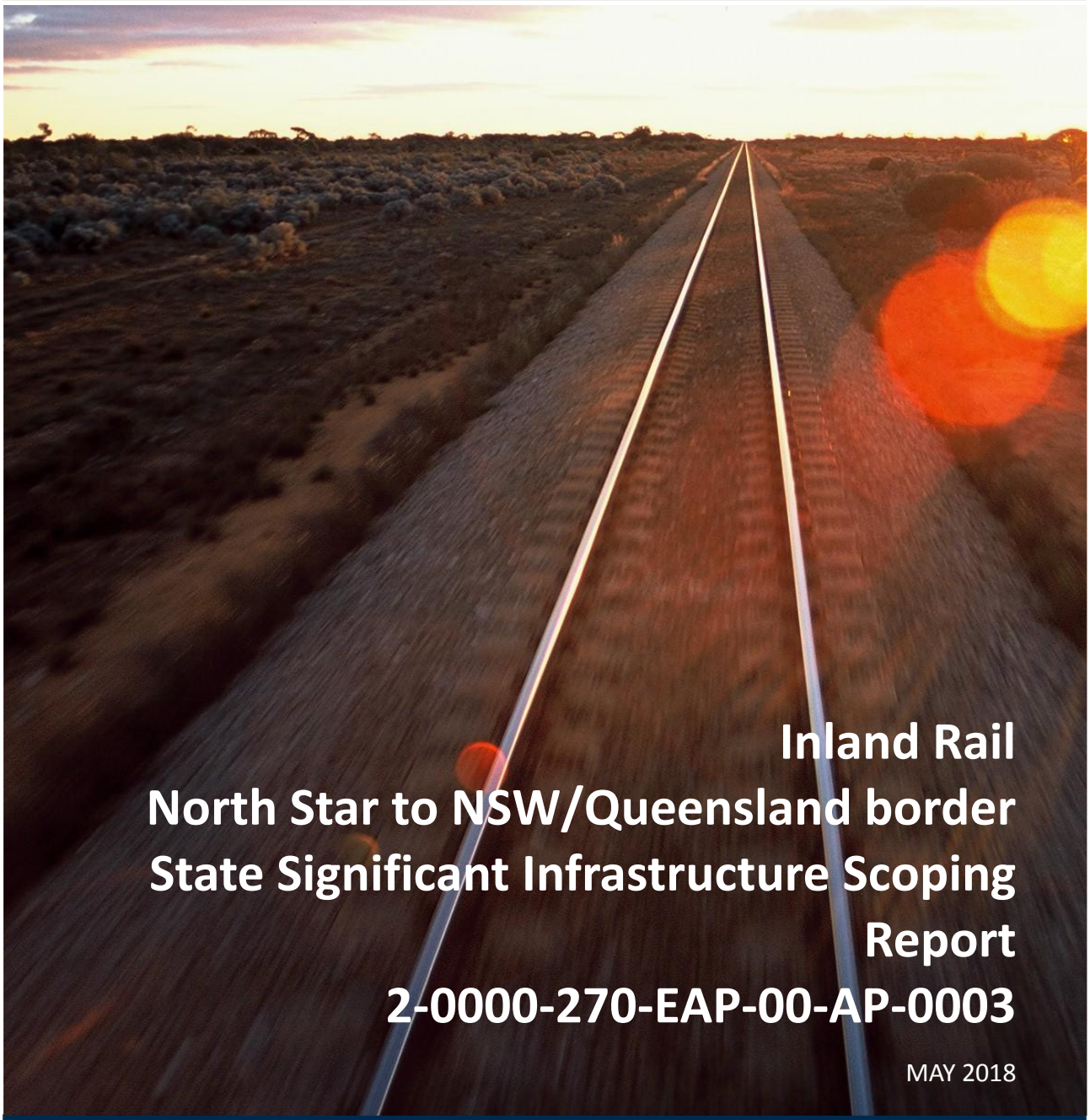
ARTC InlandRail

The Australian Government's priority freight rail project



Inland Rail
North Star to NSW/Queensland border State Significant Infrastructure Scoping Report
2-0000-270-EAP-00-AP-0003

MAY 2018

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GLOSSARY OF TERMS

TERM	DEFINITION
Culvert	A small channel, pipe or drain that allows water to pass under a road/rail line
Cutting	A form of deep excavation in soil or rock
Crossing loop	A separate section of track that is used to allow one train to safely pass another
Embankment	A structure where the rail line is above the natural surface
Emission	A substance discharged into the air
Freight	Goods transported in bulk by truck, train, ship or aircraft
Inland Rail programme (Inland Rail)	The Inland Rail programme encompasses the construction and operation of a new inland rail connection between Melbourne and Brisbane, via Wagga, Parkes, Moree, and Toowoomba. The route for Inland Rail is approximately 1,700 kilometres in length. Inland Rail will involve a combination of upgrades of existing rail track and the provision of new track.
Level crossing	A place where rail lines and a road cross at the same grade (or elevation).
Proposal	The construction and operation of the North Star to NSW/Queensland border section of Inland Rail
Proposal site	The area that would be directly affected by construction works (also known as the construction footprint). It includes the location of proposal infrastructure, the area that would be directly disturbed by the movement of construction plant and machinery, and the location of construction compounds, storage areas and other ancillary facilities that would be used to construct that infrastructure.
Rail infrastructure	Infrastructure required for the operation of a rail network, which includes tracks, wiring, signalling, stations etc.
Rail sidings	A short stretch of railroad track used to store rolling stock or enable trains on the same line to pass, or to enable the loading or unloading of freight trains
Signalling	Rail traffic lights and operational signage to allow for the safe operation of trains
Turn outs	A mechanical installation that enables railway trains to be guided from one track to another
Wheel squeal	A screeching train-track friction sound, most commonly occurring on sharp curves or as a result of heavy braking

LIST OF ABBREVIATIONS

TERM	DEFINITION
AHIMS	Aboriginal Heritage Information Management System
ARTC	Australian Rail Track Corporation
BC Act	NSW *Biodiversity Conservation Act 2016*
EEC	Endangered ecological community
EIS	Environmental impact statement
EPA	NSW Environment Protection Authority
EP&A Act	(NSW) *Environmental Planning and Assessment Act 1979*
EP&A Regulation	(NSW) *Environmental Planning and Assessment Regulation 2000*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
Infrastructure SEPP	State Environmental Planning Policy (Infrastructure) 2007
IRIG	Inland Rail Implementation Group
LEP	Local environmental plan
LGA	Local government area
NPW Act	(NSW) *National Parks and Wildlife Act 1974*
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
POEO Act	(NSW) *Protection of the Environment Operations Act 1997*
Roads Act	(NSW) *Roads Act 1993*
SEAR	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSI	State significant infrastructure

1. INTRODUCTION

1.1. Background

The Australian Government has committed to delivering the Inland Rail Programme which is designed to deliver freight rail services over a distance of 1700 kilometres (km) between Melbourne and Brisbane, via central-west New South Wales (NSW) and Toowoomba in Queensland.

The Inland Rail Programme consists of 13 separate projects, to be delivered over a period of several years (currently anticipated to be about 10 years). Each of these projects (and, in some cases as appropriate, separate work sites within a project) will be subject to an assessment and, if required, approval under the relevant planning or project laws in the relevant jurisdictions. Each assessment will also take into account its part in the Inland Rail programme.

Inland Rail is a major nation-building programme that will enhance Australia's existing national rail network and serve the interstate freight market.

This Project which this application refers to extends from the township of North Star in NSW and tie back into the existing operational narrow gauge railway of Queensland Rail's South Western Line near Yelarbon, Queensland. The delivery model for this project therefore includes a 7km extension north of the NSW/Queensland border however for the purposes of obtaining necessary approvals in relation to State statutory boundaries, this northern 7 kilometres will be considered as part of a separate approval. As such, Australian Rail Track Corporation Ltd (ARTC) ('the proponent') is seeking approval to construct and operate the North Star to NSW/Queensland border section of Inland Rail (the proposed action). The proposed action involves approximately 30 km in length of single track standard gauge railway. This includes 25 km of upgrade to existing rail line between North Star and Whalan Creek and five km of new track which will run from north of Whalan Creek to the NSW/Queensland border. The proposed action will also include installation of new culverts, bridges, a crossing loop, turnouts, road/level crossings as well as other ancillary facilities and construction works.

Investigations, surveys, tests and sampling (including, for example, related drilling and excavations), for any purposes, including (for example) geotechnical, biodiversity, heritage, contamination and utilities and services investigations, where the investigations, surveys, tests and sampling are in connection with assessment or detailed design for the project is excluded from this application.

The boundary between NSW and Queensland is defined by the Border Rivers, which is the median line of the Dumaresq, Macintyre and Barwon Rivers. The median line or middle thread of the river is defined as halfway between the banks of the river.

This proposal requires approval from the NSW Minister for Planning under Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This document supports an application to the Department of Planning and Environment seeking the Secretary's Environmental Assessment Requirements (SEARs) for the Environmental Impact Statement (EIS), as part of the first step in the approvals process for the proposal.

1.2. Overview of the proposal

The North Star to NSW/Queensland border section of Inland Rail is approximately 30 kilometres in length, comprising 25 kilometres of upgrade to existing track between North Star and Whalan Creek and five kilometres of new track which would run from north of Whalan Creek to the NSW/Queensland border. The proposal passes through agricultural land and rural properties of northern NSW and presents the opportunity to reduce the level of interaction

between the rail line and existing road crossings to improve safety and operational outcomes. Further refinement of the track from north of Whalan Creek to the NSW/Queensland border would be required due to potential flooding constraints associated with crossing the Macintyre River and potential property severance issues. The proposal site therefore includes a broad corridor at the border to allow for an optimal alignment to be further refined during the design process, as shown in Figure 1.1.

The boundary between NSW and Queensland is defined by the Border Rivers, which is the median line of the Dumaresq, Macintyre and Barwon Rivers. The median line or middle thread of the river is defined as halfway between the banks of the river.

The land requirement for the proposal would comprise the existing corridor with an average width of 50 metres, with some variation to accommodate particular infrastructure and to cater for local topography. The corridor would be of sufficient width to accommodate the infrastructure currently proposed for construction, as well as future expansion, including possible future requirement for 3,600 metre trains.

Proposal construction would be a single-track standard gauge railway, with crossing loops to accommodate double stacked freight trains up to 1,800 metres long. Components of the construction would include infrastructure to accommodate possible future augmentation and upgrades of the track, including a possible future requirement for 3,600 metre trains. Clearing of the corridor would occur to allow for construction and to maintain the safe operation of the railway.

The operational phase would be of a single track with crossing loops to accommodate double stacked freight trains up to 1,800 metres long. Impact assessment will be undertaken for rail traffic and associated activities projected at the year 2040. Inland Rail train specifications and operation of the proposal is described in section 5.

1.2.1. Key features

The key features of the proposal, as presently designed, are included below and are subject to further design and refinement:

- Upgrading approximately 25 kilometres of existing rail line.
- Construction of about five kilometres of new, single-track, standard gauge railway.
- Installation of around 30 new culverts and 15 new bridges (including 1 large bridge across the Macintyre River).
- One grade separation of Bruxner Way and the rail line.
- One crossing loop.

Around 23 level crossing locationsAncillary works would include signalling and communications, signage, fencing, services and utilities. The construction and operation of the proposal would also require the following works:

- Construction access roads and access tracks.
- Permanent and temporary changes to the road network.
- Construction compounds, storage areas and potentially borrow pits (subject to further analysis of material availability).

In addition to the above proposal features and subject to further feasibility analysis and design definition, the following may form part of the project scope and, if so, would be assessed in the EIS:

- Mobile Batch plant/s.
- Borrow pits.
- Camp accommodation for construction workers.
- Construction water supply and storage.

- Substantial environmental impact mitigation measures.
- Rail sidings.

Investigations, surveys, tests and sampling (including, for example, related drilling and excavations), for any purposes, including (for example) geotechnical, biodiversity, heritage, contamination and utilities and services investigations, where the investigations, surveys, tests and sampling are in connection with assessment or detailed design for the project is excluded from this application.

1.2.2. Timing and program

Construction is anticipated to commence in mid-2021 and is expected to take about 24 months to construct.

1.2.3. Operation

The North Star to NSW/Queensland border section is expected to have an average weekly demand of up to 79 trains per week (2025) with a peak demand of 140 (2040). The new rail line would be a faster, more efficient route that bypasses the Sydney rail network and would enable the use of double stacked trains along its entire length.

Trains would operate 24 hours per day and would be up to 1,800m in length; carry double stacked containers; and require a clearance of 7.1 metres.

1.2.4. Capital investment value

The estimated capital investment of the proposal is estimated to be in excess $50 million. Costing is to be finalised during the detailed design stage.

1.3. The proponent and future operator

1.3.1. The proponent

Australian Rail Track Corporation Ltd (ARTC) is the proponent of the proposal and has been tasked with developing a program to deliver Inland Rail, under the guidance of the Department of Infrastructure and Regional Development. ARTC was created after the Australian and state governments agreed in 1997 to the formation of a 'one stop shop' for all operators seeking access to the national interstate rail network. Across its network, ARTC is responsible for:

- Selling access to train operators.
- Development of new business.
- Capital investment in the corridors.
- Management of the network.
- Infrastructure maintenance.

Further information on ARTC can be found at http://www.artc.com.au.

1.3.2. Future operator

The proposal would form part of the rail network managed and maintained by ARTC. ARTC does not operate trains. Train services would be provided by a variety of operators.

1.4. Purpose and structure of the report

This document contains a preliminary assessment of the proposal and its likely environmental impacts to support the preparation of the Secretary's environmental assessment requirements (SEARs) under section 5.16 of the EP&A Act.

The SEARs will be prepared by the Secretary of the NSW Department of Planning and Environment (DP&E) in consultation with other relevant government agencies.

The structure of the report is as follows:

Section 1 – Introduction: outlines the key elements of the proposal, and the purpose of this report.

Section 2 – Strategic context and justification: outline of why the proposal is required and alternatives considered.

Section 3 – Site description: overview of the regional context of the proposal site.

Section 4 – Planning and assessment process: outline of the statutory approvals framework for the proposal, including applicable legislation and planning policies.

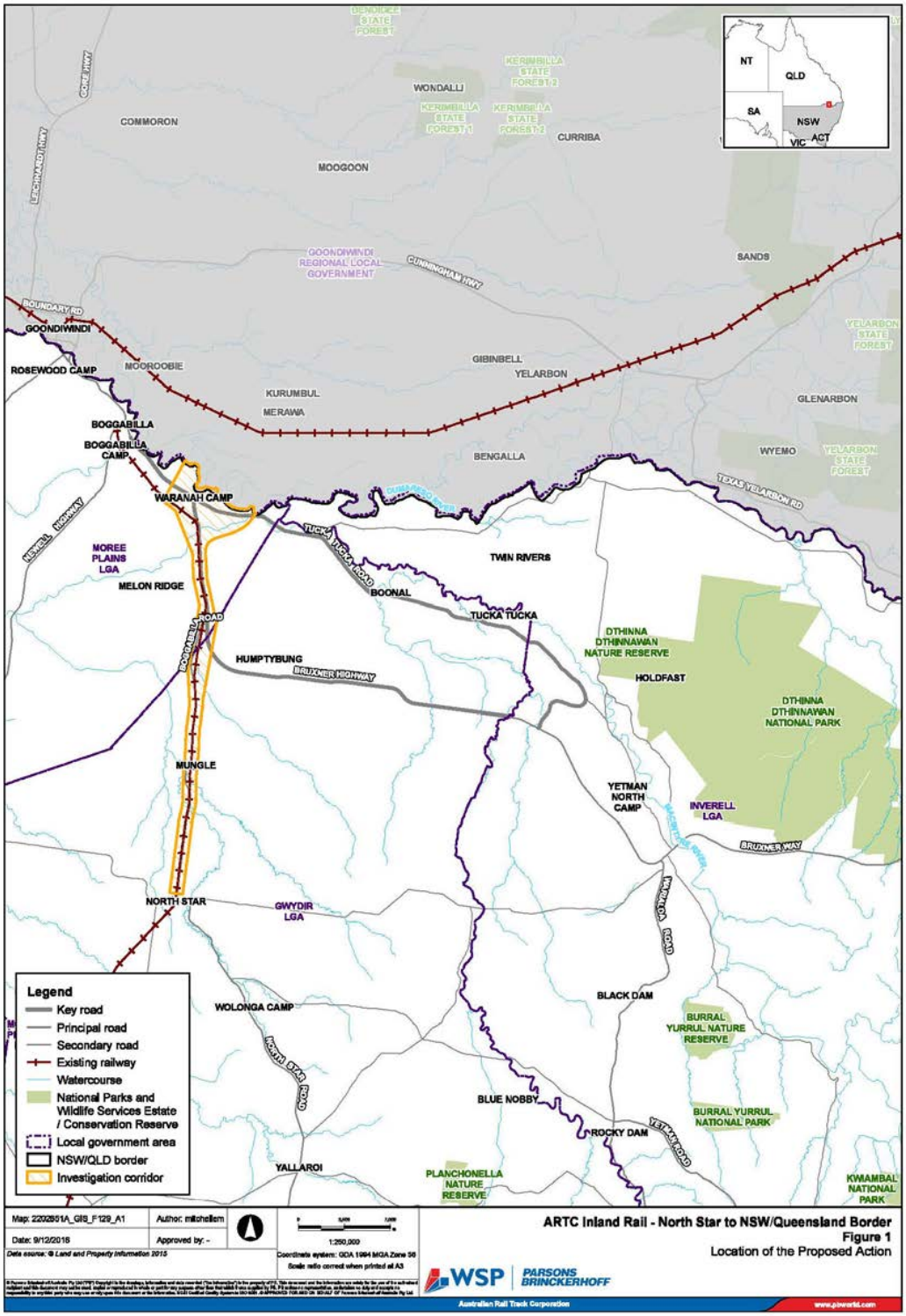
Section 5 – The proposal: outlines the scope of works, timeframe and likely activities involved with the proposal.

Section 6 – Environmental constraints: preliminary assessment of the potential impacts of the proposal on the environment.

Section 7 – Consultation: includes consultation undertaken to date and what is proposed during the preparation of the EIS.

Section 8 – Conclusion: outlines the conclusions of the document and the next steps in the process.

Figure 1.1 Location of the proposal



2. STRATEGIC CONTEXT AND JUSTIFICATION

2.1. Existing rail infrastructure

At present, the only north–south rail corridor in eastern Australia runs from Melbourne to Albury, then through Sydney and to Brisbane, generally along the coast. The concept of an inland railway from Melbourne to Brisbane has been subject to significant analysis due to a number of challenges facing freight transport infrastructure in eastern Australia, including:

- The existing north–south coastal route will reach capacity in the medium term, and additional capacity will be required to service future rail freight demand for interstate and regional freight.
- Rail efficiency and service quality is currently impacting on freight productivity, resulting in higher freight transport costs for consumers.
- Road freight transport has a competitive advantage over rail, making it difficult for rail to increase its market share, with resultant potential for safety, congestion and environmental costs as a result of increased heavy vehicles on roads.
- Rail paths on the coastal route through Sydney are shared between passenger and freight trains, impacting on the reliability of the rail freight supply chain and constraining opportunities for expansion of passenger services.

2.2. Inland Rail development history and options considered

Two major studies have been undertaken in relation to the development of an inland rail route between Melbourne and Brisbane. The first study, completed in 2006, considered potential corridors for the rail line to determine which route would deliver the best economic and financial outcome. This study identified that a 'far western corridor' through Parkes would be the best option.

The second study, the Melbourne–Brisbane Inland Rail Alignment Study (ARTC, 2010) (see below), examined the far western corridor in detail. The current Inland Rail alignment is shown in Figure 2.1.

2.2.1. Melbourne–Brisbane Inland Rail Alignment Study

The commencement of the Melbourne–Brisbane Inland Rail Alignment Study process ('the 2010 Inland Rail Alignment Study') was announced by the then Minister for Infrastructure, Transport, Regional Development and Local Government in March 2008. The stated purpose of the study was to determine the optimum alignment, economic benefits and likely commercial success of a new single track dual-gauge inland railway between Melbourne and Brisbane. The study short-listed and analysed a number of route options, and the final report (released by ARTC in July 2010) identified that the proposed alignment:

'Comprises a 1,731 kilometre long alignment between Melbourne and Brisbane:

- Melbourne to Parkes – 670 kilometres of existing Class 1 track and 37 kilometres of greenfield track from Illabo to Stockinbingal bypassing Cootamundra and the Bethungra Spiral.
- Parkes to North Star – 307 kilometres of upgraded track and 291 kilometres of greenfield track from Narromine to Narrabri.
- North Star to Acacia Ridge – 271 kilometres of greenfield construction, 119 kilometres of existing track upgraded from narrow gauge to standard gauge and 36 kilometres of the existing coastal route.'

The conclusions of the study include:

- There is demand for an inland railway.
- The route for the inland railway would be more than 100 kilometres shorter than the existing coastal route.
- The preferred alignment could achieve an average Melbourne to Brisbane transit time (terminal to terminal) of less than 24 hours.
- The inland railway would free up rail and road capacity through Sydney.
- The inland railway would achieve a positive economic net present value between 2030 and 2035, and if demand volumes grow more strongly than forecast, viability could be reached sooner.

2.2.2. Work undertaken to date

In November 2013, the Minister for Infrastructure and Regional Development announced that the Australian Government had committed $300 million to enable the development of Inland Rail to commence. This process began with pre-construction activities such as detailed corridor planning, environmental assessments and community consultation. This funding was subsequently confirmed in the 2014–15 Commonwealth Budget paper entitled Building Australia's Infrastructure.

In 2015, ARTC produced a strategic Programme Business Case to demonstrate the viability, benefits, costs and risks associated with Inland Rail to the Australian Government for endorsement and for further approval to proceed with the delivery of the Inland Rail programme.

In conjunction with the Programme Business Case, a report prepared by the Inland Rail Implementation Group (IRIG) in 2015 recommended some variations to the corridor from that previously recommended in the 2010 Inland Rail Alignment Study. The report supported the development of Inland Rail and recommended that the Australian Government commit further funding in the 2016-17 Budget for the project.

The Australian Government has committed a total of $9.3 billion to deliver Inland Rail.

2.3. Strategic planning context

The proposal sits under a number of State and Commonwealth strategic planning documents. These include:

- National Freight Strategy, Commonwealth of Australia, 2012.
- NSW Making It Happen 2015.
- NSW Long Term Transport Master Plan, Transport for NSW, 2012.
- NSW Freight and Ports Strategy, 2013.
- Rebuilding NSW – State Infrastructure Strategy, 2014.
- New England North West Regional Transport Plan, Transport for NSW, 2013 and 2014-15 update.
- Australian Infrastructure Audit – Our Infrastructure Challenges, Infrastructure Australia, 2015.

The EIS will provide further information on relevant strategies and the relationship to the proposal.

2.4. Need for Inland Rail

Freight transport is an essential part of Australia's economic prosperity and competitiveness and a crucial part of many Australian businesses. Freight transport in Australia has quadrupled in the last four decades and is predicted continue to increase to nearly double the 2010 levels by 2030 (National Land Freight Strategy, Commonwealth of Australia, 2012). This growth presents a number of challenges but also opportunities for government, industry and the community.

The 2010 Inland Rail Alignment Study, which was prepared to determine the optimum alignment and economic benefits of the Inland Rail project, identified that there is demand for an inland railway and that such a railway would achieve a positive economic net present value between 2030 and 2035.

The 2010 Inland Rail Alignment Study and the *National Land Freight Strategy* also identify a number of constraints that face the current rail line and road freight system, including:

- The Sydney-Brisbane route is anticipated to reach capacity by 2052.
- Rail efficiency and service quality is inadequate and passing on higher costs to consumers.
- Inadequate rail services are also encouraging a shift to road freight causing increased congestion, maintenance and environmental issues for roads and highway.
- Priority is given to passenger modes over freight modes in urban transport corridors, adding to delays in freight rail movements.

These constraints on the current infrastructure coupled with the forecast increasing demand for freight transport indicate a clear need for the proposal to provide adequate and efficient freight transport across the east Australian states.

2.5. Need for the proposal

The proposal utilises the existing, non-operational Boggabilla rail line and creates a new link north of Whalan Creek to the border to provide improved travel times, reduce the distance travelled and increases the load of the existing rail line to meet the Inland Rail train specifications (refer to section 5.1.1). The improved travel times and reduced distance travelled for this section of track assists the Inland Rail programme in achieving an average Melbourne to Brisbane transit time (terminal to terminal) of less than 24 hours.

Furthermore, the 2015 IRIG report named the North Star to NSW/Queensland border alignment as one of the key missing-link projects in NSW for the successful implementation of Inland Rail.

2.6. Key benefits of Inland Rail

Inland Rail would complete a significant section of the national inland rail freight network between Melbourne and Brisbane. By providing a shorter interstate route for freight that does not include travel through the congested Sydney rail network, Inland Rail would save up to 10 hours of travel time between Melbourne and Brisbane.

Trains travelling on this new, more direct route would travel at speeds up to 115 kilometres per hour, and would use significantly less fuel. Furthermore, carbon emissions would be reduced by 750,000 tonnes which is a third of that used for road freight. As a result, Inland Rail would offer a road-competitive freight service that would attract existing and new freight to rail, providing an efficient and sustainable alternative to road transport. By reducing train operating costs and improving service standards, Inland Rail would be an important contributor to national productivity.

It is estimated that, by 2050, Inland Rail would remove 200,000 truck movements from roads each year. The reduction in trucks using the interstate road network would improve road safety, ease congestion and assist local councils through reduced local road maintenance requirements. In addition, by providing a second rail link between Queensland and the southern states, Inland Rail would provide additional resilience and redundancy for the existing rail network.

In summary, Inland Rail would provide the following key benefits:

- Reduction in travel time between Melbourne and Brisbane by up to 10 hours.
- A faster, cheaper, safer, less carbon intensive and more environmentally sustainable alternative to road freight.

- Provision of capacity to meet increasing freight demand.
- Creation of carryover benefits, including cost and time savings, to businesses and consumers that rely on freight.
- Creation and growth of businesses.
- Improvements to road safety, reduced road maintenance costs and reduced congestion through reduction of road freight on interstate highways.
- Creation of redundancy for the existing rail line.

2.7. Key benefits of the proposal

The key benefits associated with the North Star to NSW/Queensland border section of Inland Rail include:

- Improved travel times and reduction in distance travelled.
- Increasing the load that the existing rail line can support by upgrading to Inland Rail train specifications.
- Upgrade or renewal of the existing level crossings on the Boggabilla line.
- Completion of a missing link of rail between northern NSW and southern Queensland,

all of which directly support the benefits outlined in section 2.6 for the proposal itself and for Inland Rail more broadly.

2.8. Options considered

The North Star to NSW/Queensland border project involves developing a direct route between North Star in NSW to the border, to ultimately provide a connection to Yelarbon in Queensland. The section in Queensland is considered in a separate proposal (NSW/Queensland border to Gowrie) and will be subject to planning approval under Queensland and, if required, Commonwealth legislation.

During early alignment identification, undertaken as part of the 2010 Inland Rail Alignment Study, ARTC developed a Base Case option, which heads in a north easterly direction from North Star. This option was chosen in favour of the existing out of use rail line to Boggabilla as desktop studies suggested it was a more direct route to Yelarbon that avoided the designated floodplain area and the need for complicated river crossings. However, early engagement with key stakeholders in 2015, identified the need to further investigate other options and reconsider utilising the existing rail line.

In 2015, ARTC completed an Alignment Refinement and Assessment Report. This assessment reviewed four options between North Star and Yelarbon, including the Base Case. From this assessment two options were selected to take forward for further assessment and evaluation which are summarised below.

Subsequently, the northern project limit was changed from Yelarbon back to the interface with Queensland Rail South Western System corridor, approximately six kilometres north of the Macintyre River crossing.

Eastern Option

The 2010 Base Case was refined to further avoid sensitive areas such as the Dthinna Dthinnawan National Park and Nature Reserve and impacts on other land uses. In addition, the alignment was moved to areas that reduce the need for fill, reduce property severance and remove reversing curves. This refined rail line would be approximately 65 kilometres in length.

Western Option

This option would use the existing rail line from North Star to Whalan Creek where a new track would be constructed tying into the existing, in-use narrow gauge line west of Yelarbon. This section would be 73 kilometres in length,

including 38 kilometres of new track. The western option was established during stakeholder consultation as the preferred alignment due to the avoidance of sensitive undisturbed areas and severance issues at several properties.

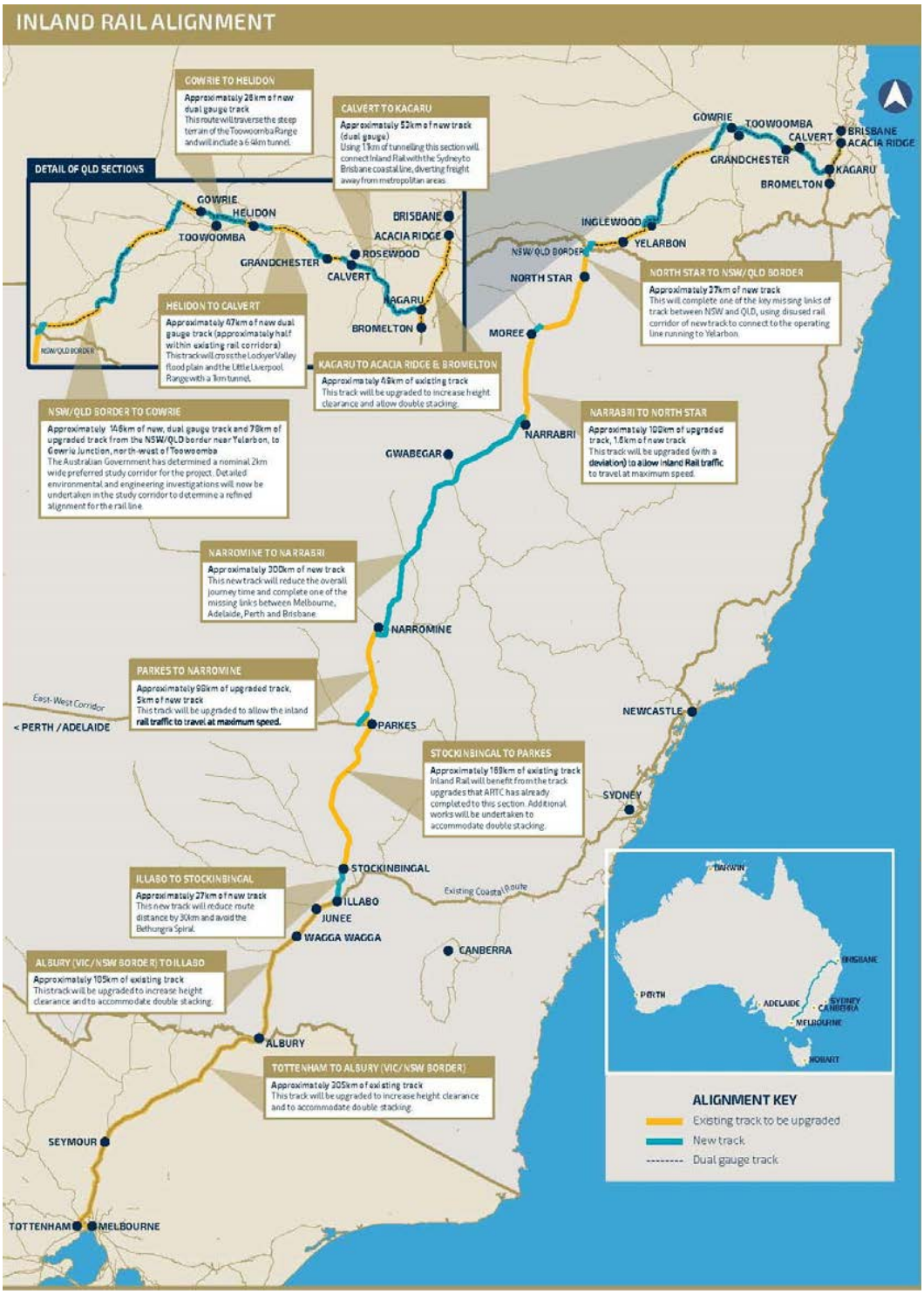
In mid-late 2016 further flooding, engineering, environmental investigations (including additional field surveys) and community consultation were undertaken on the preferred option. The information obtained during consultation activities, field surveys and desktop studies fed into another alignment selection process. The MCA included various environmental and engineering constraints as well as factoring in community concerns raised in consultation and property impacts. The MCA considered the eastern and western options. Based on the outcomes of the MCA, the western option scored higher for its reduced impact on the environment, property severance and its positive community support.

In May 2017, building on community input and stakeholder feedback, six sub-options were developed, investigated and assessed. Through this targeted assessment, it was determined that the preferred sub-option would deviate from the existing non-operational Boggabilla rail line at the southern side of Whalan Creek Bridge and would branch out to the eastern side of the original Western Option, thus reducing the length of the proposed alignment from 73 kilometres to the current proposal which is 30 km within the state of NSW.

Further refinement of the track from north of Whalan Creek to the NSW/Queensland border and tie in works to the South Western System line will be required due to potential flooding constraints of the crossing at the Macintyre River and potential property severance issues. The proposal site has therefore been widened at the border to allow for an optimal alignment to be further refined in the design process (refer to Figure 2.1).

Accordingly, the preferred option is the western option, refined as outlined above.

Figure 2.1 Inland Rail alignment



3. SITE DESCRIPTION

This section provides a description of the proposal site and its regional context within central NSW (refer to section 3.2 and 3.1). The existing rail infrastructure and its operation is described in section 3.4.

3.1. Regional context

The proposal site is located in northern NSW between North Star and the NSW/Queensland border. The proposal crosses two local government areas (LGAs), Gwydir and Moree Plains (refer to Figure 3.1). The land through the LGAs is predominantly rural land used for agriculture and grazing. The proposal crosses major roads and rivers such as the Bruxner Way, Tucka-Tucka Road and the Macintyre and Dumaresq River. Approximately 13 kilometres of the proposal runs parallel to the Bruxner Way between the intersection of Boggabilla Road and Tucka-Tucka Road in Boggabilla.

North Star is located at the southern end of the proposal site, approximately 45 kilometres south of Goondiwindi and 18 kilometres east from the Newell Highway. The NSW/Queensland border is located approximately 30 kilometres to the north of the town. At the 2016 census, the North Star area had a population of 230 people.

The major towns surrounding these locations are:

- Goondiwindi on the border of NSW and Queensland.
- Inglewood 40 kilometres north east of Yelarbon in Queensland.
- Boggabilla 9 kilometres south east of Goondiwindi and Moree, 80 kilometres south-west of North Star.
- Yelarbon in Queensland located 7 kilometres north of the NSW/Queensland border, 45 kilometres east of Goondiwindi.

3.2. Description of the proposal site

The proposal would create a link from North Star, at the southern end of the proposal, to the NSW/Queensland border, at the northern end of the proposal. The proposal would utilise the existing rail line at North Star and travel north where new track would be constructed north of Whalan Creek and continue to the NSW/ Queensland border.

Further refinement of the track from north of Whalan Creek to the NSW/Queensland border and tie in works to the South Western System line would be required due to potential flooding constraints of the crossing at the Macintyre River and potential property severance issues. The proposal site has therefore been widened at the border to allow for an optimal alignment to be further refined during the design process.

The land between the towns is predominantly disturbed rural land and crosses a number of local and private roads, creeks and privately owned properties. The proposal would also intersect the Bruxner Way approximately one kilometre south of the NSW/Queensland border. The work would commence approximately 500 metres north of North Star and continue to the NSW/Queensland border (refer to Figure 1.1). There are no major towns located along the proposal site between North Star and NSW/Queensland border.

3.3. Land ownership

The existing, non-operational Boggabilla line is owned by the NSW Government however the remainder of the proposal would comprise work on privately owned land. Full or partial acquisition of properties would be required in order to construct and operate the rail line.

3.4. Existing rail facilities

3.4.1. Overview

The existing rail network in the area includes the disused Boggabilla line located north-west of the proposal and the South Western System line located north-east of the proposal in Queensland. Figure 3.1 shows the existing railway lines surrounding the proposal.

3.4.2. Branches

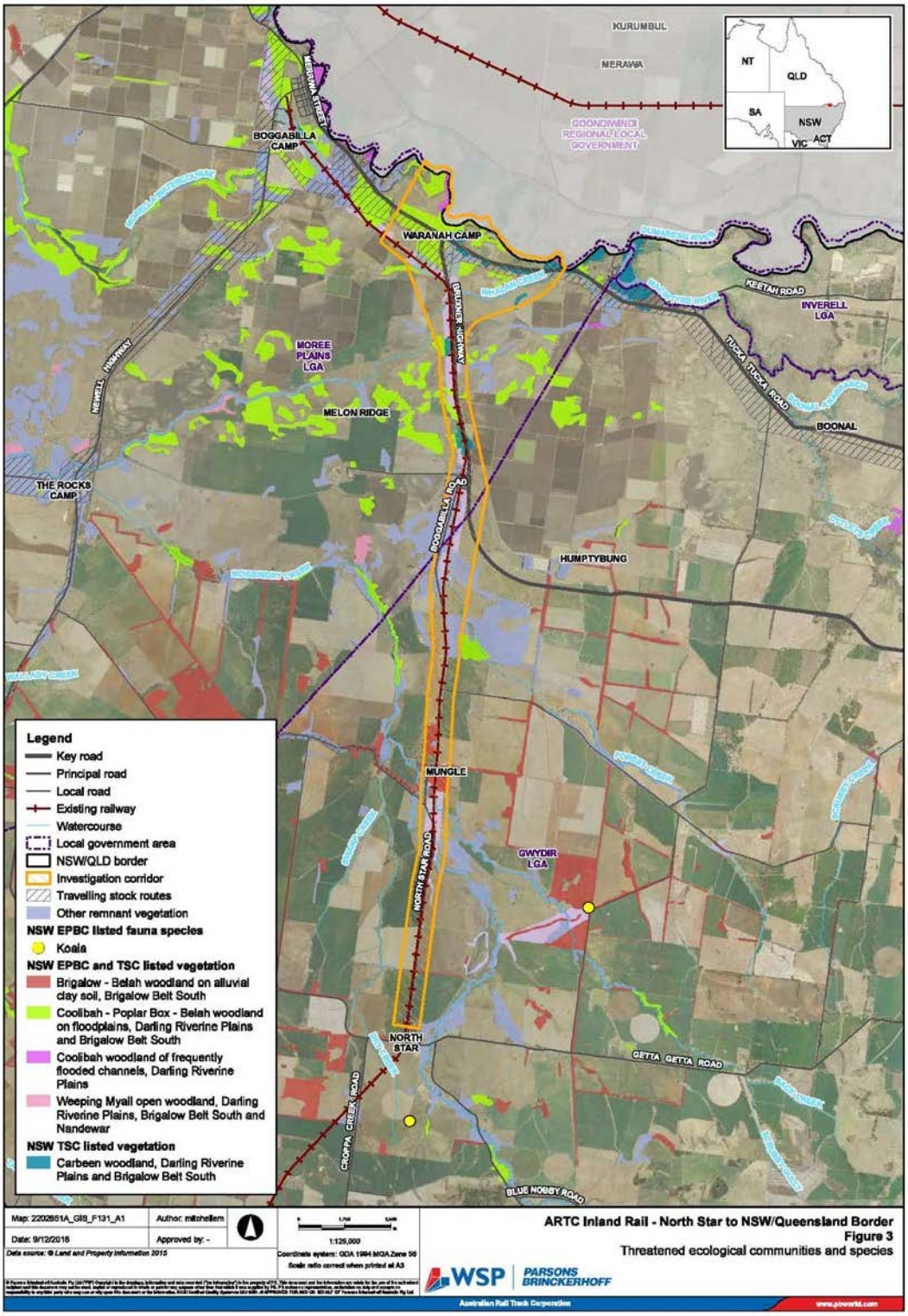
The Boggabilla line, opened in 1932, was originally constructed to transport agricultural products, primarily from the area south through NSW, although it also operated passenger services. Grain and freight services operated mostly on a seasonal basis by the 1970s and passenger services were halted in 1974. The line was truncated to North Star in 1987 and services were finished in 2013.

The South Western System is a railway located in Queensland which runs from Warwick to Dirranbandi through Karara, Inglewood, Yelarbon, Goondiwindi and Thallon. The line no longer operates passenger services, however freight trains still operate to Thallon. The South Western System line from Goondiwindi to Thallon allows an operating speed of 70 kilometres per hour.

3.4.3. Passenger services

There are no passenger services operating to any of the towns in the area. Buses operated by Crisp Coaches and Greyhound Australia service the area.

Figure 3.1 Regional location



4. PLANNING AND ASSESSMENT PROCESS

The proposal is declared to be State significant infrastructure (**SSI**) and will be assessed under Division 5.2 of the EP&A Act.

In summary:

- under *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP), the proposal is classified as 'development for the purpose of a railway or rail infrastructure on behalf of a public authority' and so may be carried out without development consent under the EP&A Act;
- where development is permissible without consent, it can be declared to be SSI by a SEPP, usually *State Environmental Planning Policy (State and Regional Development) 2011*;
- relevantly the SRD SEPP provides two potential avenues for the project to be declared to be SSI:
- where ARTC is carrying out the proposal and the capital investment value is greater than $50 million (clause 14 and Schedule 3 of the SRD SEPP); and
- where ARTC has formed the opinion that the proposal is likely to significantly affect the environment (clause 14 and item 1 of Schedule 3 of the SRD SEPP);
- ARTC has formed the opinion that both of these situations will apply, and the proposal is therefore declared to be SSI.

The proposal must therefore be assessed and approved by the NSW Minister for Planning under Division 5.2 of the EP&A Act before it can be carried out. An environmental impact statement (EIS) must be prepared as part of the assessment.

The Inland Rail Programme north of the Queensland border to Gowrie will be assessed and approved under Queensland legislation and process. This section of the Inland Rail Programme is not part of the proposal and so is not the subject of this application.

The sections below provide more detail on the EP&A Act and its operation in respect of the proposal.

4.1. Environmental Planning and Assessment Act 1979

The EP&A Act and *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) establish a framework for the assessment and approval of developments in NSW. They also provide for the making of environmental planning instruments, including state environmental planning policies (SEPPs) and local environmental plans (LEPs), which determine the permissibility and approval pathway for development proposals and form a part of the environmental assessment process.

4.1.1. Part 5 of the EP&A Act

Part 5 of the EP&A Act defines the assessment process for proposals that do not require development consent. Section 5.5 requires a determining authority to '*examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity*'. ARTC is the determining authority for this project under section 5.1(1).

Section 5.7(1) provides that '*a determining authority shall not carry out an activity, or grant an approval in relation to an activity … that is likely to significantly affect the environment (including critical habitat) or threatened species,*

populations or ecological communities, or their habitats, unless (a) the determining authority has obtained or been furnished with and has examined and considered an environmental impact statement in respect of the activity'.

In accordance with the requirements of section 5.7, ARTC has formed the opinion that the proposal is likely to significantly affect the environment and, as a result, an EIS is required.

As such the proposal is SSI under Schedule 3 of the State and Regional Development SEPP, as detailed in section 4.1.4. The proposal therefore becomes subject to the assessment and approval process in Division 5.2 of the EP&A Act.

4.1.2. Division 5.2 of the EP&A Act

Division 5.2 of the EP&A Act establishes an assessment and approval regime for SSI. Division 5.2 applies to development that is declared to be SSI by an SEPP.

Under section 5.12(3), development cannot be SSI unless it is of a kind that may be carried out without development consent under Part 4 of the EP&A Act and comprises:

(a) infrastructure, or

(b) other development that (but for this Part and within the meaning of Part 5) would be an activity for which the proponent is also the determining authority and would, in the opinion of the proponent, require an environmental impact statement to be obtained under Part 5.

As indicated in section 4.1 the proposal satisfies these requirements.

Under section 5.14 of the EP&A Act, the approval of the Minister for Planning is required for SSI before it can be carried out. In accordance with section 5.15 (Application for approval of State significant infrastructure):

'(1) The proponent may apply for the approval of the Minister under this Part to carry out State significant infrastructure.

(2) The application is to:

(a) describe the infrastructure, and

(b) contain any other matter required by the Secretary.

(3) The application is to be lodged with the Secretary.'

Under Division 5.2 of the EP&A Act, the planning and approvals process includes the following key steps:

1. Submission of a State Significant Infrastructure application with the supporting document to the Secretary of the DP&E under section 5.15 of the EP&A Act, to seek the Secretary's Environmental Assessment Requirements (SEARs) - this document is the supporting document for the application.
2. Preparation and submission of an EIS under section 5.16(2) of the EP&A Act, addressing the requirements of the EP&A Act and EP&A Regulation and the matters outlined in the SEARs.
3. Public exhibition of the EIS for a minimum of 28 days.
4. Assessment of the application and EIS by the DP&E and preparation of the Secretary's environmental assessment report (section 5.18 of the EP&A Act).
5. Determination of the application by the Minister.

Clause 192 of the EP&A Regulation requires that an application for approval of the NSW Minister for Planning to carry out SSI mustinclude:

- Details of any approval that would, but for section 5.23 of the EP&A Act, be required for the carrying out of the SSI; and
- Details of any authorisations that must be given under section 5.24 of the EP&A Act if the application is approved; and
- A statement as to the basis on which the proposed infrastructure is SSI, including, if relevant, the capital investment value of the proposed infrastructure.

Section 5.16 of the EP&A Act provides for the declaration of critical State significant infrastructure. Critical State significant infrastructure projects are high priority infrastructure projects that are essential to the State. Section 5.16 of the EP&A Act provides that any State significant infrastructure may also be declared to be critical State significant infrastructure, if it is 'of a category that, in the opinion of the Minister, is essential for the State for economic, environmental or social reasons.' As critical State significant infrastructure, the proposal would be permissible without consent under clause 16(a) of the State and Regional Development SEPP. However, the proposal would remain subject to assessment under Division 5.2 of the EP&A Act and requires the approval of the Minister for Planning.

4.1.3. Land owner'sconsent

Clause 193(1) of the EP&A Regulation provides that consent of individual land owners would not be required to make the SSI application because the proposal:

- is on behalf of a public authority, and ARTC is a public authority for the purposes of clause 193; or
- is for linear transport infrastructure.

However, the proponent must give notice of the application in accordance with clause 193(4), either:

- by notice to relevant land owners, no later than 14 days after the application has been made; or
- by advertisement published in a newspaper circulating in the area in which the infrastructure is to be carried out, at least 14 days before the EIS which relates to the infrastructure is placed on public exhibition.

4.1.4. State environmental planning instruments

4.1.4.1. State Environmental Planning Policy (Infrastructure) 2007

The infrastructure SEPP aims to assist in the delivery of public infrastructure across the state through consistent planning and assessment regimes for public infrastructure. Clause 79 of the infrastructure SEPP permits development on any land for 'the purpose of a railway or rail infrastructure' to be carried out on behalf of a public authority without consent', so the project is permissible without consent.

Typically, the provisions of the Infrastructure SEPP prevail over other environmental planning instruments unless the work is located on land reserved under the *National Parks and Wildlife Act 1974* (NPW Act) or is regulated by *State Environmental Planning Policy No. 14 – Coastal Wetlands*, *State Environmental Planning Policy No. 26 – Littoral Rainforests* or *State Environmental Planning Policy (State and Regional Development) 2011*. As the proposal is not located on land reserved under the NPW Act, nor under any of the above SEPPs, their conditions would not apply.

As set out above, the consequence of the proposal being permissible without development consent is that, among other things, the proposal is capable of being declared to be SSI.

4.1.4.2. State Environmental Planning Policy (State and Regional Development) 2011

Clauses 14 and 15 of the State and Regional Development SEPP provides for SSI and clause 16 provides for Critical SSI. Clause 14 states that development is SSI if it:

- Is wholly or partly permissible without consent under Part 4 of the EP&A Act, by virtue of operation of a SEPP (such as the Infrastructure SEPP).
- Meets the definitions provided in Schedule 3 to the State and Regional Development SEPP.

Clause 16 states that development is Critical SSI if it:

- May be carried out without development consent under Part 4 of the EP&A Act, and
- Is declared to be SSI for the purposes of the EP&A Act if it is not otherwise so declared, and
- Is declared to be critical SSI for the purposes of the EP&A Act.

The proposal is declared to be SSI for two reasons. First, clause 1 of Schedule 3 of the State and Regional Development SEPP declares that infrastructure for which the proponent is the determining authority and which would, in the opinion of the proponent, require an EIS to be obtained is SSI. Because the proposal is permissible without consent under the Infrastructure SEPP, ARTC is a determining authority under the EP&A Regulation, and ARTC has determined that the proposal is likely to significantly affect the environment, an EIS would be required and, consequently, the proposal falls within clause 1 of Schedule 3.

Second, clause 3 of Schedule 3 of the State and Regional Development SEPP declares '*development for the purpose of rail infrastructure by or on behalf of the Australian Rail Track Corporation that has a capital investment value of more than $50 million*' to be SSI. The capital investment of the proposal is estimated to be over $50 million so it is declared to be SSI.

4.1.5. Local environmental planning instruments

The proposal is located on land which is subject to the Gwydir Local Environmental Plan 2013 and Moree Plains Local Environmental Plan 2012. As the proposal is being assessed under Division 5.2 of the EP&A Act, the permissibility and consent provisions of these plans do not apply.

4.1.6. Legislation and approvals that do not apply

Section 5.23 of the EP&A Act provides that a number of additional approvals, permits or licences that would otherwise be triggered for development in NSW are not required for an approved State Significant Infrastructure project. The approvals not required for State Significant Infrastructure include:

- Approvals under Part 4 and excavation permits under section 139 of the *Heritage Act 1977*.
- Permits under section 201, 205 and 219 of the *Fisheries Management Act 1994*.
- Aboriginal heritage impact permits under section 90 of the *National Parks and Wildlife Act 1974*.
- Authorisation under the *Native Vegetation Act 2003* to clear native vegetation or State protected land.
- Water use approvals, water management approvals and approvals under Section 91 of the *Water Management Act 2000*.
- Bushfire safety authority under section 100B of the *Rural Fires Act 1997*.

4.1.7. Approvals to be applied consistently

Section 5.24 of the EP&A Act provides that a number of other approvals, if required for an approved SSI project, cannot be refused and must be granted on terms which are substantially consistent with the SSI approval. These approvals include:

- An environment protection licence under Chapter 3 of the POEO Act 197.
- Consent under Section 138 of the *Roads Act 1993.*

4.2. Other relevant legislation

4.2.1. Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) establishes the procedures for issuing environmental protection licences for specific activities relating to air, water and noise pollution and waste management. The proposal is about 30 kilometres in length and Schedule 1 of the Act requires a licence for railway system activities on networks of more than 30 kilometres, including:

(a) The installation, on site repair, on-site maintenance or on site upgrading of track, including the construction or significant alteration of any ancillary works.

(b) The operation of rolling stock on track.

The proposal meets this definition and therefore would require an environment protection licence for the construction and operation phases of the proposal. ARTC currently holds an Environment Protection Licence (EPL No. 3142) to carry out railway system activities on parts of the NSW rail network. The construction of new track, greater than five kilometres in length, would require a modification to this licence or a new licence to be obtained, due to condition A1.2 of the existing EPL. As such it is currently proposed that a separate EPL would be obtained for construction of the Proposal and this would be further considered in consultation with the Environment Protection Authority (EPA) during the EIS process. Section 5.24 of the EP&A Act will require that this licence cannot be refused and must be consistent with any SSI approval for the proposal.

4.2.2. Roads Act 1993

Section 138 of the *Roads Act 1993* requires consent for activities that disturb the surface of a public road, or involve work over, in or on a public road. Under clause 5(1) in Schedule 2, public authorities do not require consent for works on unclassified roads, but ARTC is not a "public authority" for this clause.

The necessary approvals would be obtained under the *Roads Act 1993*. As noted above section 5.24 of the EP&A Act provides that a permit under section 138 of the *Roads Act 1993* cannot be refused if it is necessary to carry out an approved SSI project. ARTC would be required to obtain a road occupancy licence from Roads and Maritime Services for any road or level crossing works on Bruxner Way.

4.3. Commonwealth legislation

4.3.1. Environment Protection and Biodiversity Conservation Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) a referral is required to the Australian Government Department of the Environment and Energy for projects, or 'actions', that are likely to have a significant impact on a matter of national environmental significance (MNES) or the environment on Commonwealth land. The Australian Government Minister for the Environment decides, based on the referral, whether the action will

need formal assessment and approval under the EPBC Act. There are three possible outcomes after submitting the referral:

- The action is considered a 'controlled action' requiring assessment and approval under the EPBC Act.
- The action is 'not a controlled action, particular manner' where further approval is not required if the action is undertaken in accordance with the manner specified.
- The action is 'not a controlled action' where further approval is not required if the action is undertaken in accordance withthe referral.

The findings of preliminary environmental investigations and field work carried out to date indicate that the proposal may have a significant impact on potential habitat for threatened flora and fauna species, and hence it could be considered a controlled action requiring approval under the EPBC Act. A referral would be prepared and submitted to the Australian Government Department of the Environment and Energy to determine whether the proposal will need formal assessment and approval under the EPBC Act (that is, whether it would be a controlled action). Once submitted, the Department will consider the referral and provide a response on whether the proposal would be considered a controlled action or not. If the proposal is considered to be a controlled action further assessment will need to be undertaken and the significance of these impacts would be considered during the EIS.

The bilateral agreement between the Commonwealth of Australia and the NSW relating to environmental assessment, allows the Minister for the Environment to rely on specified environmental impact assessment processes for SSI in the EP&A Act in assessing actions under the EPBC Act.

4.3.2. Native Title Act1993

The Commonwealth *Native Title Act 1993* provides the legislative framework that:

- Recognises and protects native title.
- Establishes ways in which future dealings affecting native title may proceed, and to set standards for those dealings, including providing certain procedural rights for registered native title claimants and native title holders in relation to acts which affect native title.
- Establishes the National Native Title Tribunal.

The National Native Title Tribunal has a number of functions under the Act including maintaining the Register of Native Title Claims, the National Native Title Register and the Register of Indigenous Land Use Agreements and mediating native title claims. The NSW *Native Title Act 1994* was introduced to ensure that the laws of NSW are consistent with the Commonwealth *Native Title Act 1993*.

5. THE PROPOSAL

5.1. Overview

This section provides a description of the proposal, including the infrastructure required, indicative construction activities, and the proposed operation, maintenance, and management arrangements.

To provide the context for the proposal, section 5.1.1 describes the proposed features and specifications of the Inland Rail, an indicative preliminary review of the main construction activities that would be undertaken is provided in section 5.4, along with an outline of the indicative operation and maintenance regime.

The key characteristics that make up the proposal (infrastructure, construction and operation) would continue to be refined and expanded upon following submission of this application. Further developed and updated information would be provided in the EIS.

5.1.1. Inland Rail performance specifications

The minimum operational requirements of the design are specified by the performance specification for Inland Rail. Key elements include:

- Maximum train length of up to 1,800 metres with capacity for later upgrades to suit trains 3,600 metres long.
- Maximum design speed of 115 km/h for freight trains.
- 7.1 metre clearances for double stacked operation.
- Maximum 21 tonne axle load at 115 km/h, 25 tonnes at 80 km/h, with future proofing for 30 tonnes at 80 km/h.

5.1.2. Proposal timeframe

Construction is anticipated to commence in mid-2020 and is expected to take about 24 months. This is indicative only at this stage. The construction commencement time and construction duration would be further refined, and may be revised as the assessment of the proposal progresses.

5.2. Scope of works

The land requirement for the proposal would comprise the existing corridor with an average width of 50 metres, with some variation to accommodate particular infrastructure and to cater for local topography. The corridor would be of sufficient width to accommodate the infrastructure currently proposed for construction, as well as future expansion, including possible future requirement for 3,600 metre trains.

Proposal construction would be a single-track standard gauge railway, with crossing loops to accommodate double stacked freight trains up to 1,800 metres long. Components of the construction would include infrastructure to accommodate possible future augmentation and upgrades of the track, including a possible future requirement for 3,600 metre trains. Clearing of the corridor would occur to allow for construction and to maintain the safe operation of the railway.

The operational phase at year 2040 would be of a single track with crossing loops to accommodate double stacked freight trains up to 1,800 metres long. Impact assessment would be undertaken for rail traffic and associated activities projected at the year 2040.

5.2.1. Key features

The construction of the proposal would involve the following:

- Approximately 30 kilometres of new single-track standard gauge line of which 25 kilometres requires upgrade to the existing track and five kilometres of new track.
- Installation of around 30 new culverts and 15 new bridges (including 1 large bridge across the Macintyre River).
- One grade separation of Bruxner Way and the rail line is anticipated
- One crossing loop is anticipate.
- Around 23 level crossing locations

These items are indicative only and will require refinement through the design process.

5.3. Construction of the proposal

Typical construction activities associated with the proposal include:

Pre-construction

Pre-construction works are those activities that would typically be undertaken before the start of substantial construction in order to make ready the key construction sites and provide protection to the public. These are works that would be part of the proposal and cannot commence until project approval is granted. Enabling works included in this application include:

- Demolishing buildings and other structures that are not a State or local heritage item.
- Supply of power, water and other services.
- Adjusting, modifying and protecting existing utilities and services.
- Transport network modifications.
- Carrying out heritage investigations, protection and archival recordings.
- Vegetation clearance.
- Establishing ancillary construction facilities (including compounds), and associated mitigation measures.
- Installation of environmental mitigation measures (including erosion and sedimentation control, temporary exclusion fencing for sensitive areas).

Excluded works from this application include:

- Investigations, surveys, tests and sampling (including, for example, related drilling and excavations), for any purposes, including (for example) geotechnical, biodiversity, heritage, contamination and utilities and services investigations, where the investigations, surveys, tests and sampling are in connection with assessment or detailed design for the proposal.
-
- Other tests, surveys, sampling or investigations of existing buildings, bridges and other third party assets.
- Service relocations that would be of minimal environmental impact.
- Minor vegetation clearance associated with any of the works described above.

These works may be determined as Exempt Development under the provisions of Clause 82 of the Infrastructure SEPP. Otherwise the works may require a separate assessment (eg. REF).

New single track, standard gauge line

The proposed works would involve constructing approximately 30 kilometres of new single-track standard gauge railway line, including provision of:

- New track ballast.
- New heavy duty concrete sleepers.
- New 60 kg rail.

Earthworks and drainage

Bulk earthworks may be required in some sections along the proposal site. Subject to the outcomes of the concept design process, the earthworks required could vary depending on the extent of modification required to construct the new tracks.

Further investigations are currently being undertaken to confirm the extent of works likely to be required to meet the Inland Rail performance specifications.

Drainage within the proposal site would be designed to suit the new single gauge track with consideration of appropriate flood immunity when designing all new track formations, embankments and cuttings for the Inland Rail route.

Culverts and bridges

The proposal would require the installation of an estimated 30 new culverts and 15 bridges. Crossings over the Macintyre River, Mobbindry Creek, Forest Creek, Back Creek and Whalan Creek and other unnamed tributaries and ephemeral creeks would require culvert structures and potentially rail over creek bridges to maintain drainage and flow paths. The estimated number and location of culverts and bridges would be subject to further refinement in detailed design.

During the concept design process, all structures would be assessed for compliance with the Inland Rail performance specification. Any existing bridges and culverts that do not comply, have limited life spans, or cannot be feasibly made to comply, would be replaced as part of the proposal.

Level crossings

Public and private level crossings are required to allow vehicles and pedestrians to cross the railway tracks. Public crossings are located on state or council roads and private crossings are created for a specific and often limited use, generally to provide access within a private property itself or between a private property and a public road.

Level crossing works may include the renewal or upgrade of level crossings on the disused Boggabilla line as well as the installation of level crossings at public/private roads which would be intersected by the proposal. The proposal would encompass 23 level crossings, with a significant proportion of these level crossings being private crossings. Roads which are intersected by the proposal include Edward Street, Tucka-Tucka Road, Bruxner Way and several other private and local public roads. The estimated number and location of road/level crossings would be subject to further refinement in the design phase. It is ARTC policy to work with stakeholders to minimise the number of crossings. ARTC has a consistent process for selecting level crossing safety treatments across the programme. The process would incorporate:

- Selection of level crossing safety treatments taking into account site assessments, road traffic volumes, stakeholder feedback and compliance with the relevant Australian and ARTC standards.

- Road network, access and local traffic implications.
- Opportunities for alternative access arrangements.
- Property acquisition and easement requirements.
- Road closure
- Estimated implementation costs.

5.3.1. Construction sequence

Construction activities would vary along the length of the proposal depending on the works to be undertaken, local conditions and track operational requirements. A typical construction sequence is as follows:

- Establish construction work sites and environmental controls.
- Undertake enabling works, including the excavation, installation and relocation of services.
- Remove existing structures and vegetation clearing.
  - Removal and storage of existing track components and ballast.
  - Demolition of existing sub-structures.
  - Excavation of unsuitable material.
- Construct new structures, including:
  - Placement of suitable formation material.
  - Installation of new culverts and associated structures.
- Track works including as required:
  - Upgrade existing formation.
  - Construction of cuts and fills.
  - Replacement of ballast.
  - Installation of new track, track components and ballast.
- Installation of signalling infrastructure and other services.
- Commissioning works.
- Site rehabilitation.

The anticipated construction methodology and sequencing will be identified in EIS.

5.3.2. Ancillary facilities

Ancillary works would include, for example, works to signalling and communications, signage, fencing, and services and utilities.

During construction, the proposal would require the establishment of construction compounds, storage locations and access tracks along the entire length of the proposal and would be located within the proposal site. Major compounds would be located preferably on disturbed land, close to major access roads and clear of sensitive environmental areas and residences as far as possible. A number of smaller storage areas would be required at strategic locations along the proposal site, for example near bridges.

Borrow pits may also be required for fill works associated with embankments, bridges and culvert structures during construction.

In addition to the construction compounds and borrow pits, which are subject to further feasibility analysis and design definition in the EIS, the following may also form part of the proposal scope:

- Mobile batch plant/s.
- Accommodation for construction workers.
- Borrow pits.
- Construction water supply and storage.
- Substantial environmental impact mitigation measures.
- Rail sidings.

The location and impacts of potential ancillary facilities, including the need for the above, will be considered in the EIS and refined during the design process.

5.4. Operation of the proposal

Currently projected train movements across the entire Inland Rail Route (round trips, most heavily trafficked section of Inland Rail) are up to 123 trains per week in 2024-25 with a peak demand in 2049-50 where train numbers are presently anticipated to reach up to 174 per week (ARTC, 2015). However, the North Star to NSW/Queensland border section is presently anticipated to have an average weekly demand of up to 79 trains per week (2025) with a peak demand of 140 (2040). The new and upgraded rail line would be a faster, more efficient route that bypasses the Sydney rail network and would enable the use of double stacked trains along its entire length.

Trains would operate 24 hours per day and would be up to 1800 metres in length; carry double stacked containers; and require a clearance of 7.1 metres.

5.4.1. Maintenance activities

Standard ARTC maintenance activities would be undertaken during operations. Typically these activities would involve minor maintenance works such as bridge and culvert inspections, through to major maintenance such as reconditioning of track and topping up of ballast as required.

6. ENVIRONMENTAL CONSIDERATIONS

6.1. Overview

This section provides a preliminary assessment of the potential environmental impacts that are likely to be associated with the construction and operation of the proposal. This assessment has been based on the current design for the proposal. The impacts described are considered preliminary and may change throughout the design and environmental impact assessment process, as more information becomes available. Any changes to environmental impacts would be adequately assessed as part of the EIS and associated technical studies.

The environmental impacts identified in this section have been classified as either ‘key’ or ‘other’ environmental issues. This classification was based on the likely significance of the identified environmental impacts, based on the findings of the preliminary environmental risk assessment and field surveys undertaken to date.

‘Key’ environmental issues were defined as those impacts that are considered to require further detailed investigation during the preparation of the EIS as they would result in a moderate to high impact on the environment. These issues are considered in sections 6.2–6.11 and include:

- Biodiversity
- Aboriginal Heritage
- Non-Aboriginal Heritage
- Hydrology, flooding and water quality
- Contamination
- Land use, socio-economic and visual impacts
- Noise and vibration
- Air quality

- Topography, geology and soils
- Traffic and transport

'Other' environmental issues were defined as those impacts that are not expected to be significant and would be manageable through the application of best practice environmental management measures. These issues are considered in section 6.12–6.18 and include:

- Waste and resource use
- Sustainability
- Greenhouse gas and energy
- Climate Change
- Hazards and risks
- Utilities and services
- Cumulative impacts

KEY ENVIRONMENTAL ISSUES

6.2. Biodiversity

A desktop study was undertaken in November 2016 to identify known and recorded threatened species, populations, communities and associated habitat listed under the *Biodiversity Conservation Act 2016* (BC Act), EPBC Act and NSW *Fisheries Management Act 1994* (FM Act) by reviewing published Commonwealth and State ecological records including; Office of Environment and Heritage's BioNet Atlas of NSW Wildlife, Department of the Environment's EPBC Protected Matters Search Tool, PlantNET – NSW FloraOnline and existing vegetation mapping.

The desktop studies were supplemented by undertaking a rapid field survey within the proposal site in April 2016 and further field verification in October 2016. The rapid surveys targeted areas where gaps in information (i.e. gaps in existing vegetation mapping) and significant remnant vegetation occurred. The surveys sought to verify and refine the presence/absence of ecological constraints within the proposal site, focusing in particular on threatened and endangered ecological communities as well as habitat capable of supporting threatened biota.

6.2.1. Existing Environment

The proposal mainly surrounded by rural land which has been previously modified and disturbed due to agricultural activities. Remnant patches of native vegetation occur within the proposal site. Vegetation found within the proposal site which is listed as threatened under the NSW *Biodiversity Conservation Act 2016* (BC Act) include Coolibah (*Eucalyptus coolabah*), Poplar Box (*Eucalyptus populnea*), Weeping Myall (*Acacia pendula*), Black Cypress Pine (*Callitris endlicheri*), Brigalow (*Acacia harpophylla*) and Western grey box (*Eucalyptus microcarpa*). In desktop searches of the Protected Matters Search Tool in November 2016, five threatened ecological communities listed under the EPBC Act and have been identified within 10 kilometres of the proposal. The communities identified are provided in Table 6.1.

Table 6.1 Threatened ecological communities within 10 kilometres of the proposal site

ECOLOGICAL COMMUNITY	COMMONWEALTH LISTING (EPBC ACT)	NSW LISTING (BC ACT)
Brigalow (*Acacia harpophylla* dominant and co-dominant)	Endangered	Endangered

ECOLOGICAL COMMUNITY	COMMONWEALTH LISTING (EPBCACT)	NSW LISTING (BC ACT)
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Endangered
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Endangered
Weeping Myall Woodlands	Endangered	Endangered
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Endangered

Vegetation communities are shown in Figure 3.1.

Two of the threatened ecological communities (TEC) listed under the EPBC Act, which are also endangered ecological communities (EEC) under the BC Act, have been confirmed as present within the preferred alignment, including:

- Brigalow (*Acacia harpophylla* dominant and co-dominant) TEC, occurring as Brigalow – Belah woodland on alluvial often gilgaied clay from Pilliga scrub to Goondiwindi, Brigalow Belt South EEC
- Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions TEC, occurring as Coolibah – Poplar Box – Belah woodland on floodplains, Darling Riverine Plains and Brigalow Belt South EEC, and as Coolibah woodland of frequently flooded channels, Darling Riverine Plains EEC.

There is also one EEC under the BC Act, Carbeen woodland, Darling Riverine Plains and Brigalow Belt South, which is not listed as a TEC under the EPBC Act.

In total 21 threatened flora and fauna species and seven species of migratory birds listed under the EPBC Act have habitat that is known to occur within the search area (refer to Appendix A).

In addition to terrestrial constraints the proposal would require waterway crossings of major waterways, including the Macintyre River. This would include species such as Murray cod (*Maccullochella peelii*), Purple-spotted gudgeon (*Mogurnda adspersa*), and Silver perch (*Bidyanus bidyanus*) with listings under the BC Act and FM Act.

In total four threatened flora species have been identified in desktop searches to potentially occur within the proposal site (listed under the BC Act and EPBC Act) includes Ooline (*Cadellia pentastylis*), Bluegrass (*Dichanthium setosum*), Belson's Panic (*Homopholis belsonii*) and *Tylophora linearis.*

In total 17 threatened fauna species have been identified in desktop searches to potentially occur within the proposal site (listed under the BC Act and EPBC Act).

6.2.2. Potential Impacts

The key potential impacts of the proposal include:

- Clearing of native vegetation within the proposal site and for other ancillary activities, which may clear threatened flora species listed under the EPBC Act and/or BC Act.
- Loss of fauna habitat and impacts on threatened species and endangered populations, listed under the EPBC Act and/or BC Act.
- Disturbance to natural waterways and aquatic habitat from the replacement and/or upgrade works of bridges and culverts.
- Habitat fragmentation and connectivity issues for flora and fauna.
- Potential for wildlife to be struck by operating trains, including threatened fauna species listed under the EPBC Act and/or BC Act.

Other indirect impacts include:

- Dispersion and potential encouraged growth of weeds during construction activities by exposing soil and clearing vegetation.
- Effects on nearby fauna, listed under the EPBC Act and/or BC Act, with related construction and operation noise and light impacts.

6.2.3. Scope of further assessment

A biodiversity assessment will be undertaken in accordance with the Biodiversity Assessment Method (BAM) as required under the BC Act. This assessment will result in a Biodiversity Development Assessment Report (BDAR) which will identify how ARTC will avoid and minimise impacts, any potential impacts that could be characterised as serious and irreversible according to the specified principles and any offset obligations required to offset the likely biodiversity impacts of the project.

The assessment will also have regard to the extent of any impacts on matters under the EPBC Act.

6.3. Aboriginal Heritage

A preliminary assessment of Aboriginal Heritage was undertaken by Niche Environment and Heritage Pty Ltd (Niche) in 2016. The assessment was prepared in line with the *National Parks and Wildlife Act 1974* (NPW Act) and Due Diligence Code of Practice for the Protection of Aboriginal Objects (DECCW, 2010) and involved a search of the Aboriginal Heritage Information Management System (AHIMS) within 10 kilometres of the proposal site and identifying areas of moderate-high sensitivity.

6.3.1. Existing Environment

The proposal site is located in the North West Slopes region and situated on generally gently undulating land with an elevation ranging between 220–270 metres Australian Height Datum (m AHD). It is characterised by low ridges and hilltops, interspersed with numerous drainage lines ranging from first-order ephemeral waterways up to major rivers with extensive flood plains. Major rivers within the proposal site include the Macintyre River and creeks which include Whalan Creek, Back Creek, Forest Creek and Mobbindry Creek.

The proposal site is located within the North Western region of the NSW Aboriginal Land Councils, more specifically the Toomelah Local Aboriginal Land Council (LALC) is the respective land council for the proposal.

A search of the National Native Title Register was also undertaken and the proposal site is located within the Gomeroi people's Native Title Claim which was accepted by the Commonwealth government in 2011, however a determination on the Native Title Claim has not been made.

An extensive AHIMS search on 28 April 2017 identified two Aboriginal objects and/or plan records which are located within the proposal site (refer to Figure 6.1). The objects identified in the AHIMS searches are listed as a modified tree, carved or scarred (Site ID 02-4-0047), and an artefact (Site ID 02-4-0046).

6.3.2. Potential Impacts

It is expected that a majority of the proposed works would occur within the existing rail corridor, where the area has been heavily disturbed, therefore impact upon Aboriginal heritage items is not anticipated. However, the new section of track north of Whalans Creek to the NSW/Queensland border would be located in an area which has previously not been disturbed. This section of the proposal site could potentially contain sites and areas of Aboriginal cultural heritage which have not been previously identified.

Further archaeological survey work and assessment, including field investigations, will be undertaken for the EIS to ensure that recorded archaeological sites and potentially archaeologically sensitive landforms are assessed and managed appropriately.

6.3.3. Scope of further assessment

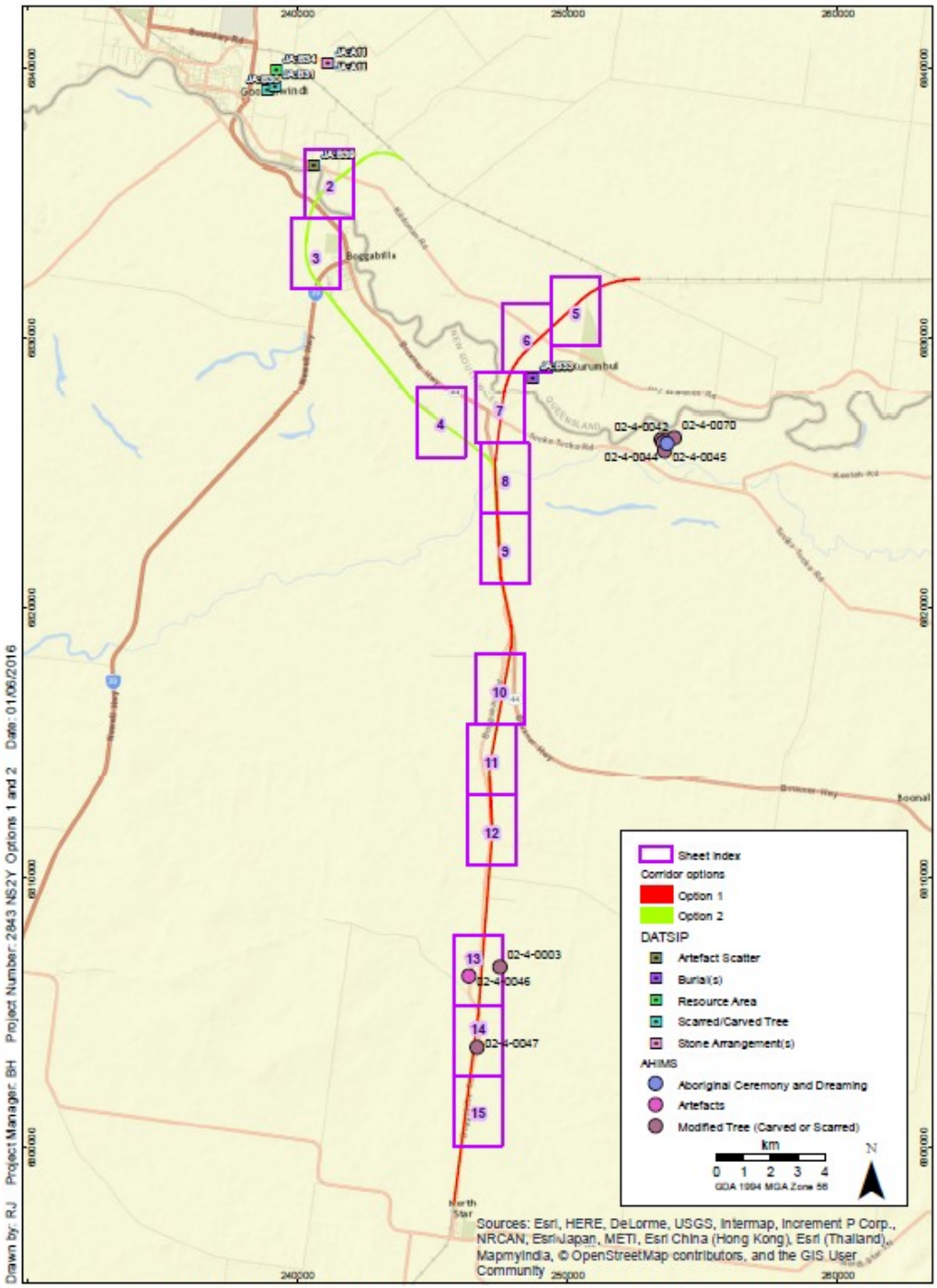
An Aboriginal cultural heritage and archaeology assessment will be prepared as part of the EIS in accordance with the Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011) and the following guidelines:

- Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW, 2010).
- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011).
- Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010a).
- Code of Practice for Investigation of Aboriginal Objects in New South Wales (DECCW, 2010b).

The assessment will include consultation with the relevant Aboriginal stakeholders.

The assessment will describe and assess the significance of any objects or places that may be impacted by the proposed works and provide options to avoid, mitigate or manage the harm to those objects or places.

Figure 6.1 Aboriginal heritage items



Option 1 and 2 - Overview of areas with moderate to high sensitivity and location of AHIMS sites

niche Environment and Heritage

Inland Rail NS2Y

FIGURE 1

Path: T:\spatial\projects\a2800\a2843_InlandRail\Maps_NS2Y\report\Options_1n2\2843_Figure_1_Options_1n2_NS2Y_Overview.mxd

6.4. Non-Aboriginal Heritage

The preliminary assessment of non-Aboriginal heritage included a search of the following databases:

- State Heritage Register.
- Australian Heritage Places Inventory.
- Australian Heritage Database (including Commonwealth and National heritage lists).
- Gwydir LEP 2013.
- Moree Plains LEP 2012.

6.4.1. Existing Environment

Searches of the relevant state and local heritage registers did not identify any heritage items within the proposal site. Given the regional location of the proposal and no listed heritage items, the potential for encountering non-Aboriginal heritage is considered low. A Mission and Cemetery, located east of the proposal site at the NSW/Queensland border, is the only non-Aboriginal heritage item listed in the area. However, it is located outside the proposal site and would not be impacted by the proposal.

6.4.2. Potential Impacts

No non-Aboriginal heritage items have been identified within the proposal site. As there is no listed heritage items within the proposal site, it is anticipated that there would not be an impact as a result of the construction or operation of the proposal. Furthermore, considering the disturbed nature of the existing disused rail line the potential for discovering unidentified heritage items would be low.

6.4.3. Scope of further assessment

A historical heritage assessment will be undertaken in accordance with relevant standards and guidelines, including the *NSW Heritage Manual 1996, Archaeological Assessments and Assessing Heritage Significance* and with consideration of the principles contained in the Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance.

This will include an assessment of the impact of the proposal on any sites, bridges or other structures of potential historical heritage value and the identification of measures where further management or investigation is required.

6.5. Hydrology, flooding and water quality

This section provides a preliminary hydrology, flooding and water quality assessment for the proposal. The assessment included a review of relevant literature to identify and evaluate existing hydrologic and hydraulic conditions within the proposal site.

6.5.1. Existing Environment

The proposal crosses the Macintyre River as well as numerous small ephemeral creeks which experience water flows during high rainfall. The proposal site is generally a flat floodplain with stands of vegetation along the riparian zone of the Macintyre River. The remainder of the floodplain has been cleared and landowners have built contour banks and dams to capture floodwaters that flow across the floodplain. There are also several irrigation channels that convey pumped irrigation water from the Macintyre River to properties on the southern floodplain.

The proposal crosses approximately 19 kilometres of floodplain of the Macintyre River and associated tributaries. Key waterways within the proposal site include Mobbindry Creek, Forest Creek, Back Creek and Whalan Creek (refer to Figure 6.2).

The proposal is located within the Border Rivers catchment. The Border Rivers catchment uses around two percent of the total groundwater resource that is extracted in the Murray-Darling Basin (CSIRO 2007). Much of the groundwater development occurs along the Dumaresq River where water is available from alluvial deposits that may be up to 90 metres deep (NSW DPI, 2012). The highest yielding aquifers however are found within shallow gravels that occur between eight to 15 metres deep (WRC, 1984). Within the catchment there is a high degree of connectivity between surface water features, such as streams and wetlands, and the underlying groundwater systems.

Groundwater dependent ecosystems (GDEs) are communities of plants, animals and other organisms that depend on groundwater for survival. A GDE may rely on the surface or subsurface presence of groundwater for survival or as a supplementary source of water. A search of the Atlas of GDE's within the proposal site, identified several ecosystems that are dependent on the surface and subsurface expression of groundwater. The ecosystems dependent on the surface expression of groundwater include river base flows, floodplains and riparian vegetation associated with Macintyre River and Mobbindry Creek. The GDE's reliant on the subsurface expression of groundwater identified in searches includes vegetation such as *Eucalyptus populnea*.

The area has a long history of flooding with much of the flood information being anecdotal. Currently, there are flood gauges at Yetman and Boggabilla on the Macintyre River. One of the highest floods on record includes the 1896 flood. Another large flood event was recorded in 1976. This reached a level of approximately 221 m AHD at Boggabilla. The flood of 1996 reached a level of approximately 220 m AHD at Boggabilla.

The floods of 2011 and 2012 were not as significant across the southern floodplain at Tucka-Tucka but were significant for the Macintyre River upstream of Yetman, the Macintyre Brook and Dumaresq River and subsequently resulted in significant flooding for Boggabilla and downstream areas.

6.5.2. Potential Impacts

During construction, potential impacts include:

- Erosion of the banks of rivers and creeks from watercourse crossings, resulting in sedimentation.
- Leaks or spills from construction equipment and materials entering watercourses.
- Risk of groundwater contamination due to shallow aquifers.
- Alteration to the bed and banks of watercourses can alter the geomorphology, potentially increasing flood risk downstream. Structures associated with the proposal such as embankments, culverts and bridges could change upstream and downstream flood behaviour and lead to scouring downstream of the culverts and sedimentation.

Increasing the sediment load within watercourses would potentially impact upon water quality by increasing the amount of total suspended solids, resulting in higher turbidity. Pollutants from construction equipment and materials could also impact on the water quality within the watercourses as a result of spills or leaks. If inadequately controlled, potential changes in water quality and an increase in sediment load could impact upon aquatic ecology and have further implications downstream.

GDE's which rely on the surface and subsurface expression of groundwater may be impacted by instream construction works such as bridges and culverts, which could alter surface flows and as a result adversely affect the functioning of GDE's.

During operation, potential impacts include:

- Oils, lubricants and other potentially hazardous substances from spills and leaks.
- Potential for localised dryland salinity via the removal of deep-rooted trees resulting in saline discharges.
- Altered flooding conditions during operation of the proposal, due to the addition of culverts and associated structures within the creeks.

These potential impacts would be further investigated in the EIS.

6.5.3. Scope of further assessment

6.5.3.1. Water quality

A water quality assessment would be undertaken. This would determine existing conditions within the rivers and creeks and would identify potential impacts and measures to avoid, minimise and mitigate these potential impacts. Water Quality Objectives (WQOs) and River Flow Objectives (RFOs) were developed by OEH for the Border Rivers catchment and are used to determine water quality and river health in association with ANZECC guidelines.

6.5.3.2. Groundwater

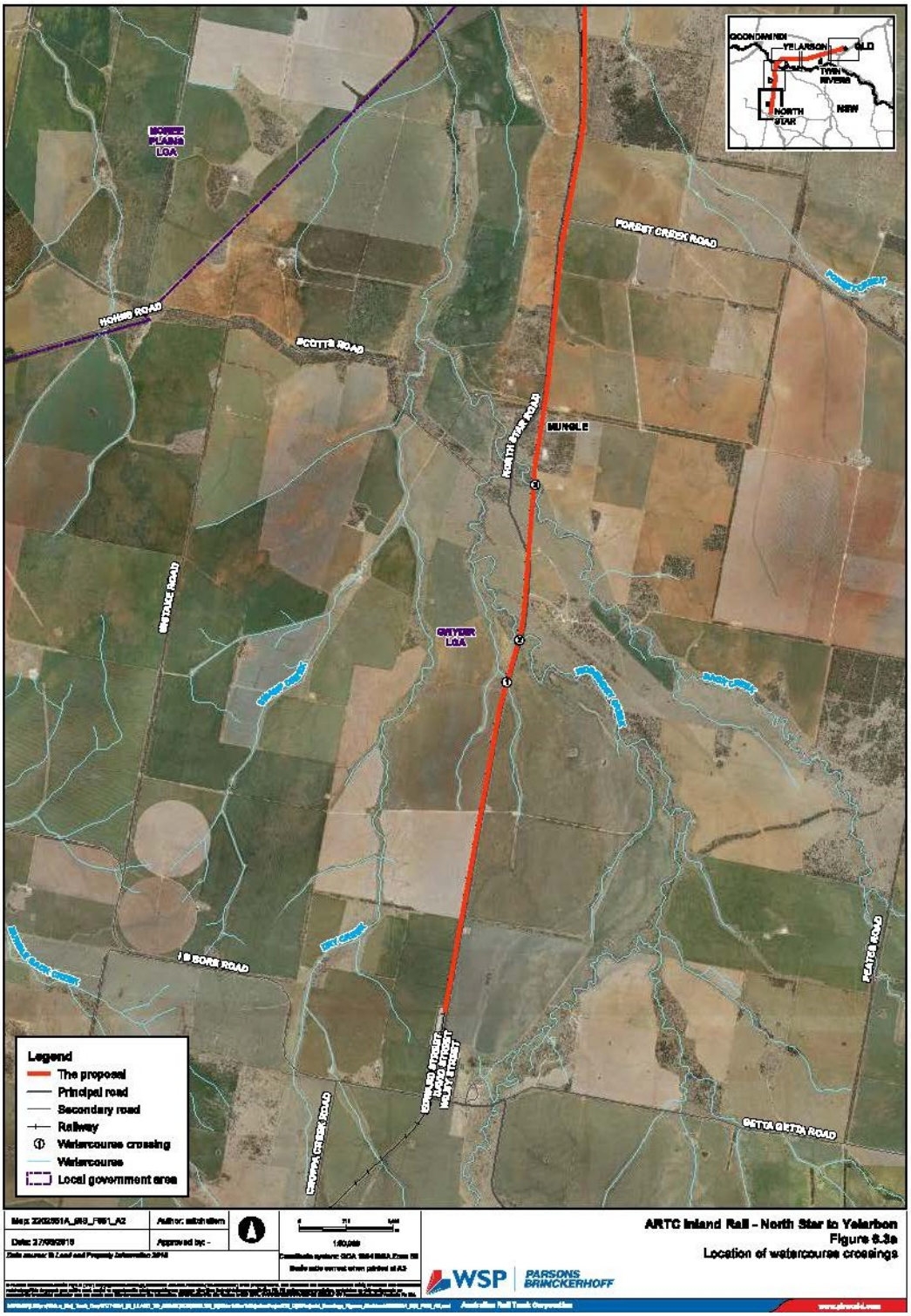
A groundwater assessment will be undertaken to determine the existing ground conditions and the need for any groundwater works during the construction phase to minimise groundwater contamination or monitoring groundwater conditions if required. This would involve a desktop review of current hydrogeological conditions to determine the potential construction and operational risks to groundwater. It would include a review of existing data and reports concerning quantity and quality information, as well as publicly available information.

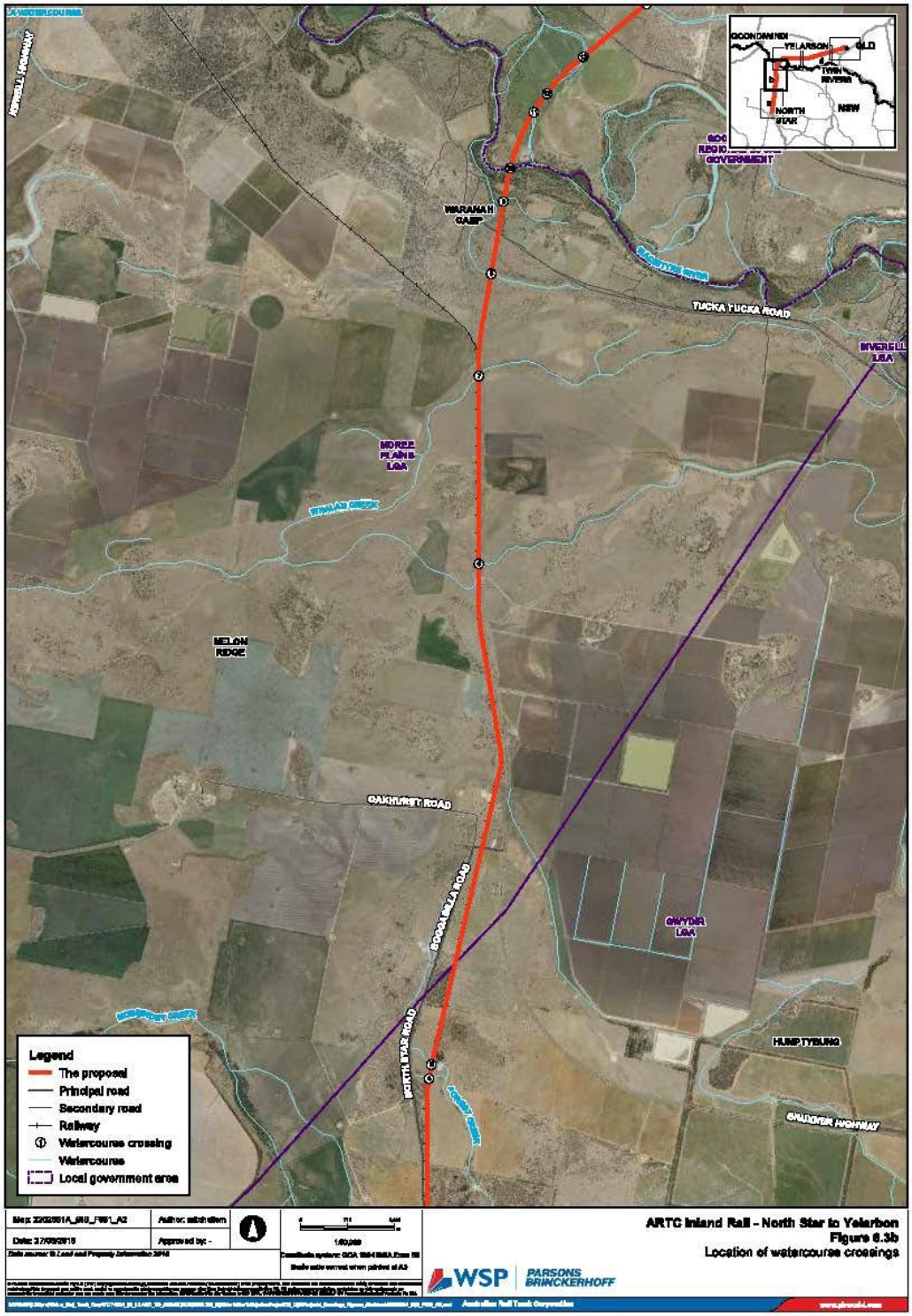
A qualitative groundwater impact assessment would be completed using the information collated from the data review. This would include assessing the potential impacts of the proposal on groundwater levels, GDEs, quality and quantity during construction and operation.

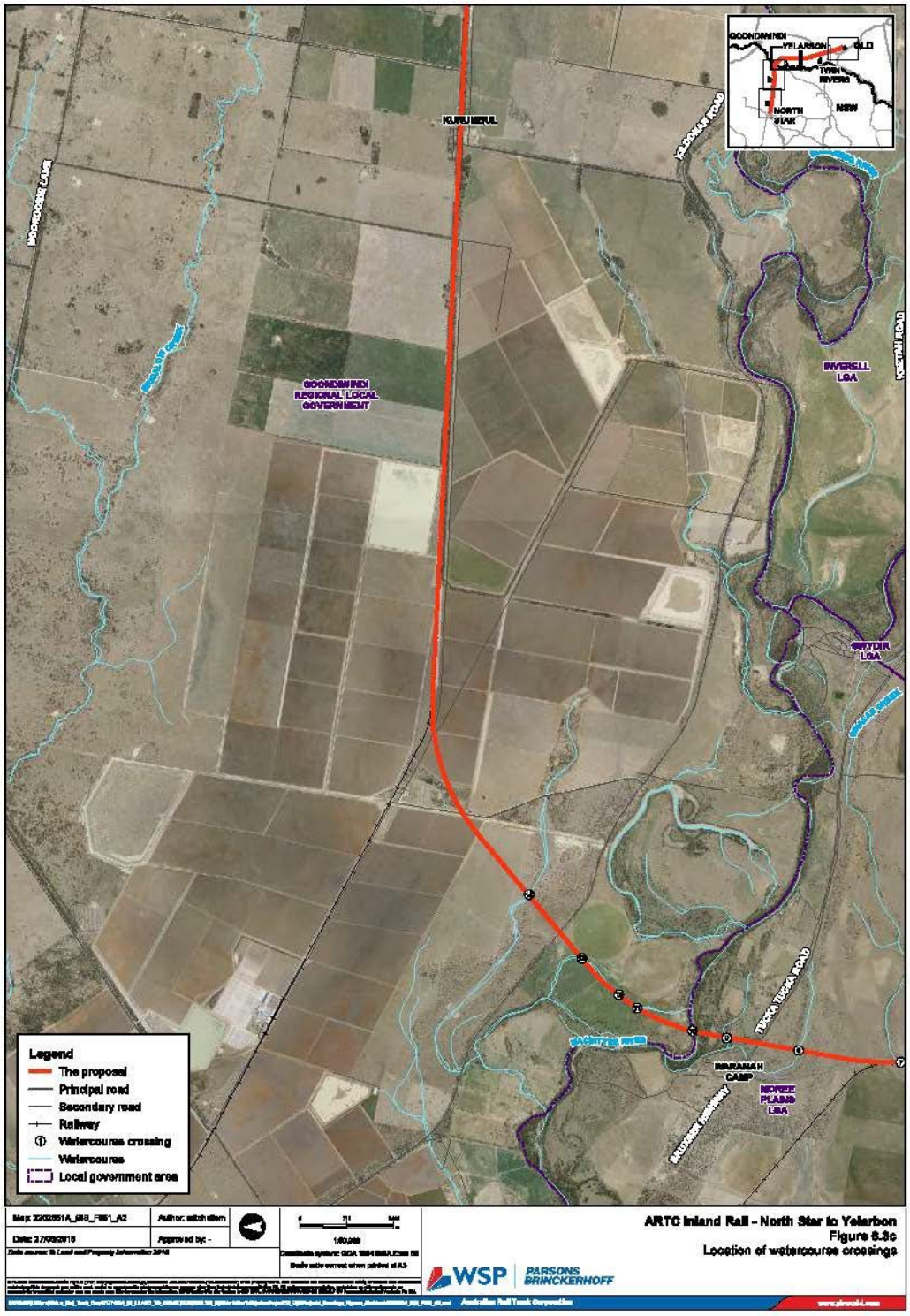
6.5.3.3. Flooding

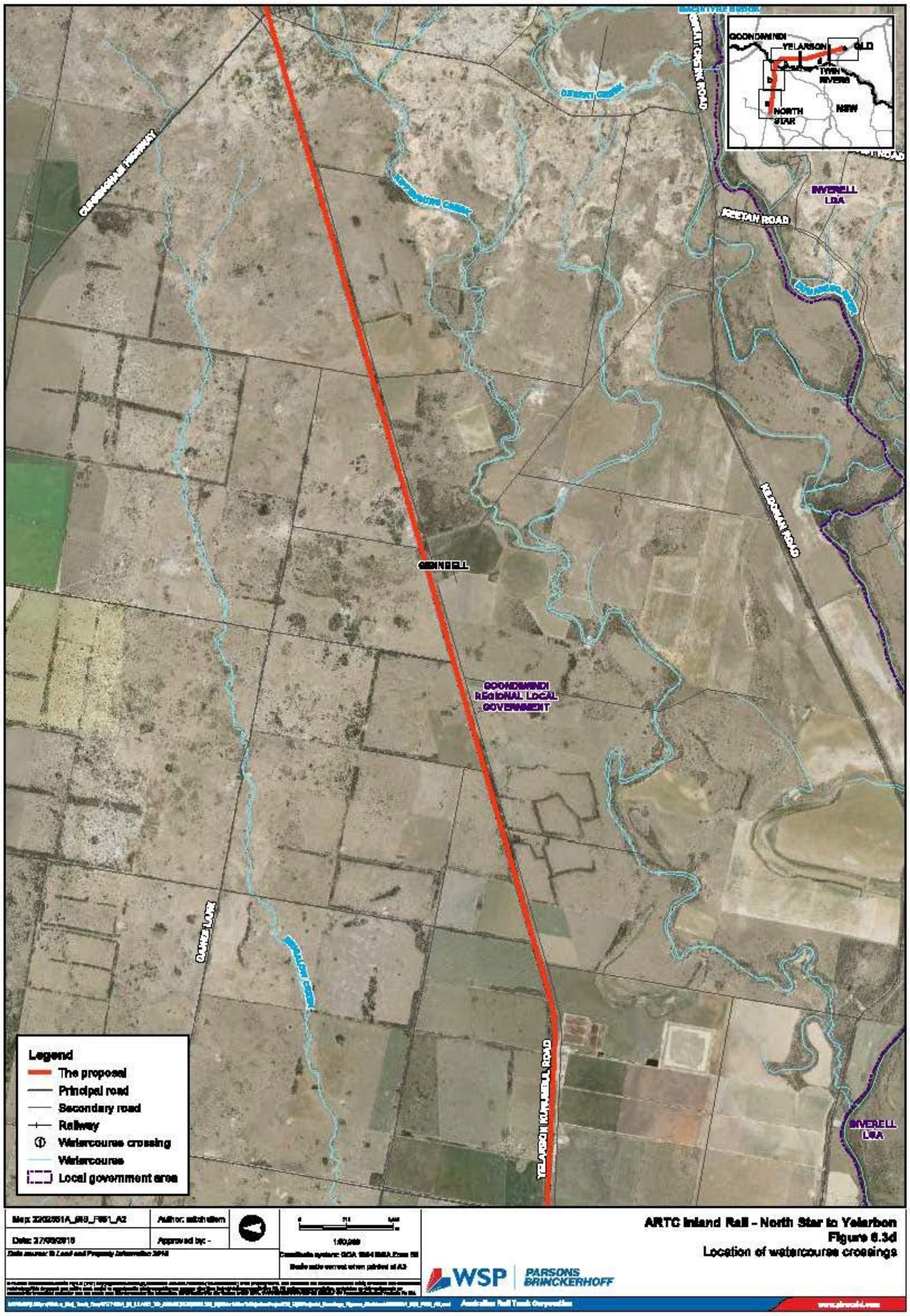
A flooding assessment will be undertaken for the EIS and will include a quantitative assessment of the potential flood impacts of the proposal. The assessment will quantify the impacts of any structures such as bridges, culverts and embankments on flood levels for a range of flood events.

Figure 6.2 Key waterways and flooding

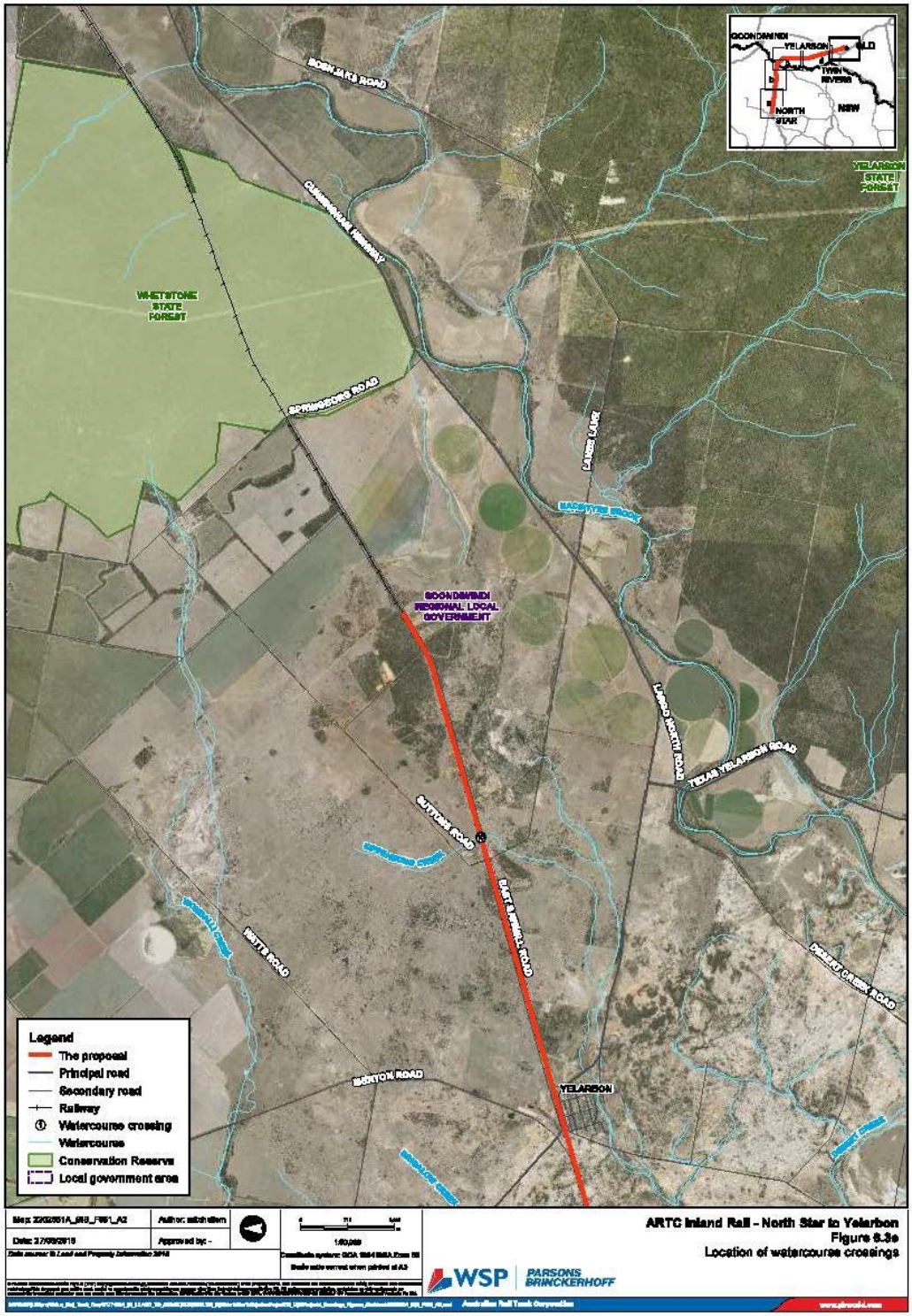



WARIANAH GAP
TUCKA TUCKA ROAD
MORRIS PLAINS LGA
MELON RIDGE
OAKHURST ROAD
BOOMERA ROAD
NORTH STAR ROAD
GWYDIR LGA
HUMPYBONG
GWYDIR HIGHWAY
Legend
The proposal
Principal road
Secondary road
Railway
Watercourse crossing
Watercourse
Local government area
ARTC Inland Rail – North Star to Yelarbon
Figure 6.3b
Location of watercourse crossings
WSP
PARSONS BRINCKERHOFF


KURUMERUL
GOONDIWINDI REGIONAL LOCAL GOVERNMENT
INVERELL LGA
WYDIR LGA
MOREE PLAINS LGA
NARRAWAH CAMP
TURRAWA TUCKA ROAD
Legend
The proposal
Principal road
Secondary road
Railway
Watercourse crossing
Watercourse
Local government area
ARTC Inland Rail - North Star to Yelarbon
Figure 8.3c
Location of watercourse crossings
WSP
PARSONS BRINCKERHOFF



ARTC Inland Rail - North Star to Yelarbon
Figure 6.3d
Location of watercourse crossings


BORN JARS ROAD
WHETSTONE STATE FOREST
SPRINGBROOK ROAD
LAMBS LANE
MACINTYRE BROOK
BOONDANDEN REGIONAL LOCAL GOVERNMENT
LAMBS NORTH ROAD
TEXAS YELARBON ROAD
SUTTONS ROAD
EAST BRANCH ROAD
WHITE ROAD
DESERT CABIN ROAD
MORTON ROAD
YELARBON
YELARBON STATE FOREST
Legend
The proposal
Principal road
Secondary road
Railway
Watercourse crossing
Watercourse
Conservation Reserve
Local government area
ARTC Inland Rail - North Star to Yelarbon
Figure 6.3e
Location of watercourse crossings
WSP
PARSONS BRINCKERHOFF

6.6. Topography, geology and soils

6.6.1. Existing Environment

6.6.1.1. Geology and soils

The 1:250 000 Goondiwindi Geology Map indicates that the majority of the proposal site passes through Quaternary sand and alluvium deposits. Part of the northern section of the proposal site passes through the Jurassic Kumbarilla Beds which comprise sandstone, siltstone, mudstone and conglomerate overlain by Quaternary age sediments.

A review of the Atlas of Australian Acid Sulfate soils revealed that the proposal is not located on land affected by acid sulfate soils.

6.6.1.2. Topography

The 1:100 000 Yetman Topographic Map and aerial photos for the site indicate that the northern section of the proposal site generally passes through gently sloping to level farming land located within or adjacent to the flood plain of Macintyre River.

The 1:100 000 Coppa Creek Topographic Map and aerial photos for the site indicate that the southern section of the proposal site predominantly passes through gently sloping to level farming land located within or adjacent to the flood plain of several small creeks which flow northwest to Whalan Creek.

6.6.2. Potential Impacts

High erosion hazard areas have been identified north and north-east of North Star using the NSW soil and land information published by the NSW OEH. These areas would require implementation of appropriate management measures and would include erosion and sediment control measures, as detailed in the *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).

The proposal site isn't located within an area identified as having the potential to contain acid sulfate soils and therefore it is unlikely that acid sulfate soils would affect or would be impacted by the proposal. Furthermore, the area is not identified to be located on salinity prone land (Department of Water and Energy, 2008).

6.6.3. Scope of further assessment

Geotechnical investigations and field surveys will be undertaken as part of the design development process.

6.7. Contamination

A review was undertaken of the NSW EPA Contaminated Land: Record of Notices database and NSW EPA contaminated sites register for the Gwydir and Moree Plains LGAs.

6.7.1. Existing Environment

A search of the NSW EPA contaminated sites register for the Gwydir and Moree Plains LGA did not identify any contaminated sites within the proposal site. A search of the NSW EPA Contaminated Land: Record of Notices database was also undertaken. The search did not identify any properties which are currently under investigation within the proposal site.

6.7.2. Potential Impacts

The potential for encountering contamination during construction is reduced because the existing contaminated site registers do not identify any contaminated sites which are within the proposal site. However, parts of the proposal

would use the existing rail corridor north of North Star. Existing rail sites are often sources of contamination or hazardous materials i.e. hydrocarbons, arsenic, asbestos and lead paint. There may also be a risk of encountering localised contamination from unregistered landfill and storage of agricultural chemicals. In particular, cattle dips are sources of high Arsenic and DDT contamination.

During construction, the proposal would have the potential to result in contamination as a result of any spills or leaks from construction equipment and site compounds. There is also the potential for contamination to occur during operation, as a result of any fuel or oil spills, leaks from trains or transportation of hazardous materials.

6.7.3. Scope of further assessment

The desktop searches undertaken to date do not indicate any need for further contamination testing. However, site specific testing would be required if significant signs of contamination or different soil conditions are identified during the geotechnical investigations. Samples of any materials that might be considered contaminated will be taken during the geotechnical investigations.

Further sampling for waste classification would be required prior to the off-site disposal of soils during construction. All waste classification would be done in accordance with NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste.

6.8. Land use, socio-economic and visual impacts

The Gwydir and Moree Plains LEP maps and Australian Bureau of Statistics (ABS) data have been used in the desktop study to describe the socio-economic characteristics of the area and identify the different land uses across the proposal site.

6.8.1. Existing Environment

6.8.1.1. Land use

The proposal traverses rural areas and land which is predominantly used for grazing and agriculture. The majority of the land has been cleared and disturbed for agricultural activities, however some patches of remnant vegetation remain (refer to section 6.2). The land falls under the Gwydir and Moree Plains LGA. All land within the proposal site is classified as RU1 - Primary Production land use zone.

With the exception of North Star, Boggabilla is the only other town in the vicinity of the proposal. The proposal does however cross a travelling stock reserve adjacent to Tucka-Tucka Road and Boggabilla (refer to https://www.industry.nsw.gov.au/lands/what-we-do/crown-land/western.).

6.8.1.2. Socio-economic

North Star is a small town, identified to have a population of 423 (2011 Census). Larger towns in the area include Moree which is 80 kilometres south-west of North Star and has a population of 9,346 (2011 Census). The main industries in the area are related to agricultural activities. Of the employed people in North Star, 58.4% worked in Sheep, Beef Cattle and Grain Farming in 2011 (2011 Census). The proposal would bisect several properties where the existing rail line occurs as well as travelling through undisturbed areas north of Whalan Creek to the NSW/Queensland border.

6.8.1.3. Visual

The visual character of the area is predominantly rural, with agricultural activities dominating the landscape. A majority of the land has been cleared or previously disturbed for agricultural activities. Other dominant features in the landscape include the existing disused rail line, Bruxner Way and Tucka Tucka Road.

6.8.2. Potential Impacts

6.8.2.1. Land use

The proposal includes a combination of new track and track upgrade works. Full or partial acquisition of properties would be required in order to construct and operate the rail line. As the proposal is located in a rural area, it passes through agricultural land, potentially severing both cultivated and grazing land. The proposal also crosses a travelling stock reserve which would have an impact on its use during construction and operation.

6.8.2.2. Socio-economic

The proposal would have wide ranging economic impacts. It would allow for more direct, efficient and safer freight transport along the east coast of Australia which would have benefits for Australia's economic growth and competitiveness by supporting existing and new businesses. The proposal would also provide benefits by easing road traffic and congestion which would result in greater road safety, lower congestion and pollution from road freight. The construction and operation of the entire Inland Rail would also contribute to growth in jobs and business at a local and regional scale.

In the short term, not all of the economic impacts of the proposal are likely to be positive. The construction of the proposal may temporarily negatively affect the day-to-day operation of businesses located near construction work sites at North Star. However, this may be offset through construction activity generating additional local expenditure through local shops and services which would have a positive impact. Depending on the size of the workforce, an influx of workers may also result in an increase in housing demand, and may drive up housing and accommodation costs.

Due to the impact upon productive land, the proposal initially would have negative impacts upon agribusiness. These impacts would include severance to crops and grazing areas which would reduce the productivity of the surrounding land and potential income generated. There may also be reduced access due to impacts on the travelling stock reserve.

The scope and significance of the social impacts are also likely to vary. Many of the social impacts during the construction phase may be adverse as a result of amenity based impacts such as visual, noise, air quality, and traffic impacts, as discussed in sections 6.8, 6.9, 6.10 and 6.11 respectively. Camp accommodation also has the potential to have a social impact. During operation, potential amenity based impacts such as noise and vibration are likely to occur in areas where the proposal is situated within close proximity to sensitive receivers (such as residential areas) as discussed in section 6.9.

6.8.2.3. Visual

During construction there would be visual impacts due to the presence of construction compounds, barricades, fencing, machinery and vehicles. Construction works such as excavation would also present visual impacts to passing receivers. These visual impacts would not be expected to be significant as the majority of sites would be located in rural areas away from sensitive receivers. However works around North Star and near roads and residential receivers would have greater effects.

During operation, the completion of the proposal would introduce new rail infrastructure that was not previously present in the northern section of the proposal site. This would impact on the existing visual and landscape character of the area. However, the upgrade of the disused rail infrastructure in the southern section may be seen as consistent with the current visual setting due to the presence of existing rail infrastructure.

6.8.3. Scope of further assessment

6.8.3.1. Land Use

A land use and property assessment will be undertaken to confirm the specific properties and owners along the proposal site that would be affected by the proposal and identify measures to avoid, minimise and manage impacts.

6.8.3.2. Socio-economic

A socio-economic assessment will be undertaken to assess the social and economic impacts on the community as a result of the construction and operation of the proposal. This assessment would include details of the local community, their nature and values, potential noise, vibration and visual impacts and likely traffic and access impacts to the community.

The assessment will also identify the nature of the community affected, the likely degree of impact and the necessary mitigation to minimise the impacts.

6.8.3.3. Visual

A landscape and visual assessment will be undertaken to identify the potential visual impacts on sensitive receivers from the construction and operation of the proposal. This assessment would include details of the potential impacts on sensitive receivers, viewpoints and amenity impacts during construction.

The existing landscape character and its sensitivity to change will also be described and would identify the impact resulting from the construction and operation of the proposal.

6.9. Noise and Vibration

6.9.1. Existing Environment

Given its rural context, the ambient noise levels are likely to be relatively low, hence making receivers potentially more sensitive to construction and operation noise. Current noise-generating activities would include agricultural activities, road traffic and rail operations south of North Star.

The sensitive receivers for the proposal would include residents of North Star and scattered rural residences within the proposal site. The proposal traverses land which is slightly undulating with limited opportunity for natural screening.

6.9.2. Potential Impacts

There would be noise and vibration generated by the construction and operation of the proposal which would alter the existing noise environment.

6.9.2.1. Construction

Potential noise and vibration sources during construction would include:

- Operation of construction plant and equipment.
- Noise associated with construction traffic and vehicle movements.

Noise impacts from construction would have a limited duration due to the linear nature of the proposal. The degree of noise impacts would depend on the proximity of the receivers to the work and their relative exposure.

Vibration generated by construction activities typically dissipates to negligible levels within 50 to 200 metres, depending on the type of activity and local geology. Therefore, widespread impacts from construction vibration are not anticipated.

6.9.2.2. Operation

The operation of a railway would result in the generation of noise including:

- Wheel rail interactions.
- Possible high frequency wheel squeal on tight radius curves and brake squeal from freight wagons at low speed.
- Horn noise.
- Maintenance activities e.g. rail grinding, inspections.
- Ground vibration from train movements.
- Diesel engine, exhaust system, cooling system and motor system noises.

Many of these noises are dependent on the nature of operation of the trains. However, the above noise sources would represent a long-term impact on the local environment.

6.9.3. Scope of further assessment

A detailed noise and vibration assessment will be undertaken. The assessment would be undertaken with regard to the Interim Construction Noise Guideline (DECC, 2009), Rail Infrastructure Noise Guidelines (NSW EPA, 2013) and Inland Rail Noise and Vibration Management Strategy. The assessment would include:

- Identification of sensitive receivers within the proposal site.
- Assessment of construction noise levels on sensitive receivers and development of mitigation measures to manage impacts.
- Assessment of operational noise levels on sensitive receivers, including typical and high-volume scenarios, and identification of management measures, including any feasible and reasonable measures to mitigate impacts.
- Documenting of design, assessment and modelling assumptions and approaches.
- Identification of opportunities to reduce noise impacts through design or management measures.

6.10. Air Quality

6.10.1. Existing Environment

Ambient air quality in the proposal site would be characteristic of rural areas, which have low particulate matter and pollutants in the air. The main factors affecting the air quality in the proposal site would include road traffic, agricultural activities and prevailing meteorological conditions.

6.10.2. Potential Impacts

Activities with the potential to influence air quality during construction include:

- Excavations, groundworks and storage and transport of soil.
- Emissions from the operation of construction vehicles, plant and equipment.
- Erosion of exposed areas such as cleared vegetation, uncovered stockpiles and haul roads.

Operation of the proposal would result in increased emissions such as greenhouse gases and particulates from the diesel consumption of freight trains using the rail corridor, however it is likely that this would be more than offset by the reduction in road freight required.

6.10.3. Scope of further assessment

An air quality impact assessment will be undertaken as part of the EIS. This assessment would include:

- Identification of sensitive receivers within the proposal site.
- Identification of ambient air quality conditions and meteorological conditions.
- Modelling and assessment of the potential emissions from the proposal and their impacts to the local air quality including justification of key design and modelling assumptions and approaches.

6.11. Traffic and transport

6.11.1. Existing Environment

6.11.1.1. Road network

The Bruxner Way and Tuck Tucka Road are the major roads that are located within the proposal site. Other roads within the proposal site are local and private rural roads which include both sealed and unsealed roads.

The proposal would run parallel to the Bruxner Way, for approximately 13 kilometres, which is a major east-west link between the Newell Highway in the north-west near Boggabilla and the New England highway in the east at Tenterfield. Tucka Tucka Road also runs east-west, linking to the Bruxner Way from Holdfast Road. The road network and major highways in proximity to the proposal is shown in Figure 1.1.

6.11.1.2. Rail network

The proposal would utilise approximately 25 kilometres of existing track which would upgraded on the same alignment. The existing rail network in the area includes the out-of-use Boggabilla railway line in NSW. The Boggabilla rail line branches from the Mungindi railway line at Camurra and runs for 130 kilometres to Boggabilla, bypassing North Star. The existing rail network is described in section 3.4.

6.11.2. Potential Impacts

The proposal would potentially cross several local and main roads which would include the Bruxner Way and Tucka-Tucka Road.

Level crossings and bridges would need to be provided to allow vehicle access over the rail line. There would also be some traffic and access impacts where the construction of the rail line interfaces with the road. The proposal does however provide the opportunity to upgrade and replace existing level crossings along the existing rail line, which would improve the overall safety of rail operations and vehicles that currently use these crossings.

There would be an increase in heavy and light vehicle movements on local roads associated with the construction of the proposal. No significant impact to traffic levels are expected from the operation of the proposal due to the low volume of traffic in the area. However, there would be permanent alterations to the local road network and current access arrangements where the proposal interfaces with local and access roads.

Maintenance access for the proposal would be provided by corridor access points. The operation of the proposal would result in an overall improved journey time for freight movements between Sydney and Brisbane as well as reducing the amount of road freight required, improving safety and traffic on roads within NSW.

6.11.3. Scope of further assessment

A detailed traffic and access impact assessment will be prepared for the EIS. The assessment would include:

- Identification of vehicle movements and access and haulage routes during construction.
- Identification and assessment of impacts to major and local roads.
- Identification of traffic and access impacts to the local road networks and private properties.
- Assessment of severance issues associated with agricultural activities including machinery access and rotational grazing.
- Mitigation measures to manage potential adverse impacts from the construction phase.

OTHER ISSUES

6.12. Waste and resource use

Potential sources of waste generation from the construction of the proposal would include:

- Spoil from excavation works.
- Green waste from vegetation clearance.
- Solid wastes including fencing, barriers and offcuts of materials such as concrete, bricks, steel and timber.
- Liquid waste such as oils and chemicals from equipment use and maintenance.
- General waste from construction personnel including food scraps, papers, plastic containers and glass.
- Wastewater run-off including water utilised for dust suppression.

Construction waste would be managed through the waste hierarchy established under the Waste Avoidance and Recovery Act 2001 (i.e. avoidance of waste, resource recovery, disposal of waste). All waste generated by the proposal would be assessed, classified, managed and disposed of in accordance with the Waste Classification Guidelines (DECCW 2009). Standard environmental management measures (based on the Waste Classification Guidelines) would be prepared prior to construction.

6.13. Greenhouse gas and energy

Activities that would generate greenhouse gas emissions during construction would include:

- Use of heavy machinery and vehicles.
- Electricity use at site compounds and offices.
- Clearing of vegetation.
- Indirect emissions embodied in construction materials including concrete and steel.

Operational greenhouse gas emissions would be associated with the use of diesel to power freight vehicles. However, the completion of the Inland would offer savings in terms of fuel use as it provides a shorter and more efficient route for freight transport. Opportunities to reduce greenhouse gas emissions would be investigated during detailed design. A Scope 1 greenhouse gas assessment will also be undertaken, based on the *Australian National Greenhouse Accounts (NGA) Factors 2008*, prepared by the Australian Government Department of Climate Change.

6.14. Climate change

Due to the anticipated timing of the proposal, impacts due to climate change would not be expected to be significant during the construction phase of the proposal. Operationally, potential issues from climate change would include damage and buckling in tracks due to more extreme temperature variations and more extreme weather events.

Climate change adaptation would be considered in the detailed design of the proposal. A climate change risk assessment will be completed and would provide recommendations to minimise the impacts of climate change.

The following government guidelines would be considered as relevant during the preparation of the climate change risk assessment:

- Commonwealth Scientific and Industrial Research Organisation's *Climate Change in Australia* Technical Report 2007 (this is based on the Intergovernmental Panel on Climate Change's Fourth Assessment Report, 2007).
- *ISO 31000-2009*; Risk Management – Principles and Guidelines.
- *AS 5334* – Climate Change Adaptation for Settlements and Infrastructure.

6.15. Hazards and risks

Hazards and risks associated with the construction of the proposal would include:

- The transport, use and storage of hazardous chemicals.
- The use of heavy machinery.
- Works conducted in an operational rail corridor.
- Works within or adjacent to an operating roadway.

Construction hazards and risks would be managed through the application of standard mitigation measures, which would be developed prior to construction.

Potential operational hazards and risks would include train accidents (including derailment, collision or impact), level crossing collisions, spills from train and equipment (such as oil and cleaning chemicals) and accidents involving hazardous cargo. These risks would be managed through design and the application of education programs, and standard mitigation measures and plans (such as emergency response plans).

6.16. Utilities and services

The proposal would require any intersecting utilities to be relocated or protected. The proposal traverses overhead powerlines and buried telecommunication cables. Due to double stacked clearance requirements it can be assumed that typically all crossings would require the services to be modified. If there is insufficient clearance then raising or relocation of powerlines or undergrounding might be required to provide clearance. A more detailed investigation of existing utilities and services would be undertaken during the design process.

6.17. Sustainability

A sustainability assessment will be undertaken as part of the EIS. The sustainability assessment will be prepared in accordance with the Inland Rail sustainability strategy and the Infrastructure Sustainability (IS) Rating Scheme developed by the Infrastructure Sustainability Council of Australia (ISCA). The assessment would:

- Document how the proposal would address and achieve the principles of ecologically sustainable development.
- Describe the sustainability benefits of the proposal.
- Provide context for the need for sustainable outcomes on the proposal.
- Document opportunities to improve sustainable outcomes on the proposal, including:
  - Opportunities to use renewable and local materials in the construction phase.
  - Opportunities to use renewable energy sources and meet other sustainability outcomes.

6.18. Cumulative Impacts

An assessment of the cumulative impacts will include a description of any major projects occurring in the vicinity of the proposal and identify potential cumulative impacts associated with the development and the proposal.

The cumulative impact assessment would also need to provide consideration for the other Inland Rail projects. In particular, the projects which adjoin to the North Star to Border section, which include Narrabri to North Star and NSW/Queensland border to Gowrie.

7. CONSULTATION

7.1. Overview

Stakeholder and community consultation for Inland Rail is an integral part of informing scoping investigations for the proposal EIS.

The Australian Government completed the 2010 Inland Rail Alignment Study to determine if an inland railway line is required. In late 2013, the then Deputy Prime Minister, the Hon Warren Truss MP, established IRIG to develop a delivery programme for the implementation of Inland Rail. The IRIG was chaired by former Deputy Prime Minister, the Hon John Anderson AO, with senior representatives from the Australian, New South Wales, Queensland and Victorian governments, and ARTC.

To support the IRIG investigations, ARTC was tasked with developing a Programme Business Case, including a ten year delivery schedule, cost estimate, development strategy and a detailed analysis of the economic benefits of Inland Rail. The IRIG took a consultative approach, engaging with a broad range of stakeholders including potential future users as well as individuals, communities and others who would live and work along the alignment, to understand the breadth of issues associated with Inland Rail.

The IRIG delivered the Programme Business Case to the Australian Government in September 2015. At this time, the 2010 Inland Rail Alignment Study was endorsed by the IRIG and is the base case for further work by ARTC.

Key stakeholders for the proposal include (but not limited to):

- Commonwealth and State Members.
- Representatives of local councils at Moree Plains Shire Council, Goondiwindi Regional Council (Queensland), Gwydir Shire Council and Inverell Shire Council.
- Australian and State government departments and agencies (e.g. Roads and Maritime Services, Country Trains), as well as the State Government appointed operator of the Country Rail Network.
- Business, freight and agricultural stakeholders (e.g. NSW Farmers Association, GrainCorp).
- Landowners within and surrounding the proposal site.
- Local Community.
- Environment stakeholders (e.g. Local Land Services, Rural Fire Service).
- Community groups.
- Peak bodies.
- Local Aboriginal Land Councils and cultural knowledge holders.
- Service providers (e.g. telecommunications, utilities, medical, emergency).
- Existing lease agreement holders (lessees) within the rail corridor.

7.2. Consultation strategy and objectives

The engagement objectives for the proposal to date have been to introduce the Inland Rail Programme and the North Star to NSW/Queensland border project to stakeholders and the local community. The other objective has been to gather a preliminary understanding of the area through local engagement and carrying out preliminary technical investigations across the proposal site. These investigations and consultation outcomes also assisted Inland Rail in determining a preferred corridor option and location to cross the Macintyre River. Consultation activities were carried out in both NSW and Queensland (up to Yelarbon) as many of the interests and potential issues were common across the border. Goondiwindi provides key services and business support to many community members and landowners between North Star and the border.

A community engagement plan has been prepared for the Inland Rail Programme that guides the consultation activities for the proposal. ARTC's values documented within the plan commit the organisation to active engagement with stakeholders and the community.

7.3. Consultation to date

7.3.1. Inland Rail Programme

Inland Rail engagement activities have been undertaken since 2014 across all levels of government, peak bodies, potential customers, end users and industry. The consultation activities include:

- Meetings in regional areas since June 2014 including Ipswich, Toowoomba, Narrabri, Dubbo, Parkes, Wagga Wagga and Wodonga to brief local government leaders, stakeholders and industry representatives on Inland Rail, and to seek local insight and feedback.
- Industry information sessions were held in Sydney and Brisbane in September 2014 to inform potential suppliers about upcoming opportunities, including how and when they can potentially get involved with Inland Rail. These sessions were attended by more than 400 representatives from Australian and international construction, engineering and rail companies.
- One-on-one meetings with local government representatives, peak bodies, potential customers and key state and Commonwealth government agencies.
- Attendance at industry forums including Heavy Haul (Newcastle), Rail Freight Futures (Melbourne), the Australian Logistics Council Annual Forum (Melbourne), and Murray Now (Albury).
- Inviting key local councils and businesses to contribute their views in terms of the potential benefits of Inland Rail through a submission process that has been complementary but separate from the Programme Business Case.

7.3.2. One-on-one and group meetings with Councils and landowners have been ongoing to date.The Proposal - informing and scoping investigations

Consultation and engagement activities have focused on engaging with the local community including landowners, Councils and regional community groups. Consultation activities have included providing information and gathering feedback from stakeholders and the local community allowing us to gain an understanding of the issues and opportunities across the proposal site. A focus of the engagement activities is on building awareness, understanding and support for customers, stakeholders, and the community. Tools such as newsletters, community information sessions, factsheets, and updates to the Inland Rail website have been utilised in the engagement activities. Engagement with local councils, Commonwealth and State Members of Parliament for the proposal has also been undertaken during this time

The Table 7.1 outlines the stakeholder and community engagement carried out with identified stakeholders in 2016 and early 2017, which provided community members and key stakeholders an opportunity to provide feedback on the proposal.

Table 7.1 Consultation summary

Stakeholders	Activity
• Mark Coulton (MP) • Adam Marshall (MP)	• Formal briefings have been carried out with individual representatives in June and October 2016.
• Moree Plains Shire Council • Goondiwindi Regional Council (Queensland) • Gwydir Shire Council • Inverell Shire Council	• Briefings were held in April, September and December 2016 and March, August and November 2017 with Goondiwindi Regional Council and in September and December 2016 and March, August and November 2017 with Moree Plains Regional Council. • A briefing was held with Gwydir Regional Council in March 2017. • Gwydir Shire Council and Inverell Shire Council representatives received regular phone calls and updates before field activities and community information sessions occurred.
• NSW Farmers • Business Groups • GrainCorp (and other ARTC customers) • Industry groups • Lands Services • Councils	• Since 2014 regular meetings and updates have been carried out with these groups at both regional and local levels. In 2016 Inland Rail held one to one briefings in September and invited industry, community and environment representatives to a Stakeholder Workshop in June 2016. • A meeting was conducted with Land Services in March 2017 regarding the Travelling Stock Route.
• Landowners within the 2 kilometre study area on the western and eastern options	• One-on-one meetings were held with landowners with some 45 meetings held across both the western and eastern corridor options in New South Wales and Queensland. These meetings included engineering, hydrology and ecology field visits in April, June and September 2016. Additional meetings were held with landowners in the study area in March, August and November 2017. A total of 17 meetings were held with landowners during 2017. • In June 2016, four landowners attended the Stakeholder Workshop. • Landowners received a fact sheet and map including the western and eastern options in December 2016 and November 2017. • A letter was distributed to landowners on the corridor options outlining the preferred corridor in February 2017.
• Landowners • Broader community (Boggabilla, North Star, Yetman and Yelarbon) • Industry	• Broad Programme consultation occurred through advertising, materials, mail outs and road shows. • Identified potentially affected landowners and surrounding landowners received an information flyer promoting community information sessions in June 2016. • Broader community and landowners in the Boggabilla, North Star, Yetman and Yelarbon (Queensland) communities received an information flyer promoting community information sessions in October 2016. • Advertising prior to community information sessions appeared in the following local papers: Border News and Goondiwindi Argus. A media

	release also appeared in the Goondiwindi Argus (online) in October 2016. • Three Community Information Sessions were held in both June and October 2016 in Yelarbon, Goondiwindi and North Star. A total of 105 people attended the sessions. A Project fact sheet and map was mailed to participants in December 2016.
• Government Agencies	• One-on-one briefings were held with the Department of Transport and Main Roads in Queensland and Roads and Maritime Services in October 2016 and February 2017. Inland Rail met with the Office of Environment and Heritage in September 2016 to discuss preliminary flood modelling.
• Local Aboriginal Land Councils	• Community information Sessions advertised in June and October 2016.

7.3.3. Consultation outcomes

During the proposal investigation and scoping phase and through the engagement activities, stakeholders and the community have had the opportunity to view project material, make an enquiry, or put forward feedback. Suggested alignment refinements made by stakeholders and community have been investigated during the investigation and scoping phase.

Table 7.2 outlines a summary of the key feedback received to date and how this would be considered in defining the scope of the environmental impact statement.

Table 7.2 Consultation feedback

Topic	Key issue	EIS
Land use, socio-economic and visual impacts	Concern about impacts upon agricultural land uses and existing farming operations, including property severance and level crossings.	The environmental impact statement will assess the social and economic impacts of the proposal.
	Concern about potential impacts to lifestyle and wellbeing for property owners in proximity to the proposal.	The environmental impact statement will assess the social and economic impacts of the proposal during construction and operation including any changes to production, lifestyle or amenity.
	Concern about impacts upon Travelling Stock Routes.	The environmental impact statement will assess temporary and permanent impacts upon land use.
Environmental impacts	Concern about flooding impacts and water velocity, particularly in the area from Whalan Creek to the Macintyre.	The environmental impact statement will assess and model the impacts on flood behaviour during construction and operation.

Topic	Key issue	EIS
Traffic and access impacts	Concern about impacts upon the local road network.	The environmental impact statement will assess impacts upon the road network during construction and operation.
Safety	Concern about the safety of crossing the rail line at level crossings.	The design process will consider the safety of the design. The environmental impact statement will include safeguards and mitigation measures to ensure safety during operation.

7.4. Consultation during preparation of the environmental impact statement

ARTC and the project team will continue to consult with stakeholders and the community during the preparation of the EIS. Consultation activities to be undertaken during the preparation of the EIS are outlined in sections 7.4.1-7.4.4 below.

7.4.1. Inland Rail communications

ARTC communications will continue throughout the preparation of the EIS and would include a community information line, email address and website updates (refer to Table 7.3).

7.4.2. Proposal Community Engagement Lead

The Community Engagement Lead, dedicated to the proposal will continue their role as a vital link in maintaining close and ongoing contact with local communities and stakeholders during preparation of the EIS. The Community Engagement Lead is the key 'on the ground' project representative and will continue to seek to understand local issues and provide this feedback to the project team.

7.4.3. Stakeholder and community engagement

ARTC will continue to provide project updates and written notification to the councils, state and commonwealth MPs, stakeholder groups, landowners and the local community during the preparation of the EIS and the design phase.

Community updates and an information line will continue to be run by ARTC to allow stakeholders and members of the community to keep up to date with the progress of Inland Rail.

7.4.4. Community contact and information

The community contact details outlined in Table 7.3 will remain in place for the preparation of the EIS and the planning and approval process.

Table 7.3 Community contact and information points available during the planning and approval process

Activity	Detail
Community information line (Toll free)	1800 732 761
Community email address	inlandrailenquires@artc.com.au
Inland Rail website	http://inlandrail.artc.com.au
Postal address	Inland Rail Australian Rail Track Corporation GPO Box 2462, Queen Street, Brisbane, QLD 4000
Community Engagement Lead	A Community Engagement Lead is dedicated to this project.

7.5. Public exhibition of environmental impact statement

Public exhibition of the EIS will be for a minimum of 28 days as stated in Section 5.17 and clause 12, Schedule 1 of the EP&A Act. Advertisements will be placed in local media giving information regarding the proposal and display of the EIS.

During the exhibition period, government agencies, stakeholders and the community will be able to review the EIS and will have the opportunity to make a written submission to the Department of Planning and Environment for consideration in its assessment of the project.

Consultation activities during the public exhibition of the EIS will be consistent with those undertaken for the proposal scope exhibition and will include:

- Community Information sessions
- Regular postcard and local newspaper advertising
- Inland Rail website updates
- Stakeholder meetings
- Government stakeholder engagement.

7.6. Consultation during construction

Should the proposal be approved, ARTC will continue to consult with stakeholders and the community during construction in accordance with the conditions of approval. Further information about the consultation activities and tools during the construction phase will be provided in the EIS.

8. CONCLUSION AND NEXT STEPS

The proposal is subject to assessment under the EP&A Act. The capital investment value of the proposal is estimated to be over $50 million, and ARTC has formed the view that the proposal is likely to significantly affect the environment, and, as a result, the proposal is State Significant Infrastructure under *State Environmental Planning Policy (State and Regional Development) 2011*. The proposal is therefore subject to Division 5.2 of the EP&A Act and an EIS is required as part of the process of seeking the approval of the NSW Minister for Planning.

As part of the first step in the approvals process for the proposal, this document supports an application to the Minister seeking the SEARs for the EIS. The document has provided a brief description of the proposal; its statutory and strategic context; stakeholder and community engagement undertaken to inform the design; and a preliminary assessment of impacts and likely significance.

Upon receipt of the SEARs, ARTC would prepare the EIS and submit it to the Department of Planning and Environment as part of the formal application for approval of the proposal.

The EIS will include the following:

- A detailed description of the proposal including its components, construction activities and potential staging.
- A comprehensive assessment of the potential impacts on the key issues including a description of the existing environment, assessment of potential direct and indirect and construction, operation and staging impacts.
- Description of measures to be implemented to avoid, minimise, managed, mitigate, offset and/or monitor the potential impacts.
- Identify and address issues raised by stakeholders.

The next stage in the environmental assessment would be progressing to an EIS which will be prepared in accordance with the EP&A Act and will meet the minimum form and content requirements set out in clauses 6 and 7 of Schedule 2 of the EP&A Regulation.

An EPBC Act referral will be made to the Australian Government Department of the Environment and Energy to seek a determination on whether the proposal is a controlled action requiring assessment under the EPBC Act.

9. REFERENCES

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WSP | Parsons Brinckerhoff 2016c, *Geotechnical Investigation Report* – North Star to Yelarbon.

WSP | Parsons Brinckerhoff 2016d, *Verified Alignment Development and Assessment Report* – North Star to Yelarbon.

APPENDIX A – EPBC LISTED FLORA AND FAUNA LIKELIHOOD OF OCCURRENCE

Australian Government
Department of the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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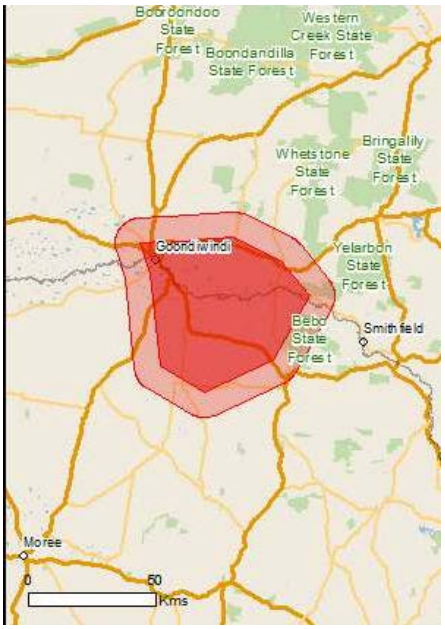

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

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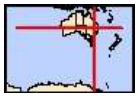

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	26
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	14
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	30
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Banrock station wetland complex	1100 - 1200km
Riverland	1000 - 1100km
The coorong, and lakes alexandrina and albert wetland	1200 - 1300km

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Brigalow (Acacia harpophylla dominant and co-dominant)	Endangered	Community known to occur within area
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community likely to occur within area
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community likely to occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Fish		

Name	Status	Type of Presence
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat known to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
Cadellia pentastylis Ooline [9828]	Vulnerable	Species or species habitat likely to occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Homopholis belsonii Belson's Panic [2406]	Vulnerable	Species or species habitat may occur within area
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Tylophora linearis [55231]	Endangered	Species or species habitat likely to occur within area
Westringia parvifolia [4822]	Vulnerable	Species or species habitat likely to occur within area
Xerothamnella herbacea [4146]	Endangered	Species or species habitat may occur within area
Reptiles		
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat may occur within area
Delma torquata Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Uvidicolus sphyrurus		
Border Thick-tailed Gecko, Granite Belt Thick-tailed Gecko [84578]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat known to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Commonwealth Bank of Australia
Commonwealth Land - Telstra Corporation Limited

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Dthinna Dthinnawan	NSW
Dthinna Dthinnawan	NSW

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		

Name	Status	Type of Presence
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus africanus Climbing Asparagus, Climbing Asparagus Fern [66907]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Parthenium hysterophorus Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area

Name	Status	Type of Presence
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Morella Watercourse / Boobera Lagoon / Pungbougal Lagoon	NSW

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-28.49446 150.332926,-28.477562 150.577371,-28.549964 150.74766,-28.660885 150.849283,-28.860729 150.720194,-28.959305 150.475748,-28.879971 150.319193,-28.590971 150.283487,-28.496874 150.250528,-28.492046 150.338419,-28.49446 150.332926

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-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Parks and Wildlife Commission NT, Northern Territory Government
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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