21	21	17	4	0	June 2022 to May 2023
Roche Road	Between Murlaggan Road and Saint Helens Road	7	7	12	7	7	7	September 2023 to September 2023
Saleyards Road	Between Millmerran–Inglewood Road and Gore Highway	1	1	1	5	29	0	January 2025 to March 2025

Road name	Road section	Peak daily traffic movements by year of construction						Peak construction months
		2021	2022	2023	2024	2025	2026	
Scrubby Road	Between Gore Highway and Jentz Road	0	115	0	49	19	0	April 2022 to April 2022
Short Street	Between Yandilla Street and Toowoomba Road	2	12	12	2	2	0	December 2022 to May 2023
Six Mile Road	Between Rodney Road and Bligh Street	2	9	11	4	0	0	April 2023 to May 2023
Steger Road	Between Warrego Highway and Draper Road	14	14	14	14	14	14	January 2021 to February 2026
Toowoomba Road	Between Vines Street and Gore Highway	4	21	21	17	4	0	June 2022 to May 2023
Tummaville Road	Between Gore Highway and Mann Silo Road	0	115	0	71	29	0	April 2022 to April 2022
Unnamed Road	Between Gore Highway and Millmerran Indoor Sports Centre	212	212	212	212	212	212	January 2021 to February 2026
Unnamed Road	Between Toowoomba–Cecil Plains Road and Unnamed Road	0	0	0	4	33	0	March 2025 to April 2025
Unnamed Road	Between Tummaville Road and Scrubby Road	0	115	0	71	29	0	April 2022 to April 2022
Unnamed Road	Between Drayton Westbrook Road and Unnamed Road	0	0	0	56	3	0	May 2024 to May 2024
Unnamed Road	Between Bostock Road and Unnamed Road	5	36	36	12	5	0	December 2022 to May 2023
Unnamed Road	Between Forestry Road and Unnamed Road	0	118	68	0	0	0	June 2022 to June 2022
Unnamed Road	Between Gore Highway and Private Access	14	14	14	14	14	14	March 2022 to June 2023
Ware Street	Between Gore Highway and Railway Line	0	0	14	0	0	0	June 2023 to July 2023
Wellcamp–Westbrook Road	Between Macaulay Road and Toowoomba–Cecil Plains Road	1	1	0	0	0	0	December 2021 to November 2022
	Between Toowoomba–Cecil Plains Road and Drayton Wellcamp Road	12	45	65	67	15	1	May 2024 to May 2024
West Street	Between Gore Highway and Rodney Road	2	9	11	4	0	0	April 2023 to May 2023
Yarranlea Road	Between Gore Highway and Railway Line	11	30	31	35	15	8	July 2024 to September 2024
	Between Railway Line and Saint Helens Road	0	0	5	0	0	0	September 2023 to September 2023

18.6.2.3 Traffic growth rates

In the first instance, traffic growth rates provided by relevant road controlling authorities were applied to existing traffic volumes to estimate the future background traffic for roads within the impact assessment area. Where growth rates were not provided, these rates were derived through assessment of historic permanent census traffic data, where available. An evaluation of available traffic growth rates on State-controlled roads identified an overall AADT growth rate of 2 per cent. This linear growth rate was then used to establish future background traffic volumes for all roads where data was not available. Adopted traffic growth rates for each road section are presented in Appendix X: Traffic Impact Assessment.

Based on the dominant agricultural land uses of the impact assessment area, traffic volumes on the road network are likely to increase during periods of harvest. Harvest periods for broadacre crops in southern Queensland are shown in Table 18.30.

During harvest, heavy vehicles usage on the local and State roads in the impact assessment increases as trucks transport grain, and tractors and harvesters move between properties. Farming machinery is generally much larger and slower than other vehicles using the roads and may result in localised delays. The impact of seasonal variation was considered as part of the analyses, especially at road–rail interface locations, through the following:

- The 95th percentile output results from SIDRA modelling results were adopted instead of the industry standard 85th percentile outputs. By doing so, the reported SIDRA analysis results are considered to be conservative as they account for additional vehicle queue and delay, which might be induced through higher traffic volumes and slower moving vehicles.
- The LOS thresholds and associated K-values used within the analysis per road type are derived from the *Guide to Traffic Engineering Practice, Part 2: Roadway Capacity* (Austroads, 1991). This provides for upper LOS threshold limits, which accounts for micro fluctuations and peaks in traffic throughout the year.

TABLE 18.30 HARVEST PERIODS FOR BROADACRE CROPS

Broadacre crops	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wheat											■	
Sorghum	■	■	■	■								
Maize	■	■	■	■								
Mungbean	■	■	■	■								
Chickpea								■	■			
Barley										■	■	
Soybeans				■	■	■						
Cotton			■	■	■	■						

Source: Agricultural Opportunities in Southern Queensland, Regional Development Australia (n.d.)

This section examines the impact of the Project-related traffic on the existing road network operation. The following traffic analysis was performed on identified primary construction routes:

- 5 per cent increase in traffic compared to existing traffic (road links and intersections)
- LOS analysis
- Intersection performance analysis.

Each of these analyses is summarised below.

18.6.2.4 Traffic comparison on road links

An assessment of impacts of construction traffic movements for the Project on the existing road network was undertaken by comparing projected traffic volumes without (background) and with the Project. Performance criteria specified in the GTIA states that traffic generated by a development is considered to result in an impact if that traffic equals or exceeds 5 per cent of the existing AADT on a road section (refer Table 18.4).

Road sections where the addition of Project construction traffic to background volumes will equate to or exceed the 5 per cent impact threshold are listed in Table 18.31. In some instances, low background traffic volumes (refer Table 18.27) have contributed to elevated percentage differences with the addition of Project construction traffic.

Full traffic comparison analysis is presented in Appendix X: Traffic Impact Assessment.

TABLE 18.31 ROAD SECTIONS WHERE CONSTRUCTION TRAFFIC WILL EQUATE TO OR EXCEED 5 PER CENT OF BACKGROUND VOLUME

Road name	Road section	Maximum % increase in AADT with Project construction traffic
State-controlled roads: Department of Transport and Main Roads		
Cunningham Highway	17D—Between Wyaga Road and Yelarbon–Keetah Road	21.1%
Cunningham Highway	17D - Between Yelarbon–Keetah Road and Texas–Yelarbon Road	32.1%
Cunningham Highway	17D—Between Texas–Yelarbon Road and Inglewood–Texas Road	67.3%
Cunningham Highway	17C—Between Inglewood–Texas Road and Millmerran–Inglewood Road	48.9%
Cunningham Highway	17C—Between Millmerran–Inglewood Road and Inglewood Quarry Access Road	31.7%
Cunningham Highway	17C—Between Inglewood Quarry Access Road and Coolmunda Dam Access	8.1%
Gore Highway	28A—Between Blackwell Road and Saleyards Road	5.0%
Gore Highway	28A—Between West Street and Millmerran–Inglewood Road	20.8%
Gore Highway	28A—Between Millmerran–Inglewood Road and Millmerran–Leyburn Road	19.6%
Gore Highway	28A - Between Millmerran–Leyburn Road and Pampas–Horrane Road	17.6%
Gore Highway	28A—Between Pampas–Horrane Road and Brookstead–Norwin Road	16.8%
Gore Highway	28A—Between Brookstead–Norwin Road and Tummaville Road	13.5%
Gore Highway	28A—Between Tummaville Road and Vines Street	45.3%
Gore Highway	28A—Between Vines Street and Toowoomba Bypass	27.7%
Millmerran–Inglewood Road	337—Between Cunningham Highway and Thornton Road	188.2%
Millmerran–Inglewood Road	337—Between Thornton Road and the LGA boundary	177.5%
Millmerran–Inglewood Road	337—Between the LGA boundary and Kooroongarra Road	27.2%
Millmerran–Inglewood Road	337—Between Kooroongarra Road and Blackwell Road	72.3%
Millmerran–Inglewood Road	337—Between Blackwell Road and Campbell Street	89.6%
Millmerran–Inglewood Road	337—Between Campbell Street and Gore Highway	43.7%
Millmerran–Leyburn Road	335—Between Gore Highway and Reiche Road	10.3%
Pampas–Horrane Road	327—Between Gore Highway and Bostock Road	50.8%
Texas–Yelarbon Road	2322—Between Cunningham Highway and Old Texas–Yelarbon Road	42.6%
Toowoomba–Cecil Plains Road	324—Between Hursley Road and Hanrahans Road	5.3%

Road name	Road section	Maximum % increase in AADT with Project construction traffic
Toowoomba–Cecil Plains Road	324—Between Hanrahans Road and 2 km west of Brimblecombe Road	7.6%
Toowoomba Second Range Crossing	319—Between Gore Highway and Toowoomba–Cecil Plains Road	18.3%
Toowoomba Second Range Crossing	319—Between Toowoomba–Cecil Plains Road and New England Highway	17.9%
Yelarbon Keetah Road	241—Between Cunningham Highway and Old Warwick Road	287.8%
GRC		
Bybera Road	Between Cunningham Highway and private access	3,793.6%
Bybera Road	Between private access and Unnamed Road	1,939.9%
Cemetery Road	Between Mooroobie Lane and Unnamed Road	50.4%
Coolmunda Dam Access	Full extent	186.9%
Cremascos Road	Between Cunningham Highway and 400 m west of private access	30.5%
East Sawmill Road	Between Cunningham Highway and Springborg Road	10.3%
Fosters Road	Between Cunningham Highway and Grays Road	1,439.7%
Grays Road	Between Millmerran–Inglewood Road and Mosquito Creek Road	504.5%
Inglewood Quarry Access Road	Full extent	34.4%
Kildonan Road	Between Yelarbon–Keetah Road and Cunningham Highway	224.3%
Lovells Crossing Road	Between Callandoon Street and Unnamed Road	2,783.8%
Lovells Crossing Road	Between Unnamed Road and Unnamed Road	759.1%
Mooroobie Lane	Between Wondalli–Kurumbul Road and Cemetery Road	615.4%
Mosquito Creek Road	Between Grays Road and Cunningham Highway	629.3%
Old Texas–Yelarbon Road	Between Texas–Yelarbon Road and Rocky Creek Road	6.4%
Old Texas–Yelarbon Road	Between Rocky Creek Road and Inglewood–Texas Road	6.4%
South Kurumbul Road	Between Yelarbon–Kurumbul Road and Kildonan Road	8.0%
Springborg Road	Between Cunningham Highway and Railway Line	906.5%
Suttons Road	Between East Sawmill Road and Unnamed Road	3,365.6%
Thornton Road	Between Millmerran–Inglewood Road and Unnamed Road	3,789.2%
Unnamed Road	Between Cemetery Road and Unnamed Road	10.3%
Unnamed Road	Between Texas–Yelarbon Road and Private Land	10.3%
Unnamed Road	Between Woodcocks Road and Queen Street North	10.3%
Unnamed Road	Between East Sawmill Road and Suttons Road	24.0%
Unnamed Road	Full extent	34.3%
Whetstone Access Road	Between Cunningham Highway and 600 m west of Railway Line	281.4%
Wondalli–Kurumbul Road	Between South Western System (Railway) and Bickers Road	1,084.3%
Yelarbon–Kurumbul Road	Yelarbon–Kurumbul Road	1,159.8%

Road name	Road section	Maximum % increase in AADT with Project construction traffic
Gwydir Shire Council		
Edwards Street	Between North Star Road and I B Bore Road	15.0%
North Star Road	Between the LGA boundary and Edwards Street	20.6%
Inverell Shire Council		
Bruxner Way	Between Texas Bridge Road and Glenrock Road	5.0%
Bruxner Way	Between Glenrock Road and New England Highway	5.0%
Moree Plains Shire Council		
Bruxner Way	Between Newell Highway and Tucka Tucka Road	20.5%
Bruxner Way	Between Tucka Tucka Road and North Star Road	20.5%
North Star Road	Between Bruxner Way and Gwydir Shire Council boundary	19.2%
River Road	Between Newell Highway and Boggabilla Weir	7.9%
TRC		
Airport Quarry Wellcamp Access Road	Between Toowoomba–Cecil Plains Road and Toowoomba Wellcamp Airport	5.3%
Athol School Road	Between Gore Highway and Trader Road	29.1%
Biddeston Southbrook Road	Between Gore Highway and Stower Road	14.9%
Blackwell Road	Between Millmerran–Inglewood Road and Gore Highway	1,116.6%
Bostock Road	Between Pampas–Horrane Road and Unnamed Road	75.3%
Brimblecombe Road	Between Toowoomba–Cecil Plains Road and Gowrie Mountain School Road	27.2%
Campbell Street	Between Millmerran–Inglewood Road and Commens Street	19.9%
Commodore Peak Road	Between Millmerran–Inglewood Road and Blackwell Road	874.7%
Dieckmann Road	Between Gore Highway and Madelaine Street	5.0%
Draper Road	Between Steger Road and Leesons Road	38.9%
Drayton Wellcamp Road	Between Wellcamp Westbrook Road and Boundary Street South	5.2%
Forestry Road	Between Millmerran–Inglewood Road and Unnamed Road	27.9%
Fysh Road	Between Gore Highway and Fysh Road	5.1%
Gap Road	Between Gore Highway and Cypress Street	5.7%
Geitz Road	Between Gore Highway and Luck Road	32.4%
Heckendorf Road	Between Millmerran–Inglewood Road and Bora Creek Road	226.2%
Kooroongarra Road	Between Millmerran–Inglewood Road and Bliss Road	293.2%
Kooroongarra Road	Between Millmerran–Inglewood Road and Halls Road	598.0%
Kooroongarra Road	Between Millwood Road and Cunningham Highway	69.8%
Leesons Road	Full extent	171.5%
Linthorpe Road	Between Gore Highway and Loveday Road	224.9%
Millwood Road	Between Millmerran–Inglewood Road and Kooroongarra Road	1,310.6%
Murlaggan Road	Between Gore Highway and Roche Road	1,156.5%

Road name	Road section	Maximum % increase in AADT with Project construction traffic
Murlaggan Road	Between Roche Road and Yarranlea Road	20.1%
Owens Scrub Road	Between Millmerran–Inglewood Road and Foxwood Road	47.3%
Paton Road	Between Millmerran–Inglewood Road and Kooroongarra Road	11.6%
Railway Street	Between Short Street and Vines Street	67.1%
Saleyards Road	Between Millmerran–Inglewood Road and Gore Highway	19.1%
Scrubby Road	Between Gore Highway and Jentz Road	100.4%
Six Mile Road	Between Rodney Road and Bligh Street	72.2%
Steger Road	Between Warrego Highway and Draper Road	38.9%
Toowoomba Road	Between Vines Street and Gore Highway	7.3%
Tummaville Road	Between Gore Highway and Mann Silo Road	200.6%
Unnamed Road	Between Gore Highway and Millmerran Indoor Sports Centre	10.2%
Unnamed Road	Between Toowoomba–Cecil Plains Road and Unnamed Road	7.3%
Unnamed Road	Between Tummaville Road and Scrubby Road	27.1%
Unnamed Road	Between Drayton Westbrook Road and Unnamed Road	12.6%
Unnamed Road	Between Bostock Road and Unnamed Road	8.5%
Unnamed Road	Between Forestry Road and Unnamed Road	27.9%
Wellcamp Westbrook Road	Between Toowoomba–Cecil Plains Road and Drayton Wellcamp Road	12.7%
West Street	Between Gore Highway and Rodney Road	19.6%
Yarranlea Road	Between Gore Highway and Railway Line	198.8%
Yarranlea Road	Between Railway Line and Saint Helens Road	31.2%

The traffic impact assessment indicates that Year 1 (2021) and Year 2 (2022) of the construction period are likely to generate the highest construction-related traffic volumes on the surrounding road network. During these years, some routes contain sections that are exceeding 10 per cent of the background traffic.

A summary of the number of roads with construction traffic that exceeds 5 and 10 per cent of base AADT has been provided for each road controlling authority in Table 18.32.

TABLE 18.32 NUMBER OF ROADS EXCEEDING FIVE PER CENT BASE AADT BY ROAD AUTHORITY

	Number of roads	
Road authority	5 to 10% of base AADT	> 10% base AADT
DTMR	1	8
NSW RMS	0	0
Clarence Valley Council	0	0
GRC	2	23
Gwydir Shire Council	0	2
Inverell Shire Council	1	0
Moree Plains Regional Council	1	2
TRC	7	31

18.6.2.5 Level of Service comparison

By itself, percentage comparison between traffic conditions with and without the Project does not provide an accurate overview of the Project's impact on the surrounding road network. This is because it does not reflect the magnitude of the Project construction traffic volumes on the performance of the road network. Impacts on the performance of the road network are assessed through LOS analysis, which considers the change in LOS in the peak hour for each road section.

Peak hour traffic volumes were derived from peak daily volumes using the following key assumptions:

- Material delivery movements will be evenly distributed across the standard daily 12 hours of construction
- It has been assumed that two shifts will occur per day with 50 per cent of total staff working each shift. Staff shift changeovers have been conservatively assumed to occur simultaneously with the background traffic peak hour.

As per the GTIA, LOS C is the minimum standard on rural roads, although a LOS D may be acceptable during events such as construction (refer Table 18.4); therefore, all road sections currently operating at or above LOS D are operating above the acceptable standard. The LOS analysis was undertaken for the construction route sections on which the 5 per cent traffic increase threshold is predicted to be exceeded (refer Table 18.31). For the purpose of comparing the expected LOS for each affected road section, the road performance with and without the Project has been assessed.

The results of the LOS comparison indicate that the Project construction traffic may cause a change to LOS along the following construction traffic routes in each direction, unless otherwise specified:

- State-controlled roads (DTMR):
  - Cunningham Highway, between Wyaga Road and Yelarbon–Keetah Road (LOS A to LOS B, gazettal direction only)
  - Gore Highway, between Millmerran–Inglewood Road and Millmerran–Leyburn Road (LOS A to LOS B)
  - Gore Highway, between Vines Street and Toowoomba Bypass (previously Toowoomba Second Range Crossing) (LOS B to LOS C)
  - Millmerran–Inglewood Road, between Kooroongarra Road and Blackwell Road (LOS A to LOS B)
  - Millmerran–Inglewood Road, between Blackwell Road and Campbell Street (LOS A to LOS B).
- Local government roads (GRC):
  - East Sawmill Road, between Cunningham Highway and Springborg Road (LOS A to LOS B)
  - Elizabeth Street, between Cunningham Highway and Callandoon Street (LOS B to LOS C).

Although there is a change in the operational LOS for the above-mentioned roads, the expected operational LOS B and LOS C are considered acceptable given the short duration of the construction activities. The operational performance of each road would be expected to return to base conditions after construction is complete; therefore, based on the LOS comparison, it is expected that the Project would not generate the need to upgrade the road network for such a short duration of impact. Instead, the implementation of traffic and road use management strategies would be appropriate for the anticipated level of impact.

Full details on the LOS analysis are provided in Appendix X: Traffic Impact Assessment.

18.6.2.6 Intersection analysis

The proposed construction routes for the Project include intersections, where construction traffic will be required to make a turning movement from one road onto another.

The GTIA indicates that delays at intersections may arise where Project traffic exceeds 5 per cent of the base traffic for any movement (refer Table 18.5).

Construction traffic routes identified for the Project are expected to use 153 intersections where turning movements would occur. A summary of the intersections on construction traffic routes by road controlling authority is provided in Table 18.33. A detailed list of the intersections is provided in Appendix X: Traffic Impact Assessment.

TABLE 18.33 INTERSECTIONS USED BY PROPOSED CONSTRUCTION TRAFFIC ROUTES

Road controlling authority	Number of intersections used by construction traffic
State-controlled: DTMR (Queensland)	88
State-controlled: RMS (NSW)	16
Local government: GRC	15
Local government: TRC	21
Local government: Clarence Valley Council (NSW)	10
Local government: Moree Plains Shire Council (NSW)	1
Local government: Gwydir Shire Council (NSW)	2

An assessment of base traffic flows and construction flows has been undertaken to identify intersections that are expected to require upgraded turning treatments to accommodate construction traffic flows consistent with the warrants outlined in Austroads' *Guide to Traffic Management Part 6 (*Austroads, 2020b).

First, projected construction traffic volumes and frequency were assessed for construction traffic routes with intersections, to identify intersections at which more than five construction vehicles per hour would make a turning. The intersections that would experience a construction traffic turning volume of more than five vehicles per hour were then plotted onto turn warrant graphs from Austroads' *Guide to Traffic Management Part 6* (Austroads, 2020b). This step in the analysis was taken to identify the intersections that may require treatment in order to accommodate the projected volumes of turning construction traffic.

These intersections are summarised within existing and proposed minimum treatments in Table 18.34. Detailed discussion on the intersection analysis for each of the locations listed in Table 18.34, including potential treatment options, is provided in Appendix X: Traffic Impact Assessment.

These upgrades are required only temporarily for construction traffic; therefore, discussions will be required with DTMR and local governments during the detail design phase to determine the permanence of such upgrades. Given the short duration of construction-related traffic, traffic management strategies may be introduced as an alternative to more permanent treatments in order to mitigate construction-related traffic impacts at intersections.

TABLE 18.34 INTERSECTIONS REQUIRING TURN WARRANT TREATMENTS

Intersection with potential operational impacts	Existing treatment	Proposed minimum treatment requirement
LGA: GRC		
Cunningham Highway/Bybera Road	Basic right turn	Channelised right turn—short
Cunningham Highway/Yelarbon–Kurumbul Road	Basic right turn Basic left turn	Channelised right turn Auxillary left turn—short
Cunningham Highway/East Sawmill Road	Basic right turn Basic left turn	Channelised right turn Auxillary left turn—short
Cunningham Highway/Springborg Road	Basic right turn Basic left turn	Channelised right turn—short Basic left turn
Cunningham Highway/Whetstone Access Road	Basic right turn Basic left turn	Channelised right turn—short Basic left turn
Cunningham Highway/McDougalls Crossing Road	Basic right turn	Channelised right turn
Cunningham Highway/Elizabeth Street	Basic right turn Basic left turn	Channelised right turn Auxillary left turn—short
Cunningham Highway/Yelarbon–Keetah Road	Basic left turn	Auxillary left turn - short

Intersection with potential operational impacts	Existing treatment	Proposed minimum treatment requirement
Cunningham Highway/Inglewood Quarry Access Road	Basic right turn Auxillary left turn - short	Channelised right turn—short Basic left turn
East Sawmill Road/Unnamed Road	Basic left turn	Auxillary left turn—short
LGA: TRC		
Gore Highway/Athol School Road	Basic right turn Auxillary left turn	Channelised right turn Auxillary left turn—short
Gore Highway/Yarranlea Road	Channelised right turn Basic left turn	No further treatment proposed Auxillary left turn—short
Gore Highway/Tummaville Road	Basic right turn Basic left turn	Channelised right turn Auxillary left turn—short
Gore Highway/Lindenmayer Road	Basic right turn Basic left turn	Channelised right turn Auxillary left turn—short
Gore Highway/Scrubby Road	Basic right turn Basic left turn	Channelised right turn Auxillary left turn—short
Gore Highway/Linthorpe Road	Basic right turn Basic left turn	Channelised right turn Auxillary left turn—short
Gore Highway/Geitz Road	Basic right turn Basic left turn	Channelised right turn Auxillary left turn
Gore Highway/Bushy Lane West	Basic right turn Basic left turn	Channelised right turn Auxillary left turn
Gore Highway/Unnamed Road	Basic left turn	Auxillary left turn—short
Gore Highway/Unnamed Road (2)	Basic right turn	Channelised right turn
Millmerran–Inglewood Road/Paton Road	Basic left turn	Auxillary left turn—short
Millmerran–Inglewood Road/Millwood Road	Basic right turn Basic left turn	Channelised right turn—short Basic left turn
Millmerran–Inglewood Road/Kooroongarra Road	Basic right turn	Channelised right turn—short
Toowoomba–Cecil Plains Road/Brimblecombe Road	Basic right turn	Channelised right turn—short
Toowoomba–Cecil Plains Road/Wellcamp–Westbrook Road	Basic right turn	Channelised right turn
Greenwattle Street/Alderley Street	Basic right turn	Channelised right turn

18.6.2.7 Pavement impacts

An increase in the total vehicle and heavy vehicle movements on the existing road network has the potential to result in the accelerated degradation of the trafficable surface.

A preliminary desktop pavement impact assessment was undertaken as part of the traffic impact assessment on all potentially affected State-controlled roads based on the existing background traffic data available for the relevant road sections. The GTIA specifies that an impact to road pavement has potential to occur where construction or operation traffic generated by a development equals or exceeds 5 per cent of the existing SARs on a road section (refer Table 18.4).

The following approach was adopted for the preliminary desktop pavement impact assessment for affected State-controlled roads:

- The number and types of vehicles that will be generated by the Project in both construction and operation were determined, and sections of the network were identified where pavement assessment is most likely required for each year of implementation
- The Project traffic volumes were converted into SARs based on the assumed number of SARs per vehicle
- A 5 per cent impact comparison of the background SARs and Project-generated SARs was conducted for each road link identified to be most likely impacted by the Project.

Table 18.35 lists the State-controlled road segments that are likely to equate to or exceed the 5 per cent SARs impact threshold over the construction period.

TABLE 18.35 FIVE PER CENT STANDARD AXLE REPETITIONS COMPARISON ANALYSIS ON ROAD LINKS

Road name	Road section	2021	2022	2023	2024	2025	2026
State-controlled roads: DTMR							
Barwon Highway	31A—Between Leichhardt Highway and Town Common Road	0.3%	1.3%	0.1%	0.0%	0.0%	0.0%
Charlton Connection Road	320—Between Toowoomba–Cecil Plains Road and Jordan Court	0.0%	0.5%	0.4%	0.5%	0.0%	0.0%
	320—Between Jordan Court and Warrego Highway	0.0%	0.5%	0.4%	0.5%	0.0%	0.0%
Cunningham Highway	17D—Between QLD/NSW Border and Leichhardt Highway	1.6%	0.5%	0.2%	0.2%	0.1%	0.0%
	17D—Between Leichhardt Highway and Wyaga Road	0.2%	1.0%	0.1%	0.0%	0.0%	0.0%
	17D—Between Wyaga Road and Yelarbon–Keetah Road	10.6%	13.7%	3.6%	1.2%	4.2%	0.0%
	17D—Between Yelarbon–Keetah Road and Texas–Yelarbon Road	51.9%	35.2%	7.8%	4.3%	7.3%	0.1%
	17D—Between Texas–Yelarbon Road and Inglewood–Texas Road	91.4%	70.2%	13.5%	17.4%	13.8%	0.2%
	17C—Between Inglewood–Texas Road and Millmerran–Inglewood Road	88.2%	72.5%	10.6%	18.6%	14.6%	0.2%
	17C—Between Millmerran–Inglewood Road and Inglewood Quarry Access Road	32.5%	98.8%	12.2%	27.1%	17.4%	0.0%
	17C—Between Inglewood Quarry Access Road and Coolmunda Dam Access	10.0%	14.1%	5.1%	7.1%	2.4%	0.0%
Gore Highway	28A—Between Blackwell Road and Saleyards Road	0.0%	0.0%	0.0%	0.9%	9.6%	0.0%
	28A—Between Saleyards Road and West Street	0.0%	0.3%	0.1%	0.4%	4.5%	0.0%
	28A—Between West Street and Millmerran–Inglewood Road	0.0%	1.2%	2.3%	0.7%	4.5%	0.0%
	28A—Between Millmerran–Inglewood Road and Millmerran–Leyburn Road	4.8%	13.6%	71.8%	18.2%	9.2%	0.5%
	28A—Between Millmerran–Leyburn Road and Pampas–Horrane Road	3.8%	11.3%	58.6%	16.8%	3.8%	0.4%
	28A—Between Pampas–Horrane Road and Brookstead–Norwin Road	3.1%	49.5%	57.4%	23.7%	7.9%	0.4%
	28A—Between Brookstead–Norwin Road and Tummaville Road	3.9%	59.8%	64.6%	25.2%	10.0%	0.6%
	28A—Between Tummaville Road and Vines Street	15.5%	169.7%	55.4%	21.4%	8.8%	0.5%
	28A—Between Vines Street and Toowoomba Bypass (previously Toowoomba Second Range Crossing)	17.9%	186.9%	14.4%	12.8%	12.0%	0.7%
	28A—Between Toowoomba Bypass (previously Toowoomba Second Range Crossing) and Westbrook Road	4.7%	11.7%	9.1%	5.4%	4.1%	0.5%
	28A—Between Westbrook Road and Warrego Highway	3.6%	8.8%	7.0%	4.1%	3.2%	0.4%

Road name	Road section	2021	2022	2023	2024	2025	2026
Inglewood–Texas Road	231—Between Cunningham Highway and Greenup Limevale Road	0.0%	0.0%	0.0%	4.3%	16.8%	1.4%
	231—Between Greenup Limevale Road and Texas–Yelarbon Road	0.0%	0.0%	0.0%	4.3%	16.8%	1.4%
	231—Between Texas–Yelarbon Road and Stanthorpe–Texas Road	0.0%	0.0%	0.0%	2.8%	10.9%	0.9%
	231—Between Stanthorpe–Texas Road and Old Texas–Yelarbon Road	0.0%	0.0%	0.0%	2.9%	11.5%	0.9%
	231—Between Old Texas–Yelarbon Road and QLD/NSW Border	0.0%	0.0%	0.0%	5.2%	20.3%	1.7%
Ipswich Motorway	17A—Between Cunningham Highway and Logan Motorway	0.0%	0.0%	0.0%	0.2%	0.7%	0.1%
Leichhardt Highway	26C—Between Cunningham Highway and Hunt Street	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%
	26C—Between Hunt Street and Barwon Highway	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%
Logan Motorway	210A—Between Ipswich Motorway and Pacific Motorway	0.0%	0.0%	0.0%	0.2%	0.6%	0.0%
Millmerran–Inglewood Road	337—Between Cunningham Highway and Thornton Road	146.0%	145.7%	13.8%	28.8%	17.5%	0.5%
	337—Between Thornton Road and the LGA boundary	177.3%	140.5%	41.7%	46.6%	25.6%	0.7%
	337—Between the LGA boundary and Kooroongarra Road	7.8%	33.8%	46.8%	30.7%	11.4%	0.7%
	337—Between Kooroongarra Road and Blackwell Road	8.8%	102.0%	379.2%	71.7%	42.8%	0.9%
	337—Between Blackwell Road and Campbell Street	20.4%	418.8%	1089.3%	87.9%	16.8%	2.2%
	337—Between Campbell Street and Gore Highway	22.5%	57.5%	345.8%	88.2%	46.3%	2.1%
Millmerran–Leyburn Road	335—Between Gore Highway and Reiche Road	0.3%	8.1%	9.9%	0.0%	0.0%	0.0%
Oakey–Pittsworth Road	323—Between Gore Highway and Quibet Road	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
Pacific Motorway	12A—Between Logan Highway and NSW/QLD border	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%
Pampas–Horrane Road	327—Between Gore Highway and Bostock Road	13.5%	59.9%	88.6%	39.0%	11.3%	0.0%
Pittsworth–Felton Road	332—Between Golf Course Road and Short Street	1.0%	5.0%	4.2%	1.2%	0.8%	0.0%
Texas–Yelarbon Road	2322—Between Cunningham Highway and Old Texas–Yelarbon Road	24.3%	13.6%	0.0%	0.7%	2.7%	0.2%
Toowoomba–Cecil Plains Road	324—Between Warrego Highway and McDougall Street	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	324—Between McDougall Street and Boundary Street	1.7%	10.4%	4.6%	1.0%	0.1%	0.0%
	324—Between Boundary Street and Charlton Connection Road	9.1%	57.1%	25.2%	5.5%	0.3%	0.0%
	324—Between Charlton Connection Road and Hursley Road	0.3%	1.9%	0.8%	0.1%	0.0%	0.0%
	324—Between Hursley Road and Hanrahans Road	2.3%	9.2%	8.9%	3.8%	3.6%	0.1%
	324—Between Hanrahans Road and 2 km west of Brimblecombe Rd	0.5%	2.6%	2.1%	1.0%	2.7%	0.0%

Road name	Road section	2021	2022	2023	2024	2025	2026
Toowoomba Bypass (previously Toowoomba Second Range Crossing)	319—Between Gore Highway and Toowoomba–Cecil Plains Road	9.2%	86.8%	1.3%	0.9%	4.3%	0.2%
	319—Between Toowoomba–Cecil Plains Road and New England Highway	4.1%	39.8%	0.0%	0.3%	1.1%	0.1%
	319—Between New England Highway and Warrego Highway	0.0%	0.0%	0.0%	0.3%	1.1%	0.1%
Warrego Highway	18B—Between Kingsthorpe Haden Road and Toowoomba Bypass (previously Toowoomba Second Range Crossing)	7.0%	63.1%	12.1%	2.6%	1.2%	0.0%
	18B—Between Toowoomba Bypass (previously Toowoomba Second Range Crossing) and Charlton Connection Road	0.4%	1.0%	2.1%	1.2%	0.5%	0.0%
	18B—Between Charlton Connection Road and McDougall Street	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	18B—Between McDougall Street and Bridge Street	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	18B—Between Bridge Street and Toowoomba–Cecil Plains Road	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	18B—Between Toowoomba–Cecil Plains Road and Karrool Street	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	18B—Between Karrool Street and Gore Highway	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	18B—Between Gore Highway and Fifth Avenue	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	18A—Between Toowoomba Bypass (previously Toowoomba Second Range Crossing) and Gatton–Helidon Road	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%
	18A—Between Gatton–Helidon Road and Gatton–Esk Road	0.0%	0.0%	0.0%	0.3%	1.0%	0.1%
	18A—Between Gatton–Esk Road and Laidley-Plainland Road	0.0%	0.0%	0.0%	0.2%	0.9%	0.1%
	18A—Between Laidley-Plainland Road and Tallegalla Two Tree Hill Road	0.0%	0.0%	0.0%	0.1%	0.6%	0.0%
	18A—Between Tallegalla Two Tree Hill Road and Haigslea Amberley Road	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%
	18A—Between Haigslea Amberley Road and Brisbane Valley Highway	0.0%	0.0%	0.0%	0.5%	1.8%	0.1%
	18A—Between Brisbane Valley Road and Mount Crosby Road	0.0%	0.0%	0.0%	0.2%	0.7%	0.1%
	18A—Between Mount Crosby Road and Cunningham Highway	0.0%	0.0%	0.0%	0.1%	0.6%	0.0%
Yelarbon–Keetah Road	241—Between Cunningham Highway and Old Warwick Road	773.4%	351.7%	27.8%	38.7%	0.0%	0.0%
State-controlled roads: NSW RMS							
Bruxner Highway	Between New England Highway and Summerland Way	0.0%	0.0%	0.0%	5.7%	22.4%	1.8%
Gwydir Highway	Between Stephens Road and Delungra Road	0.0%	0.0%	0.0%	1.1%	4.3%	0.4%
	Between Delungra Road and Delungra Bypass Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Delungra Bypass Road and Copeton Dam Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%

Road name	Road section	2021	2022	2023	2024	2025	2026
Gwydir Highway	Between Copeton Dam Road and Bannockburn Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Bannockburn Road and Campbell Street	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Campbell Street and Tingha Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Tingha Road and Elsmore Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Elsmore Road and Woodstock Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Woodstock Road and Waterloo Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Waterloo Road and Coronation Avenue	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Coronation Avenue and New England Highway	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between New England Highway and Shannon Vale Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Shannon Vale Road and Bald Nob Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Bald Nob Road and Old Grafton Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Old Grafton Road and Coombadjha Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Coombadjha Road and Old Glen Innes Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Old Glen Innes Road and Rogan Bridge Road	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Rogan Bridge Road and Bent Street	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
New England Highway	Between Bruxner Way and Bruxner Highway	0.0%	0.0%	0.5%	0.5%	0.0%	0.0%
	Between Gwydir Highway and Gwydir Highway	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%
Newell Highway	Between NSW/QLD border and Bruxner Way	1.4%	0.5%	0.2%	0.2%	0.1%	0.0%
Pacific Motorway	Between NSW/QLD border and Gwydir Highway	0.0%	0.0%	0.0%	0.2%	0.7%	0.1%
Summerland Way	Between Bruxner Highway and Red Lane	0.0%	0.0%	0.0%	0.5%	1.9%	0.2%
	Between Trenayr Road and Turf Street	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%

Table notes:

Key	
Less than 5%	Green
Greater than or equal to 5% and less than 10%	Orange
Greater than or equal to 10%	Red

The findings of the pavement impact assessment show that several State-controlled roads are likely to cross the 5 per cent SAR threshold, with several road segments exceeding this threshold by a significant margin. This analysis assumes fully loaded vehicles moving in each direction, which is conservative to ensure no underestimation of pavement impacts. Further road-specific analysis, presented in Appendix X: Traffic Impact Assessment, indicates that the State-controlled road segments located in Queensland and NSW would have a minimal pavement impact given the duration of construction activities and pavement loading.

Detailed pavement design life assessments will be carried out prior to the commencement of construction, in consultation with DTMR, once specific construction routes are agreed in the next phase of the Project. Further detailed assessment will assist in identifying whether contributions may be required towards the maintenance costs for the affected road sections as a result of additional pavement loading.

Full details of the assessment are presented in Appendix X: Traffic Impact Assessment.

18.6.3 Private access

The final number of occupational crossings on private property will be determined during detail design. ARTC has consulted with impacted landowners to obtain an understanding of property access requirements and to present potential private access solutions based on the reference design. Legal access to properties will be retained in all instances. Each property solution will be designed on a case-by-case basis through ongoing consultation with landowners and further design refinement. Consultation to identify potential occupational crossing solutions is described in Appendix C: Stakeholder Engagement Report.

Where level crossings are required, ARTC will consult with landowners to determine the design that best fits their requirements. For example, in areas where landowners use large machinery, the design of the level crossing including gate widths, crossing surface and approach grades will need to accommodate this. Alternatively, where there is stock on a property, the focus will be on installing appropriate fencing and gates to keep the stock out of the rail corridor.

ARTC will work with each landowner to find access solutions that minimise the number of level crossings for the Project, consistent with the safety objectives of the ONRSR guidelines and policies.

Design and layout of occupational crossing solutions will be determined based on the following considerations:

- Feedback from consultation with landowners on specific property requirements
- Safety standards, including criteria for minimum sight distances for trains and vehicles
- Alternative access arrangements
- Rail design and landform
- Stock movements
- Vehicle access requirements (for example farm machinery, frequency of use).

Typical treatments include:

- Underpass for stock passage or vehicle and machinery use. This will be subject to topography.
- At grade level crossing
- Diversion to adjacent public road/public road crossing.

During construction, private access to individual properties may be temporarily disrupted and restricted where land is required temporarily for the construction footprint.

18.6.4 Public transport services

The existing public transport services that have potential to be impacted by the Project have been identified in Section 18.5.3.

Generally, temporary traffic controls (e.g. reduced speed limits, temporary traffic lights, etc.) and/or an increase in construction traffic, particularly heavy vehicle traffic, have the potential to impact the operation of public transport services. Eleven public transport services have been identified with routes that are proposed to be used, in part, by construction traffic for the Project. None of the 11 public transport routes traverse, or are in proximity to, the Project footprint. The closest route to the Project is for the Ipswich to Toogoolawah (529) route, approximately 70 km to the east of the Project at its closest point. While roads used by the 11 identified services may be used by construction vehicles, the roads will not require temporary traffic controls; therefore, driving conditions on roads used by public transport services will remain unchanged.

A 5 per cent traffic comparison analysis was undertaken for all roads proposed to be used by construction traffic for the Project (refer Section 18.6.2.4). None of the roads used by the 11 public transport routes are projected to experience an increase in vehicle movements of 5 per cent or more; therefore, it is considered unlikely that increased journey times would be experienced on these public transport services as a result of construction traffic for the Project.

TransLink will be consulted as part of the detail design and construction planning phase of the Project to identify public transport service constraints on the local road network. Other service operators would be consulted, as required.

18.6.5 School bus routes

The increase in construction traffic, particularly heavy vehicle traffic, has the potential to impact the journey time and safety of school bus routes.

The potential impacts to school bus services due to the upgrade of existing, or introduction of new road–rail intersection for the Project are discussed in Table 18.36.

TABLE 18.36 POTENTIAL IMPACTS TO SCHOOL BUS SERVICES DUE TO UPGRADED OR NEW ROAD–RAIL INTERSECTION

School bus service	Potential impact
P1883 AM and PM Service Athol to Bunker's Hill State School	There is one new road–rail interface in the reference design for the Project that is located on the route for this bus service. The interface, 310-53-P-1 Athol School Road, will not have a rail crossing provided. Instead, traffic will be re-directed to use the passive level crossing provided at Purcell Road (310-52-P-3). This is a diversion of approximately 1 km, which may add a few minutes to travel time for this bus service.
P473 Yuraraba to Inglewood State School	There is one new road–rail interface in the reference design for the Project that is located on the route for this bus service. The interface, 310-24-P-2 Millmerran–Inglewood Road, has an active level crossing provided in the reference design. A wait time of approximately 101 seconds is expected at this crossing during a train pass-by (refer Table 18.25).
P510 Southbrook North to Southbrook Central State School	There are two new road–rail intersections in the reference design for the Project that are located on the route for this bus service—310-50-P-11 Linthorpe Valley Road and 310-51-P-11z Biddeston–Southbrook Road. 310-50-P-11 Linthorpe Valley Road has a passive level crossing provided in the reference design. A wait time of approximately 88 seconds is expected at this crossing during a train pass-by (refer Table 18.25). A rail-over-road grade separation is proposed at 310-51-P-11z Biddeston–Southbrook Road. Impacts to services passing through this location will be confined to construction of the Project. Once operational, vehicular movements at this location are expected to be unimpeded.
P522 Mt Emlyn area to Millmerran State School	There is one new road–rail interface in the reference design for the Project that is located on the route for this bus service—310-37-P-12a Millmerran–Inglewood Road. A rail-over-road grade separation is proposed at 310-37-P-12a Millmerran–Inglewood Road. Impacts to services passing through this location will be confined to construction of the Project. Once operational, vehicular movements at this location are expected to be unimpeded.
P772 AM and PM Service Tummaville to Millmerran State School	There are two existing rail crossings that are located on the route for this bus service, being 310-40-E-2 Millmerran–Leyburn Road and 310-42-E-1 Fysh Road. It is proposed that 310-40-E-2 Millmerran–Leyburn Road be upgraded from a passive level crossing to an active level crossing for the Project. Minor, temporary delays may be encountered at this location during construction as formation, track and signalling upgrades occur. During operation, impacts experienced at this location will be as a result of re-commenced rail operations along this section of rail corridor and the need to wait during train pass-bys. The network at this location has been non-operational since being damaged by floods in 2011. A rail crossing is not provided in the reference design at 310-42-E-1 Fysh Road. Instead, traffic will be re-directed to use the active level crossing provided at Harris Road (310-42-E-0). This is a diversion of approximately 500 m, which may add a few minutes to travel time for this bus service.

School bus service	Potential impact
P938 Bringalily to Millmerran State School	There are two new road–rail intersections in the reference design for the Project that are located on the route for this bus service, being 310-35-P-4 Millmerran–Inglewood Road and 310-37-P-12a Millmerran–Inglewood Road. Rail-over-road grade separations are proposed at both of these intersection locations. Impacts to services passing through these locations will be confined to construction of the Project. Once operational, vehicular movements at these locations are expected to be unimpeded.
P957 AM and PM Service Ivanhoe to Millmerran State School	There are two new road–rail intersections in the reference design for the Project that are located on the route for this bus service, being 310-37-P-12a Millmerran–Inglewood Road and 310-38-P-3 Owens Road. A rail-over-road grade separation is proposed at 310-37-P-12a Millmerran–Inglewood Road. Impacts to services passing through this location will be confined to construction of the Project. Once operational, vehicular movements at this location are expected to be unimpeded. 310-38-P-3 Owens Road has an active level crossing provided in the reference design. A wait time of approximately 199 seconds is expected at this crossing during a train pass-by (refer Table 18.25).
S118 AM and PM Service Pittsworth to Brookstead Area	There are two road–rail intersections in the reference design for the Project that are located on the route for this bus service, one existing crossing (310-44-E-2 Gore Highway) and one new (310-46-E-1 Yarranlea Road). Rail-over-road grade separations are proposed at both of these locations in the reference design. Impacts to services passing through these locations will be confined to construction of the Project. Once operational, vehicular movements at these locations are expected to be unimpeded.
S178 Kingsthorpe Secondary to Harristown State High School	There is one new road–rail interface in the reference design for the Project that is located on the route for this bus service, being 310-56-P-2 Warrego Highway. A rail-over-road grade separation is proposed at 310-56-P-2 Warrego Highway. Impacts to services passing through this location will be confined to construction of the Project. Once operational, vehicular movements at this location are expected to be unimpeded.
S577 Kingsthorpe/Wellcamp to Harristown State High School	There is one new road–rail interface in the reference design for the Project that is located on the route for this bus service, being 310-56-P-2 Warrego Highway. A rail-over-road grade separation is proposed at 310-56-P-2 Warrego Highway. Impacts to services passing through this location will be confined to construction of the Project. Once operational, vehicular movements at this location are expected to be unimpeded.
S740 AM and PM Service Millmerran Years 11 and 12 to Pittsworth State High School	There are two road–rail intersections in the reference design for the Project that are located on the route for this bus service, one existing crossing (310-44-E-2 Gore Highway) and one new (310-46-E-1 Yarranlea Road). Rail-over-road grade separations are proposed at both of these locations in the reference design. Impacts to services passing through these locations will be confined to construction of the Project. Once operational, vehicular movements at these locations are expected to be unimpeded.

18.6.6 Long-distance coach services

Given the low frequency of long-distance coach services that use roads within the impact assessment area, it is expected that long-distance buses would not be significantly impacted as a result of the construction of the Project.

18.6.7 State strategic touring routes

Although some strategic touring routes use roads that have been identified for use by construction traffic, the short-term nature of the construction phase would result in only temporary impacts to these routes.

Details on the impacts of the Project to the visual amenity that may be available from transport routes are discussed in Chapter 9: Landscape and Visual Amenity.

18.6.8 Cycling and pedestrian network

18.6.8.1 Construction

Construction of the Project has the potential to result in the following impacts to existing active transport networks within the impact assessment area:

- Temporary diversion of cycling routes or pedestrian access, resulting in modified routes and increased journey times
- Increased vehicle movements on cycleway network linkages that are co-located with construction traffic routes for the Project, which may result in longer journey times and increased likelihood of interactions between cyclists and vehicles.

Some of the proposed construction routes are aligned through areas of moderate-to-high pedestrian activity through the areas surrounding the towns of Yelarbon, Inglewood, Millmerran, Brookstead, Pittsworth and Toowoomba. Significant increases in heavy vehicle movements through these locations may adversely impact pedestrian movements; however, most of these routes are currently facilitating a high proportion of heavy vehicle movements (refer Table 18.27). Therefore, the addition of construction traffic to these routes is unlikely to result in a significant increase in risk to pedestrians.

18.6.8.2 Operation

Several existing cycleways have been identified within the impact assessment area (refer Section 18.5.9). Of these networks, only one along the Warrego Highway, (between Tor Street and Kingsthorpe–Haden Road, Charlton/ Gowrie Mountain) is directly intersected by the Project alignment. A grade separated; rail-over-road crossing is provided in the reference design at this location; therefore, there will be no connectivity impacts to this cycleway.

Impacts to non-designated cycleways will be the same as those for roads on which cyclists are traveling, as presented in Section 18.6.1.2.

There are no dedicated pedestrian level crossings of the rail corridor included in the reference design.

18.6.9 Emergency services

The Project has the potential to result in the following during construction:

- Increased journey times on road linkages used by construction traffic
- Increased waiting time at intersections used by construction traffic
- Temporarily altered driving conditions in proximity to construction areas, such as reduced speed limits, mobile traffic lights and lane reconfigurations.

Such impacts have potential to result in increased response times for emergency services.

During construction and operation, response times for emergency services may be delayed if they encounter significant roadworks or passing trains at level crossings. ARTC will work with the relevant emergency services agencies (e.g. Queensland Fire and Emergency Service (QFES), Queensland Ambulance Service (QAS) and Queensland Police Service (QPS)) to develop protocols and joint working arrangements to address potential impacts on emergency services and service response times during construction and operation, and ensure that access is retained as required.

The QFES, QAS and QPS will all be consulted in order to identify suitable emergency access points to the rail corridor.

18.6.10 Airports and ports

The Project footprint does not intersect the public safety area of Toowoomba Wellcamp Airport.

At its closest point, the Project alignment encroaches into the 470 m obstacle limitation surface (OLS) contour that extends from the north-western end of the runway. Through consultation with the operator of Toowoomba Wellcamp Airport, the Project has been aligned to ensure that a double-stacked train on the rail alignment will not extend vertically into the OLS.

While the Project footprint is located 11.4 km southeast of Army Aviation Centre Oakey, the Project alignment does extend across properties on which the 45 m height restriction zone applies. The Project has been aligned to ensure that a double-stacked train on the rail alignment will not extend vertically into this height restriction zone.

At its closest point, the Project alignment extends into light restriction Zone B for Toowoomba Wellcamp Airport. As detailed in the *State Planning Policy—State interest guideline: Strategic airports and aviation facilities (*Department of Infrastructure, Local Government and Planning (DILGP), 2016d), configurations of lights in straight parallel lines 500–1,000 m long, particularly in the vicinity of large unlit areas, can replicate the appearance of airport runways at night (DILGP, 2016d). In addition, occasional glare or flashes can distract pilots at critical moments. Construction-phase lighting requirements for the Project are minimal as the majority of works will occur during daylight hours. Some security lighting will be required around construction laydown areas and site offices but lighting in these instances will be directed and screened to prevent light spill beyond the extent of the Project footprint.

Once operational, lighting will be restricted to the headlamps on rollingstock and the safety lighting requirements at road–rail intersections. Neither of these sources are expected to have an adverse effect on the operational airspace.

Construction and operation of the Project will not result in airborne particulates or gaseous plumes that may otherwise impair pilot or air traffic control visibility.

The Project will not result in the introduction of new wildlife hazards that may otherwise increase the risk of aircraft strike.

Australian Noise Exposure Forecast contours are not available for Toowoomba Wellcamp Airport; however, construction or operation activities for the Project do not constitute a sensitive receptor to aircraft noise.

Based on the above, the Project is considered to be consistent with the intent of the SPP. In fact, the Project complements the role of a strategic airport as an economic, freight and logistics hub, and will enhance the economic opportunities that are available in proximity to a strategic airport.

The expected impact from the Project on ports and airports is not considered to be significant during either the construction or operation phases as the transport of materials, workforce and equipment is expected to primarily use the road and rail transport networks.

18.7 Mitigation measures

This section provides discussion of mitigation measures and controls that have been incorporated into the reference design development process, as appropriate and where possible (refer Section 18.7.1), as well as those measures that are proposed to be adopted for future phases of Project delivery (refer Section 18.7.2).

18.7.1 Mitigation through the reference design phase

Development of the reference design for the Project has progressed in parallel with the impact assessment process. As a result, design solutions for avoiding, minimising or mitigating impacts have been incorporated into the reference design as appropriate and where possible.

Mitigation measures and controls that have been factored into the design, or otherwise implemented during the reference design phase for the Project, are summarised in Table 18.37.

TABLE 18.37 INITIAL MITIGATION MEASURES OF RELEVANCE TO TRAFFIC, TRANSPORT AND ACCESS

Aspect	Initial mitigation measures
Traffic	▸ The Project has been aligned to be co-located with existing rail and road infrastructure where possible, in an effort to minimise the number of new road network intersections ▸ The reference design has been developed to minimise the potential for permanent alterations to the road configurations and traffic flow patterns ▸ The horizontal and vertical alignment has been established to optimise the earthworks required and achieve as close to a net-balance as is possible. By minimising the material deficit for construction of the Project, the volume of material required to be imported has been reduced. Less imported material equates to fewer construction truck movements on public roads. ▸ Construction traffic routes have been proposed that provide the shortest journey time between origin and destination. These routes have been assessed as part of the traffic impact assessment. ▸ The temporary footprint for the Project has been defined to provide sufficient space for the Project, including road modifications, to be safely and efficiently constructed.

Aspect	Initial mitigation measures
Rail incidents as a result of development of the Project	▸ The rail alignment has been designed to minimise the likelihood of rail incidents for the types of trains projected to use the Inland Rail network. This has been achieved by adhering to the minimum design requirements of the Basis of Design, which are: ▸ Design speed of 115 km/h ▸ Maximum grade of 1:80, with 1:100 the target ▸ Maximum curve radius of 800 m, with 1,200 m target ▸ Initial train lengths of 1,800 m, with potential to increase up to 3,600 m. ▸ The reference design includes mixed-gauge turnouts at locations where the Project interfaces with existing rail networks or infrastructure, to enable QR rollingstock to join and exit the Inland Rail network.
Road–rail interfaces	▸ Grade-separated crossings of existing roads have been adopted instead of level crossings, where possible. The specific design treatment at each road–rail interface has been selected based on a combination of factors, which include: ▸ Topography ▸ Road classification ▸ Rail geometry ▸ Road geometry ▸ Community and stakeholder feedback through consultation. ▸ Where grade separation has not been feasible, the design has been developed in accordance with the ARTC *Engineering Code of Practice—Level Crossings (*available on the ARTC extranet). Level crossings have been subject to safe design studies and risk assessments in accordance with ALCAM *to* identify and reduce the potential risks associated with these crossings, so far as is reasonably practicable, in accordance with the ONRSR Guideline (ONRSR, 2016b). ▸ Additional physical controls at level crossings such as boom gates and warning lights are provided in accordance with the *Guide to Development in a Transport Environment: Rail* (DTMR 2015), *Manual of Uniform Traffic Control Devices Part 7: Railway Crossings* (DTMR, 2019e) and ARTC *Engineering Code of Practice—Level Crossings.*
Stock routes	▸ Where stock routes have been intersected by the Project, an allowance for the continuity of movement of stock along the same route has been made in the reference design. In some instances, such as Yelarbon (811GWND) and the southern end of Millmerran–Inglewood Road (820GWD), this has involved allowance for a localised realignment of the current stock route.
Bridges	▸ Maintenance access to the deck level of all new bridge structures has been incorporated into the design ▸ Bridge clearances have been established in consultation with the owners of existing assets over which the bridge structures span (i.e. DTMR, local governments and private landowners).
Airport operation	▸ The Project alignment is approximately 1 km from the northern end of the runway for the Toowoomba Wellcamp Airport. The Project has been positioned to ensure that double-stacked freight trains will not extend vertically into the obstacle limitation surface for this airport. ▸ The reference design has been developed to be consistent with the intent of the *State Planning Policy—State interest guideline: Strategic airports and aviation facilities (*DILGP, 2016d) (refer Section 18.6.10).
Access	▸ The reference design has been developed to maintain connectivity across the Project footprint. This has been provided through either: ▸ The provision of a crossing point of the rail alignment in the location of the existing access ▸ The provision of continued means of access, via an alternative location, with interconnectivity provided.

18.7.2 Proposed mitigation measures

In order to manage and mitigate Project risks, several mitigation measures have been proposed for implementation in future phases of Project delivery. These proposed mitigation measures have been identified to address Project-specific issues and opportunities.

Table 18.38 identifies the relevant Project phase, the aspect to be managed and the proposed mitigation measure. Location-specific details of where each mitigation measure may be applied is provided in Appendix X: Traffic Impact Assessment.

The mitigation measures presented in Table 18.38 have then been factored into the assessment of residual risk, as documented in Table 18.39.

Chapter 22: Outline Environmental Management Plan provides further context and the framework for implementation of these proposed mitigation and management measures.

TABLE 18.38 ADDITIONAL MITIGATION MEASURES PROPOSED FOR FUTURE PHASES OF PROJECT DELIVERY

Delivery phase	Aspect	Proposed mitigation measures
Detail design	Road safety	▸ A safety assessment of the detail design and proposed construction traffic routes will be required, in accordance with the GTIA. The safety assessment will determine the locations where road safety audits are required. ▸ As a minimum, road safety audits will be undertaken for all public level crossings included in the detail design, to confirm: ▸ For detail design: – The safety measures proposed by the detail design are appropriate – The detail design is appropriate for the traffic conditions – The crossing is designed to provide suitable stacking and sight distance. ▸ For construction traffic route planning: – Safety controls at existing level crossings including those which may not be on the Project alignment are appropriate for the anticipated type of traffic during construction of the Project. ARTC will use previous ALCAM assessments for existing level crossings, which are made available by QR, as an input into this assessment. – The design and condition of existing level crossings are appropriate to withstand the size, mass and frequency of construction vehicles expected to use each crossing. ▸ Road safety audits will be undertaken by an accredited road safety auditor, in accordance with the Austroads *Guide to Road Safety Part 6A: Implementing Road Safety Audits* (Austroads, 2019) ▸ Consultation with relevant local governments, DTMR, QR and emergency service providers (e.g. QFES, QAS, QPS) will continue through the detail design and construction planning process to ensure that safety concerns and issues are addressed through development of the detail design and the construction methodology. Through this consultation process, stakeholders will be provided with details of the relevant construction management plans and the Traffic Management Sub-plan. ▸ Opportunities to accommodate greater separation distances between rail and neighbouring roads will be investigated, in consultation with DTMR and in accordance with AS 1742.7-2016 and *Road Planning and the Design Manual—Edition 2: Volume 3, Supplement to Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (DTMR, 2014).
	Road network	▸ The traffic impact assessment will be updated and finalised, in accordance with the process specified in the GTIA (refer Figure 18.5), to reflect the detail design, construction method (including material sources and quantities) and the finalised construction traffic routes ▸ A travel demand management awareness campaign will be developed to inform the public of the proposed construction works and its potential effect on local road network operations. The purpose of this awareness campaign would be to relieve congestion by encouraging travel outside of peaks and increase public awareness of planned construction works.

Delivery phase	Aspect	Proposed mitigation measures
Detail design (continued)	Road network (continued)	▸ A Traffic Management Sub-plan will be prepared prior to the commencement of construction, as a component of the CEMP, as a joint effort between the Principal Contractor, ARTC, DTMR, QR, local governments and an accredited road safety auditor once preferred construction routes are confirmed. This plan will reflect the finalised traffic impact assessment and will: ▸ Outline: – Traffic demand – Routing – Controls – Special vehicle requirements – How works to accommodate these are integrated into the operation of the road network. ▸ Detail measures to: – Safely manage traffic when undertaking works in a road reserve – Minimise traffic delays resulting from the development/construction – Manage construction vehicles accessing and leaving the site – Manage safety and maintain asset integrity on construction traffic routes, including existing level crossings that are not on the Project alignment – Manage road intersections that experience increased usage due to construction vehicle movements – Maintain property access. – Minimise disruption to adjacent properties – Minimise disturbance to the environment – Meet the requirements of legislation and codes of practice regarding traffic management ▸ Cater for special events, e.g. Millmerran Camp Oven Festival and regional cycling events. ▸ Acknowledge and consider: – Designated construction routes – Approaches to seasonality, including usage of stock routes – Areas of significant pedestrian and cyclist activity – Standard hours of work and deliveries – Specific hours of deliveries impacted by local land uses (e.g. school zones) – Bus service operations (e.g. public transport, school buses, long distance services) – Workforce transportation – Workforce parking, with the provision of onsite tool storage where practicable. ▸ Identify secondary, alternative construction routes, in the event of the primary route is blocked off by an emergency/accident ▸ Be in accordance with the latest edition of the *Manual of Uniform Traffic Control Devices: Part 3: Traffic control for works on roads* (DTMR, 2019d).

Delivery phase	Aspect	Proposed mitigation measures
Detail design (continued)	Road network (continued)	▸ Works identified within the Traffic Management Sub-plan may require the preparation of Traffic Control Plans (TCPs), also referred to as Traffic Guidance Schemes. Specific TCPs are required for each separate element of the works identified to be undertaken within the Traffic Management Sub-plan. TCPs detail the traffic control signs, devices and measures to be applied at work sites to warn traffic and guide it through, or past, a work area or temporary hazard. This includes plans/diagrams that illustrate the arrangement of signage and devices used to manage traffic. Highlight the temporary signage, markings, speed zones, barriers and works with the aim to: ▸ Warn drivers of the changes to the usual conditions ▸ Inform drivers about the changing conditions ▸ Guide drivers through the work sites ▸ Ensure safety of works and external road users. ▸ A Road Use Management Plan (RUMP) will be prepared for the Project in accordance with the GTIA to support works to the existing road network (refer Figure 18.5). The purpose of developing the RUMP for the Project will be to: ▸ Identify, where required, appropriate traffic and transport management strategies for the use of the State-controlled roads and local government roads for each of the construction stages of the Project ▸ Minimise the impact on the efficiency of road networks ▸ Minimise safety impacts from construction vehicles entering and leaving construction sites. The RUMP will: ▸ Summarise updated Project traffic information on which the updated road impact assessment and proposed mitigation strategies are based ▸ Briefly list roles and responsibilities for RUMP implementation ▸ Detail finalised impact mitigation strategies, focusing on controls-based or road-use management strategies. Road-use management strategies include: – Use of variable message signs – Travel demand management – Use of shuttle buses to transport workers. ▸ Avoiding peak hour traffic, especially near schools/bus routes. ▸ The RUMP will be developed in consultation with DTMR, local governments and emergency service providers and will be finalised prior to the commencement of construction ▸ The locations on construction traffic routes where turning treatments are required will be confirmed through assessment in accordance with the requirements of Austroads' *Guide to Traffic Management Part 6 (*Austroads, 2020b). Initial turning treatments have been identified in Table 18.34. ▸ Where required, turning treatments will be designed in consultation with the relevant road controlling authority and in accordance with the requirements of Austroads' *Guide to Road Design Part 4A (*Austroads, 2017). Turning treatments will be documented in the RUMP.

Delivery phase	Aspect	Proposed mitigation measures

Detail design (continued)	Access	▸ The detail design will be developed to ensure that legal access for private properties is maintained
		▸ ARTC will continue to consult with potentially impacted landowners through the detail design and construction planning process to develop and implement property-specific measures to avoid or minimise impacts that could affect property access
		▸ ARTC will continue to consult with residents of Brookstead, TRC and DTMR to refine and conclude the optimal road reconfiguration and access solution for the township of Brookstead
		▸ The construction and operational phase provision of suitable private property access will form a component of property-specific management agreements developed in consultation with landowners. Changes to individual property access onto and across properties may be offset by consolidating access in key locations, which may be facilitated through underpasses for stock and vehicles at appropriate locations. These solutions will be developed in consultation with affected landowners.
		▸ Consultation with Toowoomba and Goondiwindi Local Disaster Management Groups, in addition to QPS, QAS and QPWS will continue through the detail design process to ensure that appropriate access and egress solutions are incorporated into the detail design to enable movements across the rail corridor.
		▸ Consultation with the Department of Education to ensure that mitigation measures required to be implemented to maintain the current levels of access and operation of Brookstead State School, Southbrook Central State School and Yelarbon State School are incorporated into the detail design and/or construction planning
		▸ Safe corridor access and vehicle turnaround points will be provided for maintenance work, to ensure sufficient setback while working adjacent to live railway. Maintenance and emergency access roads will be designed such that it will allow separation to prevent interaction between trains and vehicles without impeding escape or rescue activities.
		▸ Traffic management arrangements for construction sites, laydown areas or non-resident workforce accommodation facilities requiring access directly off/onto a State-controlled road will need to be negotiated with and approved by DTMR.
		▸ All construction access points will be designed in accordance with Australian Standards, with:
		  ▸ Appropriate sighting distances in both the vertical and horizontal
		  ▸ Deceleration lanes for trucks
		  ▸ Acceleration lanes for re-entering construction traffic
		  ▸ Appropriate signage and line marking.
		▸ Where possible, access will be provided from secondary roads to minimise the potential disruptions to the nearby arterial road network.

Delivery phase	Aspect	Proposed mitigation measures

Detail design (continued)	Interface with existing QR network	▸ Detail design will be developed in accordance with the requirements of the Basis of Design.
		▸ The interoperability of the ATMS with QR's network will be confirmed through consultation with QR, with compatibility requirements incorporated into the detail design for the Project
		▸ Track design will incorporate trackside monitoring systems, which will detect faults in train wheel set and monitor rail wheel condition and defects. The locations for trackside monitoring systems will be confirmed and incorporated into the detail design.
		▸ The construction approach for the components of the Project within the existing rail corridor for the South Western Line and the Millmerran Branch Line will be confirmed through discussion with QR and other key stakeholders who are reliant on access to these operational rail lines (e.g. GrainCorp). This consultation will be used to inform:
		  ▸ The programming of construction activities requiring track possessions
		  ▸ Effective communication strategies with QR and other stakeholders.
		▸ The agreed construction approach within the existing rail corridor for the South Western Line and the Millmerran Branch Line will be formulated in a wayleave agreement, or similar, between ARTC and QR.

	Road–rail interfaces	▸ The design of road–rail intersections will continue to be developed in consultation with DTMR and QR to be in accordance with the principles established in *ONRSR Policy: Level Crossings* (ONRSR, 2019a), and in reference to the *ONRSR Guideline: Meaning of duty to ensure safety so far as is reasonably practicable* (ONRSR, 2016b) and the *Queensland Level Crossing Safety Strategy 2012–2021* (DTMR, 2012). ▸ Physical controls such as boom gates and/or warning lights will be incorporated into the design at active level crossing locations in accordance with the *Guide to Development in a Transport Environment: Rail* (DTMR, 2015), *Manual of Uniform Traffic Control Devices Part 7: Railway Crossings* (DTMR, 2019e) and ARTC *Engineering Code of Practice—Level Crossings* ▸ Detail design of appropriate exclusion fencing is required near roads or where trespass is likely to occur. Specific fencing requirements are to be agreed through discussion with adjoining landowners and asset owners. Agreed fencing requirements will be documented in a revised fencing strategy for the Project.

	Pavement	▸ A detailed pavement impact assessment will be undertaken during the detail design phase on State-controlled roads that will be used by construction traffic. The assessment will be in accordance with the GTIA, once the Principal Contractor has been appointed and construction routes have been confirmed. The detailed pavement impact assessment will identify measures to avoid, reduce or mitigate effects on the pavement life of State-controlled roads that will be used by the Project, such as:
		  ▸ Provide a payment contribution for future pavement works
		  ▸ Provide extra pavement width (e.g. to prevent edge degradation)
		  ▸ Provide additional pavement thickness
		  ▸ Seal an unsealed pavement
		  ▸ Provide maintenance during construction
		  ▸ Undertake pavement rehabilitation.

Delivery phase	Aspect	Proposed mitigation measures
Detail design (continued)	Pavement (continued)	▸ For sealed local government roads, a condition assessment will be conducted (e.g. National Association of Australian State Road Authorities roughness count) prior and post construction activities, as well as at annual intervals during construction ▸ For unsealed local government roads, a visual condition will be conducted (either manual or vehicle mounted high speed condition survey) prior to and post construction activities. The scope for pavement assessments of unsealed local government roads will be agreed with relevant local governments before construction commences. ▸ The scope and frequency of pavement condition assessments that are to be required during the construction period will be documented in the RUMP.

	Consultation	▸ The detail design and construction method for the Project will be developed in combination with continued consultation with relevant local governments, DTMR, QR and emergency service providers (e.g. QFES, QAS and QPS).
		▸ Continued consultation will be necessary with QR to confirm:
		  ▸ Interconnectivity and interoperability details of the Inland Rail network with the existing railway network
		  ▸ Construction approach for the Project within existing rail corridor. The agreed construction approach in these locations will require a wayleave agreement, or similar, between ARTC and QR.
		▸ Continued consultation with Toowoomba Wellcamp Airport will be required to ensure that the detail design and construction methodology for the Project do not impact on the current and planned future operations of the airport.

Pre-construction and construction[1]	Road network	▸ Construction works cannot commence within a State-controlled road corridor without written approval from DTMR. This will be required to be obtained through consultation with DTMR during the detail design phase of the Project. ▸ The Traffic Management Sub-plan will be implemented and reviewed annually for effectiveness, including review by relevant road controlling authorities ▸ Implement the travel demand management awareness campaign (refer above) to notify relevant local governments, DTMR, emergency service providers and community members of the construction activities occurring in support of the Project, temporary alternations to the existing road network and potential impacts on journey time ▸ Use directional signage and line marking around construction sites and the surrounding network, including using Variable Message Signs (VMS), if appropriate ▸ Develop and implement specific traffic management plans for special events (e.g. Australian Camp Oven Festival in Millmerran, regional road cycling events), to be developed in conjunction with DTMR, relevant local governments and event organisers.
	Road safety	▸ ARTC's existing *Work Instruction for Fatigue* (WHS-WI-423) (available on the ARTC extranet) will be implemented for the Project to ensure conditions of work of personnel align with requirements of the *Work Health and Safety Act 2011 (Qld)* (WHS Act) ▸ Construction traffic on known school bus routes will be restricted to only essential movements during pick-up and set-down times on school days ▸ Relevant emergency services (e.g. QFES, QPS, QAS) will be notified in advance of temporary and permanent changes to the road network and of construction activities that may affect journey times for emergency vehicles ▸ Relevant emergency services will be notified in advance, prior to the movement of all hazardous/dangerous or oversize construction material and equipment. Temporary traffic management to be implemented, e.g. road signs stipulating reduced speed limits. ▸ All oversize, overmass and restricted access vehicles will comply with the *Guideline for Excess Dimension Vehicles in Queensland: Version 8* (DTMR, 2013e) in terms of transport safety

Delivery phase	Aspect	Proposed mitigation measures
Pre-construction and construction[1] (continued)	Road safety (continued)	▸ Construction speed limits will apply to all unsealed routes used by construction vehicles. Applicable speed limits will be determined through consultation with the relevant local government and documented in the Traffic Management Sub-plan within the CEMP. ▸ Licensed transporters operating in compliance with *Australian Code for the Transport of Dangerous Goods by Road and Rail* (Commonwealth of Australia, 2018b) will be used for the transportation of dangerous goods ▸ A Form M994 will be completed and signed by a certified Level 3 Traffic Management Operator should any regulatory traffic signs/devices associated with any State-controlled roads be required ▸ Temporary road works, including diversion and signage, will be in accordance with the *Manual of Uniform Traffic Control Devices: Part 3 – Traffic control for works on roads* (DTMR, 2019d).
	Road–rail interface	▸ ARTC and QR will jointly undertake pre-construction and post-construction condition surveys of all existing level crossings that will be used by construction traffic. The need for rectification works will be determined through comparison of pre-construction and post-construction survey results. The party responsible for the undertaking of rectification works and the scope of those works will be agreed through discussions between ARTC and QR. ▸ Level crossings that are under possession of the constructing authority will be provided with warning signage, line marking, and other relevant controls, in accordance with the *Guide to Development in a Transport Environment: Rail* (DTMR, 2015), *Manual of Uniform Traffic Control Devices Part 7: Railway Crossings* (DTMR, 2019e) and with the Traffic Management Sub-plan and RUMP procedures.
	Interface with existing QR network	▸ In accordance with Section 255 of the TI Act, works cannot commence within the existing rail corridor without QR's written approval, unless this process is overwritten by a pre-agreement between ARTC and QR ▸ If construction of Project components within existing rail corridor is completed during a temporary possession of the rail corridor, then works will be completed in accordance with the conditions of the temporary possession and/or wayleave agreement granted to ARTC by QR ▸ All works carried out on QR property will be in accordance with the requirements of QR's *Civil Engineering Technical Requirement: Work in or about Queensland Rail Property* (CIVIL-SR-002).
	Pavement	▸ Install shaker grids or rumble pads at entry/exit points from laydown areas ▸ Pavement condition assessments during and at the conclusion of construction will be carried out at the frequency specified in the RUMP ▸ Local government and DTMR-approved maintenance contractors will be used for construction, modification or rectification of roads. This may entail works such as crack sealing, pothole patching, edge repairs, resealing and grading (of gravel roads), etc.
Operation	Road network	▸ Develop a protocol between ARTC and emergency service providers, defining appropriate and co-ordinated responses and communication in the event of emergencies during operations (e.g. access to real-time information about crossing times and access to alternate crossing points).

Delivery phase	Aspect	Proposed mitigation measures

Operation (continued)	Road–rail interface	▸ ARTC will conduct routine inspections of crossing infrastructure in accordance with ARTC's *Engineering Code of Practice* and will regularly review crossing performance and incident information to identify opportunities for improved performance and further reduction in risk
		▸ Railway safety messages will be provided to the community through awareness activities, community engagement activities, and campaigns to increase public awareness regarding the Project. Fact sheets and guidelines will also be freely available on the ARTC website, aiming to provide guidance to the community regarding safety around level crossings.
		▸ Key actions outlined within the *Queensland Level Crossing Safety Strategy 2012–2021* (DTMR, 2012) will be implemented, including:
		  ▸ Promoting level crossing safety through public awareness campaigns
		  ▸ Maintain data collection, including near-miss reporting
		  ▸ Maintain level crossing infrastructure in accordance with Australian Standards.

	Access	▸ The rail maintenance access roads will be available for use by emergency vehicles in the event of an incident.

Table note:
1. Combined, as there is no distinction between mitigation measures applicable for pre-construction and construction phases of the Project

18.8 Impact assessment summary

Potential traffic and transport impacts associated with the Project in the construction and operation phases are outlined in Section 18.6. These potential impacts have been subjected to a risk assessment as per the methodology introduced in Chapter 4: Assessment Methodology and summarised in Section 18.4.

The initial risk assessment is undertaken on the assumption that the design considerations (or initial mitigation measures) factored into the reference design phase (refer Table 18.37) have been implemented.

Additional mitigation and management measures were then applied as appropriate to the phase of the Project to reduce the level of potential impact (refer Table 18.38). The residual risk level of the potential impacts was then reassessed.

The pre-mitigated risk levels are presented next to the residual risk levels in Table 18.38 to assess the effectiveness of the mitigation and management measures.

TABLE 18.39 RISK ASSESSMENT SUMMARY FOR TRAFFIC AND TRANSPORT

Aspect	Potential impacts	Phase	Initial risk[1]			Residual risk[2]		
			Likelihood	Consequence	Risk	Likelihood	Consequence	Risk
Road network	Operational efficiency	Pre-construction and construction	Likely	Moderate	High	Possible	Minor	Low
		Operation	Likely	Moderate	High	Possible	Minor	Low
Intersections	Operational efficiency	Pre-construction and construction	Possible	Moderate	Medium	Unlikely	Minor	Low
Road–rail interface	Safety	Pre-construction and construction	Possible	Extreme	High	Rare	Major	Low
		Operation	Possible	Extreme	High	Rare	Major	Low
Pavements	Operational efficiency	Pre-construction and construction	Likely	Minor	Low	Possible	Not significant	Low
Access	Safety	Pre-construction and construction	Possible	Moderate	Medium	Unlikely	Major	Medium
Road network	Safety	Pre-construction and construction	Possible	Extreme	High	Unlikely	Major	Medium
Interface with existing QR network	Safety	Pre-construction and construction	Unlikely	Extreme	Medium	Rare	Major	Low
		Operation	Unlikely	Extreme	Medium	Rare	Major	Low

Table notes:
1. Includes implementation of initial mitigation measures specified in Table 18.37
2. Assessment of residual risk once the mitigation measures identified in Table 18.38 have been applied

18.9 Cumulative impacts

It is a requirement of the ToR for this Project that the potential cumulative impacts be considered. This section provides a discussion of the potential for cumulative impacts in relation to traffic and transport. Further details on the potential for cumulative impacts to arise as a result of the Project, in combination with others, is presented in Chapter 21: Cumulative Impacts. Details on the assessment methodology for cumulative impacts is presented in Chapter 4: Assessment Methodology.

Projects with spatial and/or temporal overlap can result in cumulative impacts. Cumulative impacts may:

- Differ from those of an individual project when considered in isolation
- Be positive or negative
- Differ in severity and duration depending on the spatial and temporal overlap of projects occurring in an area.

Twenty-three projects were initially identified as having potential to contribute to cumulative impacts in combination with the Border to Gowrie Project. These projects are either currently operational, expected to undergo future expansion or are currently going through an approval process. A full list of the 23 projects, with a description of each, is presented in Chapter 21: Cumulative Impacts.

For the purpose of traffic, transport and access, projects that will have a temporal overlap in construction or expansion activities and may result in traffic usage of the same road network as the Border to Gowrie Project are considered to have potential to result in cumulative impacts. Only 9 of the initial 23 projects identified meet these criteria. The projects considered applicable to the traffic and transport cumulative impact assessment are listed in Table 18.40.

TABLE 18.40 PROJECTS INCLUDED IN THE TRAFFIC AND TRANSPORT CUMULATIVE IMPACT ASSESSMENT

Projects	Location	Description	Construction dates
New Acland Coal Mine Stage 3	35 km northwest of Toowoomba 18 km north of the Project footprint	Expansion of the existing New Acland open-cut coal mine to up to 7.5 Mtpa	2019–TBC
Australia Pacific LNG Project	Walloons gas fields (approximately 20 km west of Millmerran) 13 km west of the Project footprint	Integrated liquefied natural gas (LNG) project. The Walloons gas fields, located to the west of the Project, supplies coal seam gas to support the LNG facility on Curtis Island.	Construction began 2011
InterLinkSQ	13 km west of Toowoomba Adjacent to south of the Project footprint	A 200-ha transport, logistics and business hub. Located on the narrow-gauge regional rail network and interstate network. Located at the junction of the Gore, Warrego and New England Highways.	2018–TBC
Asterion Medicinal Cannabis Project	Wellcamp, Queensland Adjoins the Project footprint 1 km south of Toowoomba–Cecil Plains Road	A high-tech medicinal cannabis cultivation, research and manufacturing facility. The project involves construction of a 40-ha glasshouse to produce 20,000 plants per day at full capacity. Medicinal-grade cannabis grown at the facility will be manufactured into a range of medicinal products, including single patient packs, cannabis oils, gels, salts and related products, destined solely for the medicinal market. This facility is anticipated to be the largest facility of its kind in the world.	2020–2021

Projects	Location	Description	Construction dates
Commodore Mine and Millmerran Power Station	Domville, Queensland The Project is aligned adjacent to potential future coal reserves for the mine	The Commodore Mine is an open-cut coal mine, which provides coal for the 850 MW Millmerran Power Station (Mininglink n.d.). The Millmerran Power Station is a coal-fired power station that supplies enough electricity to power approximately 1.1 million homes (Power Technology, 2018).	Operational, but subject to possible future expansion of footprint
Wyemo Piggery	Glenarbon, Queensland 8 km south of the Project footprint	Piggery with approval for 55,000 pig units	TBC
Goondiwindi Abattoir	Goondiwindi, Queensland 13 km north of the Project footprint	A new beef abattoir located on the outskirts of Goondiwindi with beef processing of up to 72,000 tonnes per year	TBC
North Star to Border (Inland Rail)	Rail alignment from North Star, NSW to the NSW/QLD border Adjoins the Project footprint to south	New 37 km rail corridor to connect North Star (NSW) to the Queensland Rail South West Rail Line just over the NSW/QLD border	2021–2024
Gowrie to Helidon (Inland Rail)	Rail alignment from Gowrie to Helidon, Queensland Adjoins the Project footprint to north	New 26 km dual-gauge track between Gowrie (northwest of Toowoomba) and Helidon (east of Toowoomba), extending through the LGAs of Toowoomba and Lockyer Valley. The Project includes a 6.38 km tunnel to create an efficient route through the steep terrain of the Toowoomba Range.	2021–2025

A qualitative cumulative impact assessment and associated results for traffic, transport and access is provided in Table 18.41.

TABLE 18.41 ASSESSMENT OF TRAFFIC AND TRANSPORT CUMULATIVE IMPACTS

Project	Potential cumulative impact	Aspect	Relevance factor	Sum of relevance factors	Impact significance	Comments and mitigation measures
New Acland Coal Mine Stage 3	Increase traffic volumes on local road network	Probability of the impact	Low (1)	5	Low	The potential for cumulative traffic impacts to arise due to New Acland Coal Mine Stage 3 is considered to be low due to the separation distance between the two projects (18 km north of the Project footprint). The potential for the Project to contribute to increased traffic volumes on the local road network will be managed through: ▸ Development and implementation of a RUMP and Traffic Management Sub-plan ▸ Consultation with DTMR and TRC through the detail design and construction phases of the Project to identify newly occurring issues and risks to the road network that will be used by Project traffic.
		Duration of the impact	Low (1)			
		Magnitude/intensity of the impact	Low (1)			
		Sensitivity of the receiving environment	Medium (2)			
Australia Pacific LNG Project	Increase traffic volumes on local road network	Probability of the impact	Low (1)	5	Low	The potential for cumulative traffic impacts to arise due to the Australia Pacific LNG Project is considered to be low due to the separation distance between the two projects (13 km north of the Project footprint). The potential for the Project to contribute to increased traffic volumes on the local road network will be managed through: ▸ Development and implementation of a RUMP and Traffic Management Sub-plan ▸ Consultation with DTMR and TRC through the detail design and construction phases of the Project to identify newly occurring issues and risks to the road network that will be used by Project traffic.
		Duration of the impact	Low (1)			
		Magnitude/intensity of the impact	Low (1)			
		Sensitivity of the receiving environment	Medium (2)			
InterLinkSQ	Increase traffic volumes on local road network	Probability of the impact	Medium (2)	8	Medium	Both projects are expected to be reliant on use of roads north of the Warrego Highway. The shared use of these roads could occur for a large portion of the construction period for the Project. The potential for the Project to contribute to increased traffic volumes on the local road network will be managed through: ▸ Development and implementation of a RUMP and Traffic Management Sub-plan ▸ Consultation with DTMR and TRC through the construction planning and construction phases of the Project to identify newly occurring issues and risks to the road network used by Project traffic
		Duration of the impact	Medium (2)			
		Magnitude/intensity of the impact	Medium (2)			
		Sensitivity of the receiving environment	Medium (2)			

Project	Potential cumulative impact	Aspect	Relevance factor	Sum of relevance factors	Impact significance	Comments and mitigation measures
InterLinkSQ (continued)	Increase traffic volumes on local road network (continued)					▸ Consultation with the developers and operators of InterLinkSQ throughout construction to understand the scheduling of activities for that Project and enable time periods where cumulative traffic impacts may arise to be identified ▸ Where new potential for cumulative impacts are identified through the construction period, additional mitigation measures will be developed in consultation with DTMR, TRC and InterLinkSQ and documented in the Traffic Management Sub-plan and RUMP, as appropriate.
Asterion Medicinal Cannabis Project	Increase traffic volumes on local road network	Probability of the impact	Medium (2)	6	Low	The potential for cumulative traffic impacts to arise due to the Asterion Medicinal Cannabis Project is considered to be low due to the short duration of overlap in construction time periods and the likely advanced status of construction of the Medicinal Cannabis Project by the time peak construction activities for the Project occur in the area. The potential for the Project to contribute to increased traffic volumes on the local road network will be managed through: ▸ Development and implementation of a RUMP and Traffic Management Sub-plan ▸ Consultation with DTMR and TRC through the detail design and construction phases of the Project to identify newly occurring issues and risks to the road network that will be used by Project traffic.
		Duration of the impact	Low (1)			
		Magnitude/intensity of the impact	Low (1)			
		Sensitivity of the receiving environment	Medium (2)			

Project	Potential cumulative impact	Aspect	Relevance factor	Sum of relevance factors	Impact significance	Comments and mitigation measures
Commodore Mine and Millmerran Power Station	Increase traffic volumes on local road network	Probability of the impact	High (3)	9	Medium	Both projects are expected to be reliant on use of Millmerran–Inglewood Road in the Millmerran and Clontarf areas. The shared use of this road could occur for a large portion of the construction period for the Project. The potential for the Project to contribute to increased traffic volumes on the local road network will be managed through: ▸ Development and implementation of a RUMP and Traffic Management Sub-plan ▸ Consultation with DTMR and TRC through the construction planning and construction phases of the Project to identify newly occurring issues and risks to the road network used by Project traffic ▸ Consultation with the operators of Commodore Mine, Intergen throughout construction to understand the scheduling of expansion activities for that Project and enable time periods where cumulative traffic impacts may arise to be identified ▸ Where new potential for cumulative impacts are identified through the construction period, additional mitigation measures will be developed in consultation with DTMR, TRC and Intergen and documented in the Traffic Management Sub-plan and RUMP, as appropriate.
		Duration of the impact	Medium (2)			
		Magnitude/intensity of the impact	Medium (2)			
		Sensitivity of the receiving environment	Medium (2)			
Wyemo Piggery	Increase traffic volumes on local road network	Probability of the impact	Low (1)	5	Low	The potential for cumulative traffic impacts to arise due to the Wyemo Piggery is considered to be low due to the separation distance between the two projects (8 km north of the Project footprint). The potential for the Project to contribute to increased traffic volumes on the local road network will be managed through: ▸ Development and implementation of a RUMP and Traffic Management Sub-plan ▸ Consultation with relevant road controlling authorities through the detail design and construction phases of the Project to identify newly occurring issues and risks to the road network that will be used by Project traffic.
		Duration of the impact	Low (1)			
		Magnitude/intensity of the impact	Low (1)			
		Sensitivity of the receiving environment	Medium (2)			

Project	Potential cumulative impact	Aspect	Relevance factor	Sum of relevance factors	Impact significance	Comments and mitigation measures
Goondiwindi Abattoir	Increase traffic volumes on local road network	Probability of the impact	Low (1)	6	Low	The potential for cumulative traffic impacts to arise due to the Goondiwindi Abattoir is considered to be low due to the separation distance between the two projects (13 km north of the Project footprint). The potential for the Project to contribute to increased traffic volumes on the local road network will be managed through: ▸ Development and implementation of a RUMP and Traffic Management Sub-plan ▸ Consultation with relevant road controlling authorities through the detail design and construction phases of the Project to identify newly occurring issues and risks to the road network that will be used by Project traffic.
		Duration of the impact	Medium (2)			
		Magnitude/intensity of the impact	Low (1)			
		Sensitivity of the receiving environment	Medium (2)			
North Star to Border (Inland Rail)	Increase traffic volumes on local road network	Probability of the impact	Medium (2)	8	Medium	There is potential for construction traffic for both projects to use roads on the Queensland side of the Macintyre River (e.g. Kildonan Road, Wondalli–Kurumbul Road). The potential for the Project to contribute to increased traffic volumes on the local road network will be managed through: ▸ Development and implementation of a RUMP and Traffic Management Sub-plan ▸ Consultation with road network asset managers through the construction planning and construction phases of the Project to identify newly occurring issues and risks to the road network used by Project traffic ▸ Subject to construction contract arrangements, investigate opportunities to nominate laydown locations that can be shared between this project and the Border to Gowrie Project. This would enable optimisation of the number of delivery movements and routes to/from the construction sites for both projects.
		Duration of the impact	Medium (2)			
		Magnitude/intensity of the impact	Medium (2)			
		Sensitivity of the receiving environment	Medium (2)			

Project	Potential cumulative impact	Aspect	Relevance factor	Sum of relevance factors	Impact significance	Comments and mitigation measures
Gowrie to Helidon (Inland Rail)	Increase traffic volumes on local road network	Probability of the impact	Medium (2)	8	Medium	Both projects are expected to be reliant on use of roads north of the Warrego Highway. The shared use of these roads could occur for a large portion of the construction period for the Project. The potential for the Project to contribute to increased traffic volumes on the local road network will be managed through: ▸ Development and implementation of a RUMP and Traffic Management Sub-plan ▸ Consultation with DTMR and TRC through the construction planning and construction phases of the Project to identify newly occurring issues and risks to the road network used by Project traffic ▸ Subject to construction contract arrangements, investigate opportunities to nominate laydown locations that can be shared between this project and the Border to Gowrie Project. This would enable optimisation of the number of delivery movements and routes to/from the construction sites for both projects.
		Duration of the impact	Medium (2)			
		Magnitude/intensity of the impact	Medium (2)			
		Sensitivity of the receiving environment	Medium (2)			

Table notes:
Relevance factors between 1 and 3 were determined using professional judgement to select most appropriate relevance factor for each aspect and summing the relevance factors.
Sum of relevant factors definition:

- Low (1–6): Negative impacts need to be managed by standard environmental management practices. Monitoring to be part of general project monitoring program.
- Medium (7–9): Mitigation measure likely to be necessary and specific management practices to be applied. Targeted monitoring program required, where appropriate.
- High (10–12): Alternative actions should be considered and/or mitigation measures applied to demonstrate improvement. Targeted monitoring program necessary, where appropriate.

18.10 Conclusions

This traffic and transport assessment has been prepared to address Section 11.107 to 11.116 of the ToR. In doing so, the assessment has evaluated a comprehensive range of issues encompassing potential impacts of the construction and operation phases of the Project on the surrounding transport infrastructure and its users. The chapter has also examined the potential traffic and pavement impacts from the movement of materials, workforce and equipment during the construction phase of the Project on the surrounding road network.

Key findings of this assessment are as follows:

- The reference design for the Project interfaces with seven State-controlled roads in nine locations. Nine State-controlled roads are expected to experience construction traffic that exceeds 5 per cent of the background traffic.
- Sixty-nine local government roads have been identified that are expected to experience construction traffic that exceeds 5 per cent of the background traffic. Twenty-five of these roads are in the GRC LGA and 38 of these roads are in the TRC LGA. Impacts to many of these roads are expected to be minimal as the high percentage of construction traffic is a function of low existing traffic volumes.
- The results of the LOS comparison between the 'with' and 'without' Project scenarios indicate that the Project may potentially cause a minor change in LOS for some road sections during each year of construction. Based on the LOS comparison, it is not expected that the Project would generate the need to upgrade the road network for such a short duration of impact, but adequate traffic and road-use management strategies and mitigation measures would be required. The specific traffic and road-use management strategies will be subject to agreement with relevant local governments.
- Intersection analysis has identified 26 locations where the addition of construction traffic warrants additional turning treatments to be applied in order to maintain operational safety. These upgrades are required only temporarily for construction traffic; therefore, discussions will be required with DTMR and local governments during the Project design phase to determine the permanence of such upgrades. Given the short duration of construction-related traffic, traffic management strategies may be introduced as an alternative to more permanent treatments in order to mitigate construction-related traffic impacts at intersections.
- The findings of the pavement impact assessment show that several State-controlled roads are likely to cross the 5 per cent SAR threshold, with several road segments exceeding this threshold by a significant margin. This analysis assumes fully loaded vehicles moving in each direction, which is conservative to ensure no underestimation of pavement impacts. Further road-specific analysis, presented in Appendix X: Traffic Impact Assessment, indicates that the State-controlled road segments located in Queensland and NSW would have a minimal pavement impact given the duration of construction activities and pavement loading. Detailed pavement design life assessments will be carried out prior to the commencement of construction, in consultation with DTMR, once specific construction routes are agreed in the next phase of the Project. Further detailed assessment will assist in identifying if contributions may be required towards the maintenance costs for the affected road sections as a result of additional pavement loading.
- Seventeen cycle routes are identified in Queensland and NSW that might be impacted by construction traffic. Some of the proposed construction routes are aligned through areas of moderate to high pedestrian activity through the areas surrounding the towns of Yelarbon, Inglewood, Millmerran, Brookstead, Pittsworth and Toowoomba. While increased heavy vehicle movements through these locations may adversely impact pedestrian movements, the majority of these routes currently facilitate a high proportion of heavy vehicle movements.
- Eleven public transport services in Queensland and NSW have been identified with routes that are proposed to be used, in part, by construction traffic for the Project. None of the 11 public transport routes traverse, or are in proximity to, the Project footprint. The closest route to the Project is for the Ipswich to Toogoolawah (529) route, approximately 70 km to the east of the Project at its closest point. While roads used by the 11 identified services may be used by construction vehicles, the roads will not require temporary traffic controls. Therefore, driving conditions on roads used by public transport services will remain unchanged.
- One hundred and eighty-four (184) existing school bus services share elements of proposed construction routes for the Project. Eleven of these bus services have upgraded or new road–rail intersections included in the reference design for the Project. These services may experience longer journey times due to temporary traffic control measures, temporary or permanent road realignments and wait times at level crossings. Construction traffic on known school bus routes will be restricted to only essential movements during pick-up and set-down times on school days.

- Eleven existing long-distance coach services share elements of proposed construction routes for the Project; however, the impacts on these long-distance coach services are expected to be minimal due to the low frequency of the services
- The reference design for the Project interfaces with the State stock route network in 12 locations. The reference design for the Project has, in all instances, maintained access stock route users. This has been provided through either:
  - The provision of a crossing point of the rail alignment in the location of the existing stock route
  - The provision of an alternative means of moving stock.
- In relation to rail operational traffic and maintenance processes, rail operational traffic volumes are likely to be negligible with no envisaged impact to operational conditions of the surrounding road networks.

The reference design has been developed in parallel with the draft EIS to avoid the occurrence of impacts to transport infrastructure and traffic. Where avoidance has not been possible, design development has sought to minimise the likelihood and/or consequence of these impacts, as far as possible. Responses of the reference design to potential traffic and transport issues have been detailed in Section 18.7.1.

Where potential impacts to traffic and transport have not been fully avoided or mitigated through the reference design, additional mitigation measures have been nominated for implementation in future phases of the Project. These proposed mitigation measures have been detailed in Section 18.7.2.

A risk assessment of potential impacts, both without (initial risk) and with the application of proposed mitigation measures (residual risk), has been undertaken (refer Section 18.8). This assessment concluded that road network and access safety are expected to have a 'medium' residual risk rating following the implementation of all mitigation measures. This level of residual risk is largely attributed to the external human factors that contribute to road network and access safety that cannot be completely controlled by measures implemented by the Project. All other assessed risks have a residual risk rating of 'low'.

All potential impacts to traffic and transport infrastructure will be managed through adherence to the Outline EMP (Chapter 22: Outline Environmental Management Plan), including the Traffic Management Sub-plan and RUMP.