Australian Government

BUILDING OUR FUTURE

ARTC InlandRail

Inland Rail Programme

Narrabri to North Star Project

Environmental Impact Statement

Main Report

Image: Newell Highway north of Narrabri, NSW

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Certification

Submission of environmental impact statement

Prepared under Part 5.1 of the Environmental Planning and Assessment Act 1979 (NSW).

Environmental impact statement prepared by:

Name	Kate Day	Aryel Pyliotis
Qualifications	Bachelor of Environmental Science (Honours) Master of Environment	Bachelor of Science (Honours)
Address	GHD Pty Ltd 133 Castlereagh Street, Sydney NSW 2000	
Responsible person name and address (proponent)	Simon Thomas Programme Director Inland Rail Australian Rail Track Corporation Level 12, 40 Creek Street, Brisbane QLD 4000	
The address of the land to which the statement relates	Land within the Narrabri, Moree Plains, and Gwydir local government areas as described within this environmental impact statement.	
Description of the infrastructure to which this statement relates	Construction and operation of a section of Inland Rail, located between Narrabri and North Star in NSW.	
Environmental impact statement	An environmental impact statement is attached addressing all matters in accordance with Part 5.1 of the Environmental Planning and Assessment Act 1979 (NSW) and Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (NSW).	
Declaration	I certify that I have prepared this environmental impact statement in accordance with the Secretary's Environmental Assessment Requirements dated 8 November 2016. The environmental impact statement contains all available information that is relevant to the environmental assessment of the infrastructure to which the statement relates. To the best of my knowledge, the information contained in the environmental impact statement is neither false nor misleading.	
Signatures		
Name	Kate Day	Aryel Pyliotis
Date	3 November 2017	3 November 2017

Abbreviations

Abbreviation	Definition
ABS	Australian Bureau of Statistics
AEP	annual exceedance probability
AHD	Australian height datum
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal heritage impact permit
ANZS	Australia and New Zealand Standard
ARTC	Australian Rail Track Corporation
AS	Australian Standard
ATMS	Advanced Train Management System
BoM	Bureau of Meteorology
CEEC	critically endangered ecological community
CEMP	construction environmental management plan
CHMP	Cultural Heritage Management Plan
CLM Act	*Contaminated Land Management Act 1997* (NSW)
CO	Carbon monoxide
CSIRO	Commonwealth Scientific and Industrial Research Organisation
dB	decibel
dB(A)	A-weighted decibel
EEC	endangered ecological community
EIS	environmental impact statement
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000* (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EPL	environment protection licence
ESD	ecologically sustainable development
FM Act	*Fisheries Management Act 1994* (NSW)
GIS	geographical information system
GHD	GHD Pty Ltd
ha	hectare
IBRA	Interim Biogeographic Regionalisation of Australia
ICB	intermediate bulk containers
IS	infrastructure sustainability
ISCA	Infrastructure Sustainability Council Australia

Abbreviation	Definition
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardisation
km	kilometres
km^2	square kilometres
km/h	kilometres per hour
LEP	Local Environmental Plan
LGA	local government area
LUCRA	Land Use Conflict Risk Assessment
m	metres
m^3	cubic metres
mAHD	metres above Australian Height Datum
mm/s	millimetres per second
NATA	National Association of Testing Authorities
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
NO_2	Nitrogen dioxide
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
OEH	Office of Environment and Heritage
OEMP	operation environmental management plan
PM	particulate matter
PMF	probable maximum flood
POEO Act	*Protection of the Environment Operations Act 1974* (NSW)
PPV	peak particle velocity
RING	*Rail Infrastructure Noise Guideline* (EPA, 2013)
SEARs	Secretary's Environmental Assessment Requirements (for the EIS)
SEPP	state environmental planning policy
SO_2	Sulphur dioxide
TEC	threatened ecological community
TSC Act	*Threatened Species Conservation Act 1995* (NSW)
VDV	Vibration dose value
WARR Act	*Waste and Resource Recovery Act 2001* (NSW)
µg/L	microgram per litre
$µg/m^3$	microgram per cubic metre
µS/cm	microsiemen per centimetre

Definitions

Term	Definition
Aboriginal object	Defined by the *National Parks and Wildlife Act 1974* as: 'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains'.
Aboriginal site	A place where physical remains or modification of the natural environment indicate past and 'traditional' activities by Aboriginal people. Site types include artefact scatters, isolated artefacts, burials, shell middens, scarred trees, quarries and contact sites. Includes sites listed on the. Also known as Aboriginal objects.
Aboriginal place	Declared by the Minister for the Environment, in accordance with section 84 of the *National Parks and Wildlife Act 1974* and by an order published in the Gazette, as a place that, in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture.
Aboriginal places of heritage significance	Defined in the *Standard Instrument - Principal Local Environmental Plan* as an area of land, the general location of which is identified in an Aboriginal heritage study adopted by the Council, and that may be shown on the Heritage Map. The term may include (but is not limited to) places that are declared as Aboriginal places under section 84 of the *National Parks and Wildlife Act 1974*.
Absorptive capability	Absorptive capability relates to the ability of the landscape character zones to absorb the proposal within the existing landscape setting
Active control (level crossings)	Where the movement of vehicular or pedestrian traffic across a railway crossing is controlled using devices such as flashing signals, gates or barriers (or a combination of these), with the device/s activated prior to, and during, the passage of a train through the crossing.
Annual exceedance probability (AEP)	The chance of a flood if a nominated size occurring in a particular year. The chance of the flood occurring is expressed as a percentage and, for large floods, is the reciprocal of the annual recurrence interval (ARI). For example, the one per cent AEP flood event is equivalent to the 100 year ARI flood event.
Approved methods	*Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (Department of Environment and Conservation, 2005).
Average recurrence interval (ARI)	The long-term average number of years between the occurrence of a flood of a nominated size.
Ballast	Crushed rock, stone etc used to provide a foundation for a railway track. Ballast usually provides the bed on which railway sleepers are laid, transmits the load from train movements, and restrains the track from movement.
Biobanking agreement	Landowners enter into a biobanking agreement with the Minister for the Environment to establish a biobank site. A biobanking agreement is a conservation covenant that is attached to the land title. A biobanking agreement specifies the management actions that are required to be undertaken on biobank sites to improve biodiversity values and allow biodiversity credits to be created.
Biobank site	A site to which a biobanking agreement applies.

Term	Definition
Biodiversity credits	In accordance with the *Framework for Biodiversity Assessment* (OEH, 2014b) the biodiversity credits, which consist of ecosystem credits and species credits, represent the impacts on threatened species as a result of a proposal. A decision support tool, produced by OEH, is used to determine the number of biodiversity credits required to offset the impacts of the development.
Biodiversity offsets	Biodiversity offsets are measures that benefit biodiversity by compensating for the adverse impacts elsewhere of an action, such as clearing for development. Biodiversity offsets work by protecting and managing biodiversity values in one area in exchange for impacts on biodiversity values in another.
Biophysical environment	The physical environment (water, soil etc) as well as the biological activity within it (plants, animals etc.).
Bulk freight	Bulk freight generally involves large quantities of homogenous product, typically liquid or loose crushed solid material (such as cement, grains and ores), transported en masse without packaging.
Classified road	A road that meets the definition of a classified road and is listed as such under the *Roads Act 1993* – includes main roads, highways, freeways etc.
Climate	The average weather experienced at a site or region over a period of many years, ranging from months to many thousands of years. The relevant measured quantities are most often surface variables such as temperature, rainfall and wind.
Climate scenario	A plausible and often simplified representation of the future climate, based on an internally consistent set of climatological relationships that has been constructed for explicit use in investigating the potential consequences of anthropogenic climate change, often serving as input to impact models.
Crossing loop	A section of track off to the side of the main track/s that allows a train to move to the side so that another can pass.
Construction compound	An area used as the base for construction activities, usually for the storage of plant, equipment and materials and/or construction site offices and worker facilities.
Culvert	A structure that allows water to flow under a road, railway, track, or similar obstruction.
Dangerous goods	Dangerous goods are substances or articles that pose a risk to people, property or the environment, due to their chemical or physical properties. They are usually classified with reference to their immediate risk.
Ecologically sustainable development	Development that uses, conserves and enhances the resources of the community so that ecological processes on which life depends are maintained, and the total quality of life, now and in the future, can be increased.
Ecosystem credit	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with a plant community type. Ecosystem credits measure the loss in biodiversity values as a result of a proposal, and the gain in biodiversity values at an offset site.
Emission	A substance discharged into the air.
Existing rail corridor	The corridor within which existing rail infrastructure, subject to works as part of Inland Rail, are located. The rail corridor is defined by ARTC to mean everywhere within 15 metres of the outermost rails; or within the boundary fence where boundary fences are provided and are closer than 15 metres; or if the property boundary is less than 15 metres, the property boundary; or a permanent structure such as a fence, wall or level crossing separating the operating rail corridor from other land.

Term	Definition
Formation	The earthworks/material on which the ballast, sleepers and tracks are laid.
Freight	Goods transported by truck, train, ship, or aircraft.
Freight task	The amount of freight transport, usually measured in tonnes or tonne-kilometres.
Hairpin curve	A hairpin turn or bend is a very tight turn with the track resembling a hairpin.
Heritage listed	An item, building or place included on statutory heritage lists maintained by local, State or the Australian Government.
Infrastructure sustainability	Infrastructure that is designed, constructed and operated to optimise environmental, social and economic outcomes of the long-term.
Inland Rail	The Inland Rail programme encompasses the design and construction of a new inland rail connection between Melbourne and Brisbane, via Wagga, Parkes, Moree, and Toowoomba. The route for Inland Rail is about 1,700 kilometres in length. Inland Rail will involve a combination of upgrades of existing rail track and the provision of new track.
Intermodal	The movement of freight using multiple modes of transport (rail, ship, truck) without handling of the freight itself when changing modes. For a railway this usually refers to the transport of freight in containers which may be double stacked on the wagons carrying them.
$L_{A90(period)}$	The sound pressure level exceeded for 90 per cent of the measurement period.
$L_{Aeq(time)}$	Typically used to described ambient (background) noise levels.
$L_{Aeq(1\ hour)}$	The busiest 1-hour 'equivalent continuous noise level', it represents the typical L_{Aeq} noise level from all the proposal noise events during the busiest 1-hour of the assessment period.
$L_{Aeq(9\ hour)}$	The night-time 'equivalent continuous noise level' - it represents the cumulative effects of all the proposal noise events occurring in the night-time period from 10:00 pm to 7:00 am.
$L_{Aeq(15\ hour)}$	The daytime 'equivalent continuous noise level' - it represents the cumulative effects of all the proposal noise events occurring in the daytime period from 7:00 am to 10:00 pm.
$L_{Aeq(24\ hour)}$	The 'equivalent continuous noise level', sometimes also described as the 'energy-averaged noise level' – it represents the cumulative effects of all the proposal noise events occurring in one day.
L_{Amax}	The maximum sound level recorded during the measurement period.
Landscape	All aspects of a tract of land, including landform, vegetation, buildings, villages, towns, cities and infrastructure.
Landscape character	The combined quality of built, natural and cultural aspects that make up an area and provide its unique sense of place.
Landscape character zone	An area of landscape with similar properties or strongly defined spatial qualities, distinct from areas immediately adjacent.
Landscape feature	A component, part or feature of the landscape that is prominent or eye-catching, for example hills, buildings, vegetation.
Landscape quality	Largely subjective judgement based on particular characteristics that influence the way in which the environment is experienced, including special interests such as cultural associations or heritage interests, the presence and/or type of elements and condition.

Term	Definition
Level crossing	A place where rail lines and a road cross at the same elevation.
Level crossing protection	The level of control provided at level crossings, which is determined on a case by case basis, and depends on the particular characteristics of a crossing. It generally falls into two categories: passive protection (uses warning signage only) or active protection (uses either signage and flashing lights only, or signage/flashing lights with boom gates).
Level of service	Defined by Austroads as a measure for ranking operating road and intersection conditions, based on factors such as speed, travel time, freedom to manoeuvre, interruptions, comfort and convenience.
Local road	Road used primarily to access properties located along the road.
Non-bulk freight	Non-bulk freight is generally characterised as any containerised, packaged or other unitised freight, such as: pallets; motor vehicles and trailers; laden transported vehicles and live animals. It is generally placed or lifted onto or into transport vehicles or holds. It often involves heterogeneous goods being moved between dispersed locations. Non-bulk freight varies in density, perishability and fragility.
Passive control (level crossings)	Where the movement of vehicular or pedestrian traffic across a railway crossing is controlled using signs or devices that are not activated by the approach or passage of a train, relying on the road user to detect the approach or presence of a train by direct observation.
PM_{10}	Particulate matter 10 micrometers or less in diameter. Particles in this size range make up a large proportion of dust that can be drawn deep into the lungs. This is a classification of particles by size rather than chemical properties.
Possession	A period of time during which a rail line is blocked to trains to permit work to be carried out on or near the line.
Proposal	The construction and operation of the Narrabri to North Star 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 the storage areas/compounds sites etc, that would be used to construct that infrastructure.
Pioneer line	Rail lines constructed to a lesser standard than main rail lines, providing access to mainly agricultural areas.
Rail alignment	The exact positioning of the track, accurately defined both horizontally and vertically, along which the rail vehicles operate.
Rail corridor	The corridor within which the rail tracks and associated infrastructure are located.
Rail level	The theoretical level of the running surface of the rails.
Rating background level	The underlying level of noise present in an area once transient and short-term noise events are filtered out.
Relic	A relic is defined by the NSW *Heritage Act 1977* as 'any artefact, object or material evidence which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and which is of State or local heritage significance.'
Sensitivity	The sensitivity of a landscape character area or view and its capacity to absorb change. In the case of visual impact this also relates to the type of viewer and number of viewers.

Term	Definition
Species credit	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the threatened species profile database.
Spoil	Material generated by construction.
Strahler stream order	Classification system that gives a waterway an 'order' according to the number of tributaries associated with it.
Section 170 register	Under section 170 of the *Heritage Act 1977*, all state government agencies must keep and administer a database of heritage assets called a Section 170 Heritage and Conservation Register.
Sensitive receivers	Land uses which are sensitive to potential noise, air and visual impacts, such as residential dwellings, schools and hospitals.
Study area	The study area is defined as the wider area including and surrounding the proposal site, with the potential to be directly or indirectly affected by the proposal (for example, by noise and vibration, visual or traffic impacts). The actual size and extent of the study area varies according the nature and requirements of each impact assessment technical report.
Track	The structure consisting of the rails, fasteners, sleepers and ballast, which sits on the formation.
Track formation	Refer to the definition of formation.
Travelling stock routes	Travelling stock routes and reserves are parcels of Crown land reserved under the *Crowns Lands Act 1989* for use by travelling stock.
Turnout	A junction point where a rail vehicle can leave a given track for a branching or parallel track.
Underbridge	A bridge underneath a railway or road. For the proposal, underbridges refer to those structures which allow water from a watercourse to pass under the railway, but are longer in span than culverts.
Visual amenity	The value of a particular area or view in terms of what is seen.
Visual impact	The impacts on the views from residences, workplaces and public places. This can be positive (i.e. benefit or an improvement) or negative (i.e. adverse or a detraction).
Visual catchment	Extent of potential visibility to or from a specific area, feature or proposal.
View	The visual experience from the viewer's perspective.
Waste	Waste is defined by the EPA as any matter (whether liquid, solid, gaseous or radioactive) that is discharged, emitted or deposited in the environment in such volume, constituency, or manner as to cause an alteration to the environment.
Waste management hierarchy	The waste management hierarchy is a set of priorities for the efficient use of resources, which underpins the objectives of the *Waste Avoidance and Resource Recovery Act 2001*. The waste management hierarchy progresses from avoidance (most preferred), to re-use/recycling, to disposal (least preferred).

Executive summary

Overview

The Australian Government has committed to building a significant piece of national transport infrastructure by constructing a high performance and direct interstate freight rail corridor between Melbourne and Brisbane, via central-west New South Wales (NSW) and Toowoomba in Queensland. Inland Rail is a major national project that will enhance Australia's existing national rail network and serve the interstate freight market.

The Inland Rail route, which is about 1,700 kilometres long, involves:

- using the existing interstate rail line through Victoria and southern NSW
- upgrading about 400 kilometres of existing track, mainly in western NSW
- providing about 600 kilometres of new track in northern NSW and south-east Queensland.

Inland Rail has been divided into 13 projects, seven of which are located in NSW.

This environmental impact statement (EIS) considers the potential impacts of the proposal to construct and operate the Narrabri to North Star section of Inland Rail ('the proposal'). It has been prepared to support Australian Rail Track Corporation's application for approval of the proposal in accordance with the requirements of Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The proposal is State significant infrastructure, and is subject to approval by the NSW Minister for Planning. The proposal has also been declared by the Minister for Planning as critical State significant infrastructure under section 115V of the EP&A Act. The EIS addresses the environmental assessment requirements of the Secretary of the Department of Planning and Environment ('the SEARs'), dated 8 November 2016. The proposal is also determined to be a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (EPBC Referral 2016/7729), and requires approval from the Australian Government Minister for the Environment and Energy. The EIS focuses on the key assessment requirements specified by the SEARs. It is supported by specialist technical assessment reports.

The proposal

Key features

The proposal consists of 188 kilometres of upgraded track and associated facilities, and is generally located within the existing rail corridor between Narrabri and the town of North Star, via Moree. Some works would also be undertaken outside the rail corridor, including works at Bellata, Moree, and Camurra.

The key features of the proposal involve:

- upgrading the track, track formation, culverts, and underbridges within the existing rail corridor, for a distance of 188 kilometres, between Narrabri and North Star via Moree
- realigning the track within the existing rail corridor at Bellata, Gurley, and Moree stations to conform with required platform clearances for Inland Rail trains
- providing five new crossing loops within the existing rail corridor at Bobbiwaa, Waterloo Creek, Tycannah Creek, Coolleearllee, and Murgo
- providing a new section of rail line at Camurra about 1.6 kilometres long, to bypass the existing hairpin curve ('the Camurra bypass')
- removing three existing rail bridges and providing new rail bridges over the Mehi and Gwydir rivers and Croppa Creek
- realigning about 1.5 kilometres of the Newell Highway near Bellata, and providing a new road bridge over the existing rail corridor ('the Newell Highway overbridge')
- providing a new road bridge over the existing rail corridor at Jones Avenue in Moree ('the Jones Avenue overbridge').

Ancillary work would include works to level crossings, signalling and communications, signage, fencing, and services and utilities within the proposal site.

Timing

Subject to approval of the proposal, construction is planned to commence in mid-2018, and is expected to take about 24 months. Inland Rail as a whole is expected to be operational in 2025.

Operation

The proposal would form part of the rail network managed and maintained by ARTC. Train services would be provided by a variety of operators. Prior to the opening of Inland Rail as a whole, the rail line would be used by existing rail traffic, which includes trains carrying passengers and grain at an average rate of about four trains per day.

It is estimated that the operation of Inland Rail would involve an annual average of about 10 trains per day travelling north of Moree (between North Star and Moree) and 12 trains per day travelling south of Moree (between Moree and Narrabri) in 2025. This would increase to about 19 trains per day north of Moree (between North Star and Moree) and 21 trains per day south of Moree (between Moree and Narrabri) in 2040. In the proposal site, this would be additional to the existing rail traffic using the rail line.

The Inland Rail trains would be a mix of grain, bulk freight, and other general transport trains. Total annual freight tonnages would be about 11.8 million tonnes in 2025, increasing to about 19 million tonnes in 2040 (from the existing 2 million tonnes of grain per year).

Train speeds would vary according to axle loads, and range from 80 to 115 kilometres per hour (for 21 tonne trains) except through Moree where the maximum train speed would be 65 kilometres per hour due to track geometry. Trains would operate 24 hours per day. They would be up to 1,800 metres long; carry double stacked containers; and have a height of 6.5 metres.

Need for the proposal

The proposal is a critical component of Inland Rail, and Inland Rail cannot proceed without the proposal. The proposal has been designed to maximise use of the existing rail corridor, while still contributing to the overall efficiency of Inland Rail.

Objectives of the proposal

The objectives of the proposal are to:

- provide upgraded rail infrastructure that meets the Inland Rail specifications, to enable trains using the Inland Rail corridor to travel between Narrabri and North Star, connecting with other sections of Inland Rail to the north and south
- minimise the potential for environmental and community impacts, by maximising use of the existing rail corridor.

Inland Rail

Objectives

The objectives of Inland Rail are to:

- provide a rail link between Melbourne and Brisbane that is interoperable with train operations between Perth and Adelaide, to serve future rail freight demand, and stimulate growth for inter-capital and regional/bulk rail freight
- provide an increase in productivity that will benefit consumers through lower freight transport costs
- provide a step-change improvement in rail service quality in the Melbourne to Brisbane corridor and deliver a freight rail service that is competitive with road
- improve road safety, ease congestion, and reduce environmental impacts by moving freight from road to rail
- bypass bottlenecks within the existing metropolitan rail networks, and free up train paths for other services along the coastal route
- act as an enabler for regional economic development along the Inland Rail corridor.

Need for Inland Rail

There is no direct continuous inland rail link between Melbourne and Brisbane. Interstate rail freight currently travels between Melbourne and Sydney via Albury, and then between Sydney and Brisbane, generally along the coast. About 70 per cent of the freight between Melbourne and Brisbane is carried by road, principally the Newell Highway in NSW, and connecting highways in Victoria and Queensland.

Growth in freight demand

The Melbourne to Brisbane corridor is one of the most important general freight routes in Australia, supporting key population and employment precincts along the east coast and inland NSW. It is estimated that 21 million tonnes of non-bulk and complementary freight moves along this corridor each year. This is expected to grow to over 40 million tonnes per year by 2050.

With the population of the eastern states forecast to increase by 60 per cent over the next 40 years, the need for efficient and effective freight transport will continue to increase. Strong forecast population growth, accompanied by comparable growth in employment, is likely to place significant pressure on existing infrastructure and services.

Existing freight capacity and infrastructure issues

Without the increased use of rail, the growth in freight demand is likely to result in increasing pressure on the road network and associated safety and environmental issues, increased freight costs, and a loss of economic opportunity. The current national infrastructure network cannot support this projected growth, with increasing pressure on already congested roads through Sydney, and increasing use of heavy trucks such as B-doubles and, potentially, B-triples along the Hume-Pacific and Newell highway corridors.

Rail is generally the most productive and efficient mode for freight travelling from regional areas to export ports and urban destinations. Freight trains travelling along the Melbourne to Brisbane corridor currently travel through the Sydney metropolitan rail network, often experiencing significant delays. Travel time reliability is poor, as a result of the priority given to passenger services, freight transit curfews in the Sydney metropolitan area, and substandard rail alignments elsewhere. Limited capacity during morning and afternoon passenger peaks restricts freight movements at these times.

Summary of the need for Inland Rail

Inland Rail is needed to improve the efficiency of freight moving between Melbourne and Brisbane. Inland Rail will bypass the Sydney metropolitan area, substantially cut the overall journey time to less than 24 hours, and increase the reliability of services between Melbourne and Brisbane. This is expected to increase the competitiveness of rail transport relative to road transport.

In addition, Inland Rail will encourage growth and investment in regional areas along the route through improved freight connections.

As noted by the *Australian Infrastructure Audit* (Infrastructure Australia, 2015), 'Rail offers an alternative to road transport and societal benefits in terms of lower emissions, reduced road congestion and increased safety per tonne kilometre, particularly over longer distances or when carrying heavy goods.'

In summary, Inland Rail is needed to respond to the growth in demand for freight transport, and address existing freight capacity and infrastructure issues. The analysis of demands undertaken by ARTC indicated that there would be sufficient demand for Inland Rail.

Summary of the key findings of the EIS

Traffic, transport and access

The proposal would not result in any significant adverse impacts with respect to traffic and transport issues such as traffic operations, road capacity on the surrounding network, site access, and road safety. During construction, traffic and transport would be managed by a construction traffic management plan prepared prior to the commencement of construction.

The proposal may result in changes to some level crossings. Consultation with potentially affected landowners would be undertaken, and changes would only occur following agreement with the property owner and relevant agencies.

The road network has spare capacity to cater for the estimated construction and operation traffic, and no significant network impacts are predicted. The main operational traffic impacts relate to changes in delays at level crossings, and changes in traffic movements associated with the proposed Jones Avenue overbridge in Moree.

Traffic activity at most level crossings in the study area is low, and the volume of traffic likely to be delayed by train activity is not substantial. There is capacity at each level crossing for delayed traffic to queue clear of adjacent intersections. Within Moree, the Newell Highway and the Moree Bypass run adjacent to the proposal site. The intersections at Alice Street and Bullus Drive would be affected by minor delays at level crossings resulting in queuing traffic.

The proposed Jones Avenue overbridge would benefit the community and road users by improving connectivity across the rail line. Construction of the overbridge and associated road connections would involve closing Joyce Avenue at the northern end, and constructing a new intersection with Tycannah Street. It is predicted that there will be minor operational impacts to traffic movement as a result of the proposal.

The transfer of freight to rail when Inland Rail becomes operational would reduce truck movements on the Newell Highway. This would have safety benefits to the broader community and reduce emissions.

Biodiversity

The majority of the proposal site and surrounds have been heavily modified by past and ongoing disturbances associated with the existing rail corridor and surrounding rural/agricultural activities. Clearance and maintenance of the rail corridor has resulted in fragmentation, a high level of disturbance, and degradation of vegetation communities. However, although the majority of the proposal site consists of non-native vegetation or cleared land, patches of native vegetation remain.

Biodiversity impact assessments of the proposal were undertaken, including a terrestrial biodiversity assessment prepared in accordance with the *Framework for Biodiversity Assessment* (OEH, 2014a), an aquatic biodiversity assessment, and an assessment of the potential impacts on matters listed under the EPBC Act.

The main potential impact of the proposal on biodiversity would occur during construction as a result of the clearing of native vegetation within the proposal site, including vegetation within the rail corridor, and in areas of the proposal site located outside the rail corridor. At this stage of the design, it is estimated that the proposal would require the permanent removal of about 411 hectares of native vegetation. This vegetation includes threatened ecological communities listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) and/or the EPBC Act.

ARTC is committed to minimising the environmental impacts of the proposal. The area of direct impact would be further refined during detailed design, with the aim of reducing the amount of vegetation clearing required as far as practicable. To mitigate the potential impacts to biodiversity, a comprehensive Biodiversity Offset Strategy has been prepared in accordance with the *NSW Biodiversity Offsets Policy for Major Projects* (OEH, 2014c). This includes consideration of potential offset sites and/or opportunities to purchase biodiversity credits to offset the impacts of the proposal, according to the requirements for major projects under the EP&A Act, and to offset impacts on EPBC Act matters.

The main impacts on aquatic ecological systems would be as a result of the removal and construction of new watercourse crossing structures along the proposal site, and access over watercourses for movement of construction equipment and personnel. These potential impacts would be minimised by implementing the construction mitigation and management measures provided by the EIS. No impacts to aquatic threatened species or communities are predicted.

Noise and vibration

There is the potential for construction noise to exceed relevant criteria at various sensitive receivers along the proposal site. The potential significance of the impacts would be minimised by the mobile nature of the majority of the construction works. Although construction noise would be temporary and localised in nature, the potential impacts would be managed through the implementation of noise control measures provided in the EIS, particularly for those sections of the proposal site located close to sensitive receivers (less than 50 metres).

Construction vibration was assessed, and management and mitigation measures have been provided to minimise the potential for significant human comfort and structural vibration impacts at the nearest sensitive receivers.

The noise modelling predicted that the noise levels at 152 residential receivers have the potential to exceed the redeveloped rail line criteria for operational rail noise by the year 2040. It is anticipated that Inland Rail would be complete in 2025, and this is when train movements would increase above existing numbers with the commencement of train operations between Melbourne and Brisbane. However, the route is not expected to reach design capacity until 2040.

Mitigation options have been identified, and would be refined during detailed design and in consultation with affected sensitive receivers. Post construction noise monitoring would be undertaken at representative locations to verify the effectiveness of the mitigation measures with respect to the appropriate guidelines.

Air quality

The main potential impact on air quality during construction would occur as a result of the generation of dust from construction works and the movement of equipment and machinery. If dust is not adequately controlled, it could impact on surrounding sensitive receivers and agricultural land uses. These issues would be managed by implementing air quality management controls guided by the construction environmental management plan (CEMP).

During operation, the increase in diesel operated freight trains using the corridor has the potential to increase levels of pollutants such as nitrogen oxides and particulate matter. The air quality impact assessment considered the potential increases and concluded that the emissions are expected to be below the relevant impact assessment criteria. Air pollution from transport corridors decreases significantly with distance, and is not expected to be an issue for the proposal given the distance from the majority of potentially sensitive receivers.

Soils and contamination

Construction of the proposal has the potential to result in erosion and sedimentation, and contamination of soils and surface waters. Mitigation measures would be implemented to minimise these risks, including implementation of a soil and water management sub-plan as part of the CEMP, and protocols for construction in areas of potentially contaminated soils.

Implementation of the proposed environmental controls and the CEMP would reduce the risk of potentially contaminating activities impacting on workers, surrounding residents, and the environment.

The risk of contamination associated with operation is expected to be low. Sediment and erosion control plans for exposed soils would be adopted and implemented, which would reduce the risk of environmental impact.

Hydrology and flooding

The proposal involves raising the level of the rail formation along the majority of the proposal site, to achieve ARTC's design standards for flood immunity. This would include installing structures such as culverts on watercourse crossings.

The proposal would be constructed using pre-cast structures where practicable. This would reduce the size of the construction footprint, the extent of earthworks, and the timeframe to construct each structure. Minimising the duration of disturbance at each work site reduces the risk of a significant rainfall event flooding the work area.

The proposal incorporates design measures to avoid or minimise potential impacts on flooding and hydrology during operation. These focus on providing structures at all existing watercourse crossings to minimise the potential for changes in surface water flow paths.

Raising the height of the rail formation would impact surface water flows across the floodplain. This would change the upstream local flooding regime, and lead to more concentrated flows through culverts, which would discharge to downstream watercourses.

Currently, about 11,124 metres of the existing rail corridor in the proposal site is overtopped during a one per cent annual exceedance probability (AEP) local flood event, to a maximum depth of 0.75 metres. Flood modelling predicts that the proposal would reduce the length of rail overtopping in this type of local flood event by 88 per cent, to a length of 1,338 metres and a maximum depth of 0.37 metres. The proposal is predicted to reduce the area of upstream flooding for the majority of local flood events up to the probable maximum flood. The extent of flooding in a one per cent AEP flood event is anticipated to reduce by about six per cent.

Regional flood modelling undertaken for the Gwydir and Mehi rivers indicated that near Moree, flood depths and extents due to the proposal would marginally increase (by about six per cent), compared to the existing situation.

Water quality

The potential impacts of construction relate mainly to erosion and the generation of sediment, particularly during watercourse crossings, construction of new culverts/underbridges, and construction of the proposed new rail bridges over the Mehi and Gwydir rivers and Croppa Creek. To mitigate these impacts, erosion and sediment control measures, including measures for the main watercourse crossings, would be implemented during construction in accordance with the CEMP. A surface water monitoring framework would be prepared to guide the monitoring of water quality.

Construction is not anticipated to impact on groundwater resources. Excavation would be relatively shallow compared to the likely depth of the water table, and is not likely to intercept groundwater aquifers or their flow systems. In locations where piling is required (such as for bridge piers), the detailed design would consider methods to minimise or avoid the potential requirement for dewatering where perched groundwater is encountered.

During operation, surface water runoff would be managed through a drainage system that connects to cross drainage infrastructure at existing drainage lines and watercourses. The drainage system would include measures, such as scour protection at culvert outlets, to minimise the potential for scouring and erosion. Where appropriate, culvert outlets would be lined to minimise scouring.

Aboriginal heritage

Within the existing rail corridor, the construction and maintenance of the existing rail line is likely to have resulted in the removal/relocation of archaeological evidence that may have been present.

Two sites listed under the *National Parks and Wildlife Act 1974* (NPW Act) are located within the proposal site – the Steel Bridge Camp site (10-3-0032), which is an area of potential archaeological deposit at the former Aboriginal fringe camp site, and the Duffys Creek site (10-3-0035), an artefact scatter and area of potential archaeological deposit. These sites were assessed as having low to moderate archaeological significance at ground level, and moderate to high significance below the current depth of disturbance.

In addition, 12 new Aboriginal sites were identified within the proposal site during field surveys. Of these sites, eight are isolated artefacts with low significance, three are artefact scatters with low significance, and one is an artefact scatter with low to moderate significance.

Five areas of moderate or higher archaeological potential were identified within the proposal site.

Detailed design would aim to minimise the potential impacts to these sites and areas as far as possible. Where impacts are unavoidable, the significance of impacts would be minimised by implementing the mitigation measures provided.

Non-Aboriginal heritage

Three locally listed heritage items are located within the proposal site – Moree Station, which is listed on both the *Moree Plains Local Environmental Plan 2011* (the Moree Plains LEP) and Railcorp's section 170 heritage register, and the Mehi River and the Gwydir River rail bridges, which are listed on ARTC's section 170 heritage register. Moree Station is considered by the Moree Plains LEP to have State significance, and the Mehi River and Gwydir River bridges are considered to have local significance.

The proposal involves removing the Mehi River and the Gwydir River rail bridges, and the rail bridge over Croppa Creek (identified as a potential heritage item of local significance), as some of their elements are not compatible with Inland Rail requirements. Removing these bridges would detrimentally impact the heritage significance of the bridges. The option of maintaining these bridges and building new bridges next to them was considered but discounted due to ongoing maintenance requirements and safety issues. The heritage assessment concluded that, although the bridges are considered to be good examples of steel bridges constructed on a pioneer line using American bridge technology, there are other similar examples, both regionally and throughout NSW.

Although the proposal site passes through the boundary of Moree Station, the remaining features of the station, including the island platform layout and refreshment room, would not be directly impacted by the proposal. The station would remain a functioning railway station, easily recognisable and understandable as such. As the station and line would remain operational, the upgrade of the existing rail line would not change the setting or character of this item.

The existing rail line with its remaining elements (such as timber underbridges, the intact railway stations of Edgeroi, Bellata and Gurley, and the remains of former stations) is considered to be a potential heritage item of local significance. The proposal involves removing the existing rail line and associated infrastructure, and providing a new rail line within the same corridor. Retaining all evidence of the existing rail line is not feasible, as significant upgrades to the formation are required for it to comply with the Inland Rail performance specifications. The corridor would be retained for rail usage. The railway stations of Edgeroi, Bellata, and Gurley would not be directly impacted.

The proposal has the potential to impact any remains associated with the former Aboriginal fringe camp site located near the Mehi River bridge. Although not listed as an archaeological site under the *Heritage Act 1977*, it is considered to have archaeological potential.

The main potential for indirect impacts relates to vibration generated by construction. Given the proximity of construction to Moree Station, the former Edgeroi Woolshed (a potential heritage item considered to be of local significance), and remaining structures associated with Edgeroi, Bellata, and Gurley stations, there may be the potential for indirect impacts caused by vibration.

Measures are provided to mitigate and manage the impacts identified.

Landscape and visual amenity

The proposal would generate visual impacts during construction. Construction impacts would be temporary and limited to the construction period.

Operational impacts of the proposal would occur as a result of the introduction of new structures in the landscape, mainly associated with the Newell Highway overbridge, the Jones Avenue overbridge, and to a lesser extent, replacement of the bridges at the Mehi River, Gwydir River and Croppa Creek. There are no anticipated impacts on Siding Springs Observatory as a result of the operation of the proposal.

The proposal has been designed to minimise potential impacts, through careful siting of project elements, and by minimising clearing as far as practicable. Mitigation measures are provided to further reduce the visual impacts of the proposal. These would be implemented during the detailed design and construction phases.

Land use and property

The main potential impacts on land use would occur during construction. Impacts include temporary disruption to land use along the construction corridor for construction areas, compounds, and haulage routes. These impacts, such as soil compaction, disruption of services or utilities, changes in access and interrupted land management, would be short-term and minimised with the implementation of mitigation measures.

Some acquisition of land would be required to construct the Camurra bypass, the Newell Highway and Jones Avenue overbridges. Based on the current design, no properties require complete acquisition; however the option for complete acquisition would be discussed with the landowner where a property is materially affected.

While there would be a slight increase in the number of buildings inundated during a one per cent AEP flood event compared to the existing situation, the overall extent of flooding would decrease and significant impacts due to flooding are not anticipated. Further modelling would be undertaken during detailed design to determine how the proposal can be modified so that existing flooding characteristics with regards to property inundation are not worsened.

Socio-economic impacts

Socio-economic benefits and impacts would result from construction and operation of the proposal. Beneficial impacts during construction include employment (an estimated average workforce of 180 people would be required to construct the proposal), training opportunities, and flow on local and regional economic benefits. Impacts during construction would include potential impacts on the amenity of the local community, and impacts associated with the inflow of the workforce into the local area, including demand for accommodation. Mitigation measures are provided to mitigate and manage the impacts identified.

Beneficial impacts as a result of operation include the following opportunities, which would be refined as Inland Rail progresses:

- better access to and from our regional markets (including via the Moree Gateway intermodal facility)
- enabler for regional economic development along the Inland Rail corridor
- safety and amenity benefits as a result of the reduction of freight transport on major road corridors.

The potential for environmental and social disturbance as a result of construction has to be balanced against the long-term benefits of Inland Rail overall.

Other issues

The main wastes that would generated during construction include excess spoil, vegetation, construction materials, and general waste. All of the spoil generated would be reused on site through the creation of spoil mounds within the rail corridor, except where the presence of contamination is noted.

The potential for cumulative impacts resulting from the interaction of the proposal with other projects either existing or proposed in the surrounding area is considered low. Depending on construction timing of the proposal and other projects, there may be an increase in traffic, and the demand for accommodation and workforce. There are no anticipated cumulative impacts during operation.

Environmental mitigation and management

Potential impacts resulting from the proposal are considered manageable through the implementation of the proposed mitigation and management measures.

The detailed design for the proposal is being developed with the objective of minimising potential impacts on the local and regional environment and the local community. The design and construction methodology would continue to be developed, taking into account the input of stakeholders.

To manage the potential impacts identified by the EIS, and in some cases remove them completely, the assessment chapters outline a range of mitigation measures that would be implemented during construction and operation. The environmental performance of the proposal would be managed as described in Chapter 27, including implementation of the mitigation measures, construction and operation environmental management plans, and the Inland Rail NSW construction noise and vibration management framework. These plans would also ensure compliance with relevant legislation and any conditions of approval.

Part A: **Introduction**

Image: Newell Highway north of Narrabri

1. Introduction

1.1 Overview

The Australian Government has committed to delivering a significant piece of national transport infrastructure by constructing a high performance and direct interstate freight rail corridor between Melbourne and Brisbane, via central-west New South Wales (NSW) and Toowoomba in Queensland. Inland Rail is a major national project that will enhance Australia's existing national rail network and serve the interstate freight market.

The Inland Rail route, which is about 1,700 kilometres long, would involve:

- using the existing interstate rail line through Victoria and southern NSW
- upgrading about 400 kilometres of existing track, mainly in western NSW
- providing about 600 kilometres of new track in northern NSW and south-east Queensland.

Inland Rail has been divided into 13 sections, seven of which are located in NSW.

In 2015 Australian Rail Track Corporation Ltd (ARTC) ('the proponent') developed a ten-year programme to deliver Inland Rail by 2025. 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
- developing new business
- capital investment in the corridors
- managing the network
- infrastructure maintenance.

Further information on ARTC and Inland Rail can be found at www.artc.com.au and www.inlandrail.com.au.

1.2 The proposal

The proponent is seeking approval to construct and operate the Narrabri to North Star section of Inland Rail ('the proposal'), which consists of 188 kilometres of upgraded rail track and associated facilities. The proposal forms a key component of Inland Rail.

1.2.1 Location

The proposal is generally located within the existing rail corridor between Narrabri and the village of North Star, via Moree. Some works would also be undertaken outside the rail corridor, including works at Bellata, Moree, and Camurra.

The location of the proposal is shown in Figure 1.1. Chapter 2 provides further information on the location of the proposal, and a description of the proposal site for the purposes of the environmental impact statement (EIS).

1.2.2 Key features

The key features of the proposal involve:

- upgrading the track, track formation, culverts and underbridges within the existing rail corridor, for a distance of 188 kilometres, between Narrabri and North Star via Moree
- realigning the track within the existing rail corridor at Bellata, Gurley, and Moree stations to conform with required platform clearances for Inland Rail trains
- providing five new crossing loops within the existing rail corridor at Bobbiwaa, Waterloo Creek, Tycannah Creek, Coolleearllee, and Murgo
- providing a new section of rail line at Camurra about 1.6 kilometres long, to bypass the existing hairpin curve ('the Camurra bypass')
- removing the existing bridges and providing new rail bridges over the Mehi and Gwydir rivers and Croppa Creek
- realigning about 1.5 kilometres of the Newell Highway near Bellata, and providing a new road bridge over the existing rail corridor ('the Newell Highway overbridge')
- providing a new road bridge over the existing rail corridor at Jones Avenue in Moree ('the Jones Avenue overbridge').

The key features of the proposal are shown in Figure 1.2.

Ancillary work would include works to level crossings, signalling and communications, signage, fencing, and services and utilities within the proposal site.

Figure 1.1 Location of the proposal

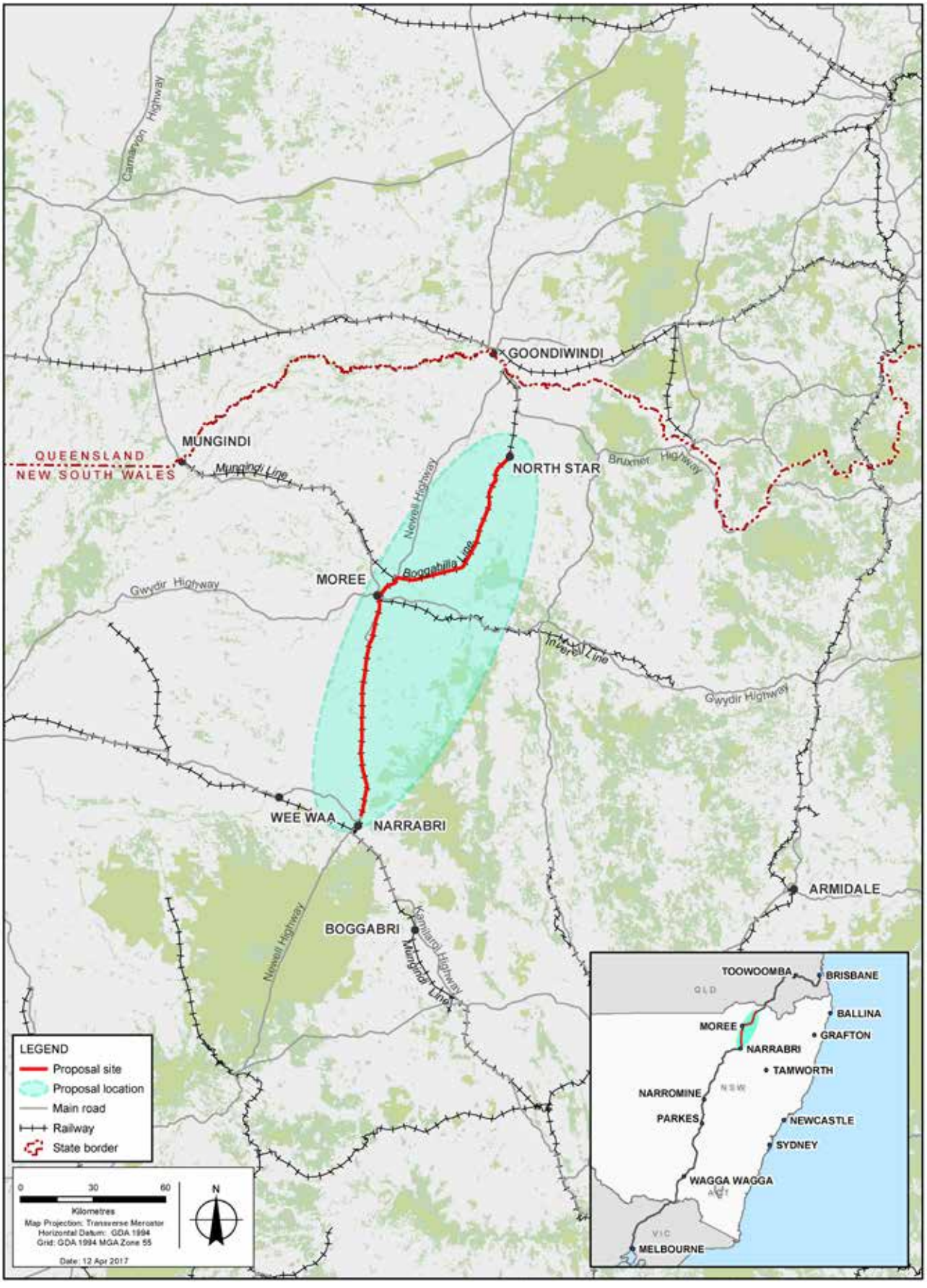
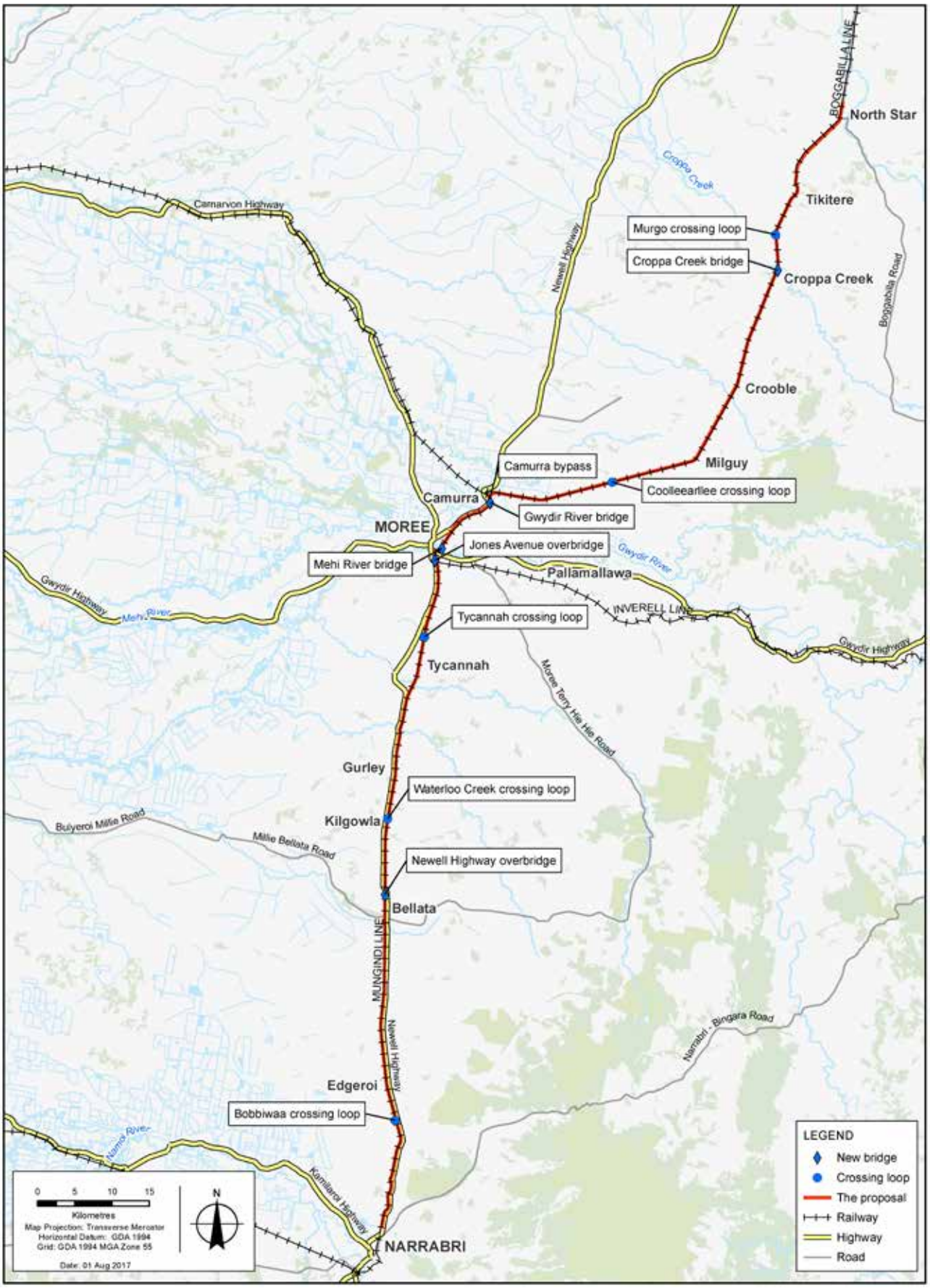


Figure 1.2 Key features of the proposal



The land requirement for the proposal will comprise the existing corridor with an average width of 30 metres, with some variation to accommodate particular infrastructure and to cater for local topography. The corridor will 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 will 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 will 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 will occur to allow for construction and to maintain the safe operation of the railway.

The operational phase at year 2040 will 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 the proposed development described in the *Inland Rail 2015 – Melbourne to Brisbane Inland Rail, Attachment A: ARTC 2015 Inland Rail Programme Business Case* ('Programme Business Case') (ARTC, 2015) for rail traffic and associated activities projected at the year 2040.

1.2.3 Timing and operation

Subject to approval of the proposal, construction of the proposal is planned to start in mid-2018, and is expected to take about 24 months. Construction is expected to be completed in mid-2020.

The proposal would form part of the rail network managed and maintained by ARTC. Train services would be provided by a variety of operators. Prior to the opening of Inland Rail as a whole, the rail line would be used by existing rail traffic, which includes trains carrying passengers and grain at an average rate of about four trains per day.

Existing train operations along the proposal site would continue prior to, during, and following construction. Train numbers are not anticipated to significantly increase until all 13 sections of Inland Rail are complete, which is estimated to be in 2025.

It is estimated that the operation of Inland Rail would involve an annual average of about 10 trains per day travelling north of Moree (between North Star and Moree) and 12 trains per day travelling south of Moree (between Moree and Narrabri) in 2025. This would increase to about 19 trains per day north of Moree (between North Star and Moree) and 21 trains per day south of Moree (between Moree and Narrabri) in 2040. The trains would be a mix of grain, intermodal (freight), and other general transport trains. The EIS assesses the operational impacts of the use of the proposal as part of Inland Rail.

Further information on the proposal is provided in Chapters 7 and 8.

1.3 Objectives of the proposal and Inland Rail

The objectives of the proposal are to:

- provide upgraded rail infrastructure that meets the Inland Rail specifications, to enable trains using the Inland Rail corridor to travel between Narrabri and North Star, connecting with other sections of Inland Rail to the north and south
- minimise the potential for environmental and community impacts, by maximising use of the existing rail corridor.

The objectives of Inland Rail as a whole are to:

- provide a rail link between Melbourne and Brisbane that is interoperable with train operations to Perth, Adelaide, and other locations on the standard gauge rail network, to serve future rail freight demand, and stimulate growth for inter-capital and regional/bulk rail freight
- provide an increase in productivity that will benefit consumers through lower freight transport costs
- provide a step-change improvement in rail service quality in the Melbourne to Brisbane corridor and deliver a freight rail service that is competitive with road
- improve road safety, ease congestion, and reduce environmental impacts by moving freight from road to rail
- bypass bottlenecks within the existing metropolitan rail networks, and free up train paths for other services along the coastal route
- act as an enabler for regional economic development along the Inland Rail corridor.

1.4 EIS purpose and structure

This environmental impact statement (EIS) supports an application for approval of the proposal under Part 5.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). It addresses the environmental assessment requirements of the Secretary of the Department of Planning and Environment (the SEARs) dated 8 November 2016 (refer to Appendix A). The proposal is also a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and requires approval from the Australian Minister for the Environment and Energy. The EPBC Act assessment requirements are specified by the SEARs.

The EIS (Volume 1) is structured in four parts as follows:

- **Part A Introduction - including:**
  - an introduction to the environmental assessment (Chapter 1)
  - a description of the general biophysical and socio-economic environment within which the proposal would be located, including the regional setting and a description of the proposal site (Chapter 2)
  - an overview of the statutory context for the proposal and the approval requirements (Chapter 3)
  - a summary of the consultation that occurred during the proposal development and environmental assessment process, and the consultation proposed during public exhibition, detailed design, and delivery (Chapter 4).
- **Part B The proposal - including:**
  - an overview of the strategic context and need for the proposal (Chapter 5)
  - a summary of the alternatives to the proposal as a whole, and the options considered during development of the concept design for the proposal (Chapter 6)
  - a description of the proposal features and operation (Chapter 7), including the approach to avoiding or minimising impacts, design features and infrastructure proposed, operation, maintenance, and other related information
  - an indicative description of the likely construction process and activities (Chapter 8).
- **Part C Environmental assessment – including:**
  - the results of the assessment of key environmental issues identified by the SEARs, including information on the existing environment, potential construction and operation impacts, and the proposed approach to mitigation and management (Chapters 9 to 26).
- **Part D EIS synthesis - including:**
  - a consolidated summary of the key potential impacts, a description of the proposed approach to environmental management, and a compilation of the mitigation measures (Chapter 27)
  - conclusion and justification for the proposal (Chapter 28).

An assessment of environmental risks is provided in Appendix B of Volume 1. The assessment was undertaken to provide a preliminary identification of the potential risks to be considered in more detail by the EIS. Other appendices in Volume 1 provide supporting information and data.

The specialist technical reports prepared as an input to the EIS are provided in Volumes 2 and 3.

2. General biophysical and cultural environment

This chapter provides a description of the proposal site, including a summary of its general biophysical and cultural (including community, land use and socio-economic) environment.

2.1 Regional setting

The proposal site is located in north-west NSW in an area also known as the North-West Plains. The North-West Plains is an extensive pastoral area covering over 32,000 square kilometres, featuring prime agricultural land mainly drained by the Namoi and Gwydir rivers and their tributaries. Major towns include Moree and Narrabri (Regional Development Australia, 2013).

The proposal site traverses three local government areas (LGAs), with the southern section of the proposal located in the Narrabri LGA, the middle section in the Moree Plains LGA, and the northern section in the Gwydir LGA (shown in Figure 2.1). The three LGAs are predominantly rural, with the main local industries based around agriculture (mainly cotton and grain growing) and grazing. The Moree Plains and Gwydir LGAs both adjoin the NSW–Queensland border.

Narrabri is located in the Narrabri LGA at the southern end of the proposal site. The town is about 447 kilometres south-west of Brisbane, 521 kilometres north-west of Sydney, and 939 kilometres north-east of Melbourne. It is located on the Namoi River at the junction of the Kamilaroi and Newell highways.

Moree is located in the Moree Plains LGA about 96 kilometres north of Narrabri. It is located on the Mehi River at the junction of the Newell and Gwydir highways.

The small village of North Star is located at the northern end of the proposal site in the Gwydir LGA. North Star is about 80 kilometres north-east of Moree, and 30 kilometres south of the Queensland border.

The regional context for the proposal site is shown in Figure 2.1.

2.2 Description of the proposal site

2.2.1 Definition

The proposal site is defined as the area that would be directly impacted by the construction of the proposal and includes the location of operational infrastructure. The majority of works associated with the proposal would be undertaken within the existing corridors for the Mungindi and Boggabilla rail lines, between Narrabri and North Star. The proposal site (shown in Figure 2.2) also includes the location of infrastructure located outside the existing rail corridor, including the Camurra bypass; the new Newell Highway overbridge and associated highway realignment near Bellata and the Jones Avenue overbridge in Moree.

For the purposes of the EIS, the proposal site is generally considered to have a width of 30 metres, providing for a 15 metre buffer on each side of the alignment centreline. The proposal site is assumed to include all the required track and associated infrastructure, cess drains, haul roads, culverts, level crossings, and spoil mounds. The proposal site also includes the location of construction compounds (described in Chapter 8).

The land requirement for the proposal will comprise the existing corridor with an average width of 30 metres, with some variation to accommodate particular infrastructure and to cater for local topography. The corridor will be of sufficient width to accommodate the infrastructure currently proposed for construction, as well as future expansion, including a possible future requirement for 3,600 metre long trains.

Figure 2.1 Regional context

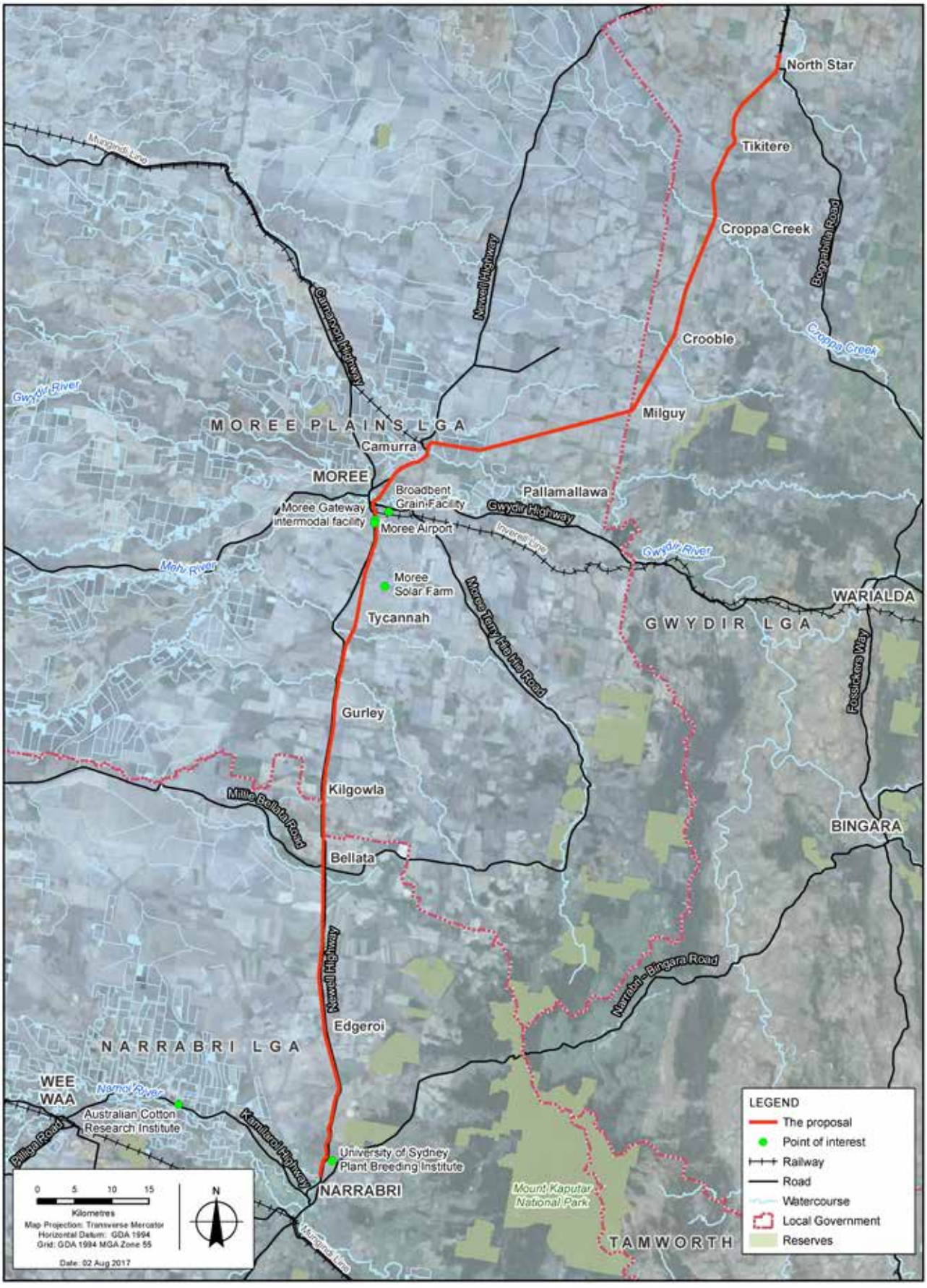


Figure 2.2a Proposal site

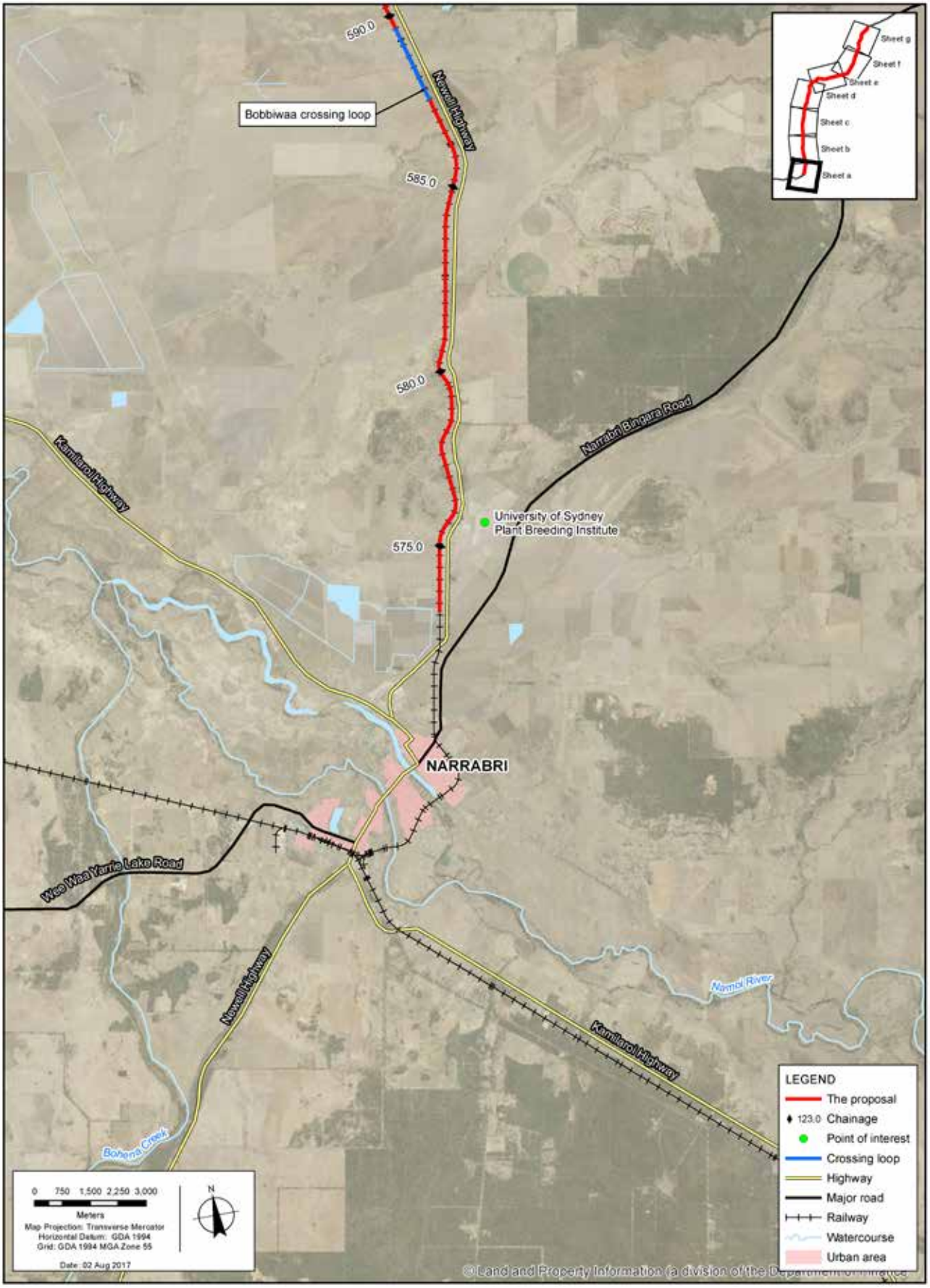


Figure 2.2b Proposal site

Figure 2.2c Proposal site

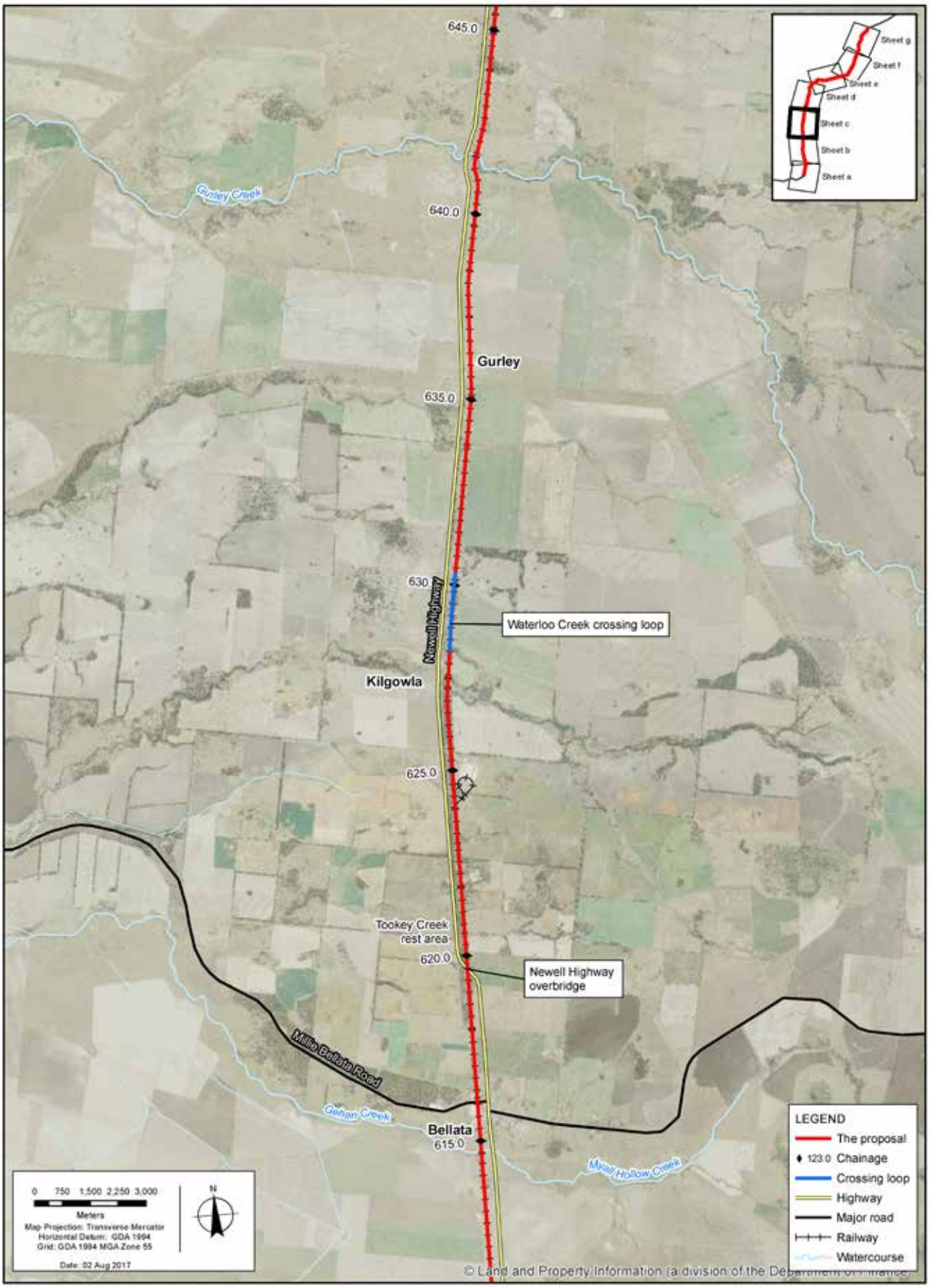


Figure 2.2d Proposal site

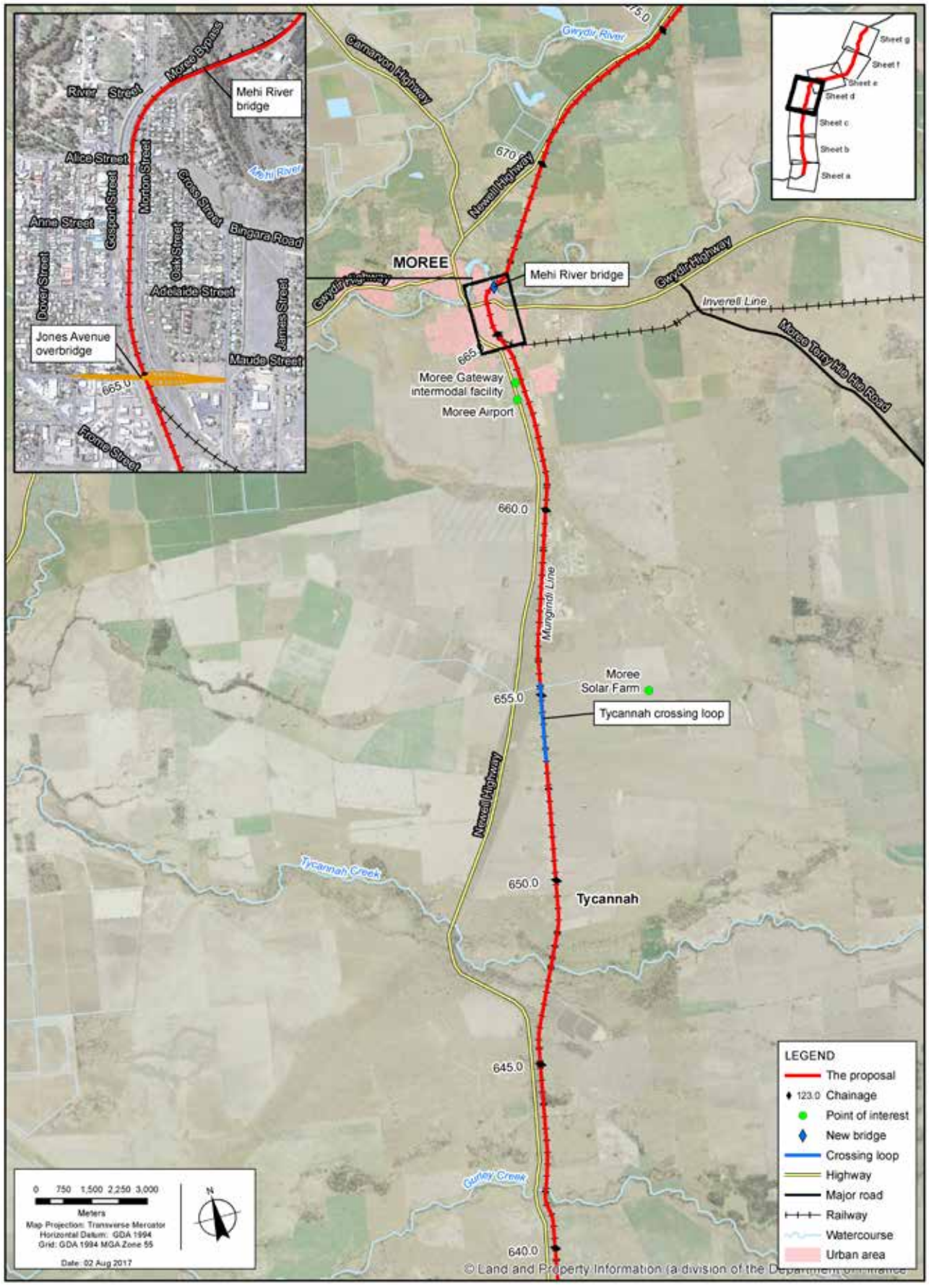


Figure 2.2e Proposal site

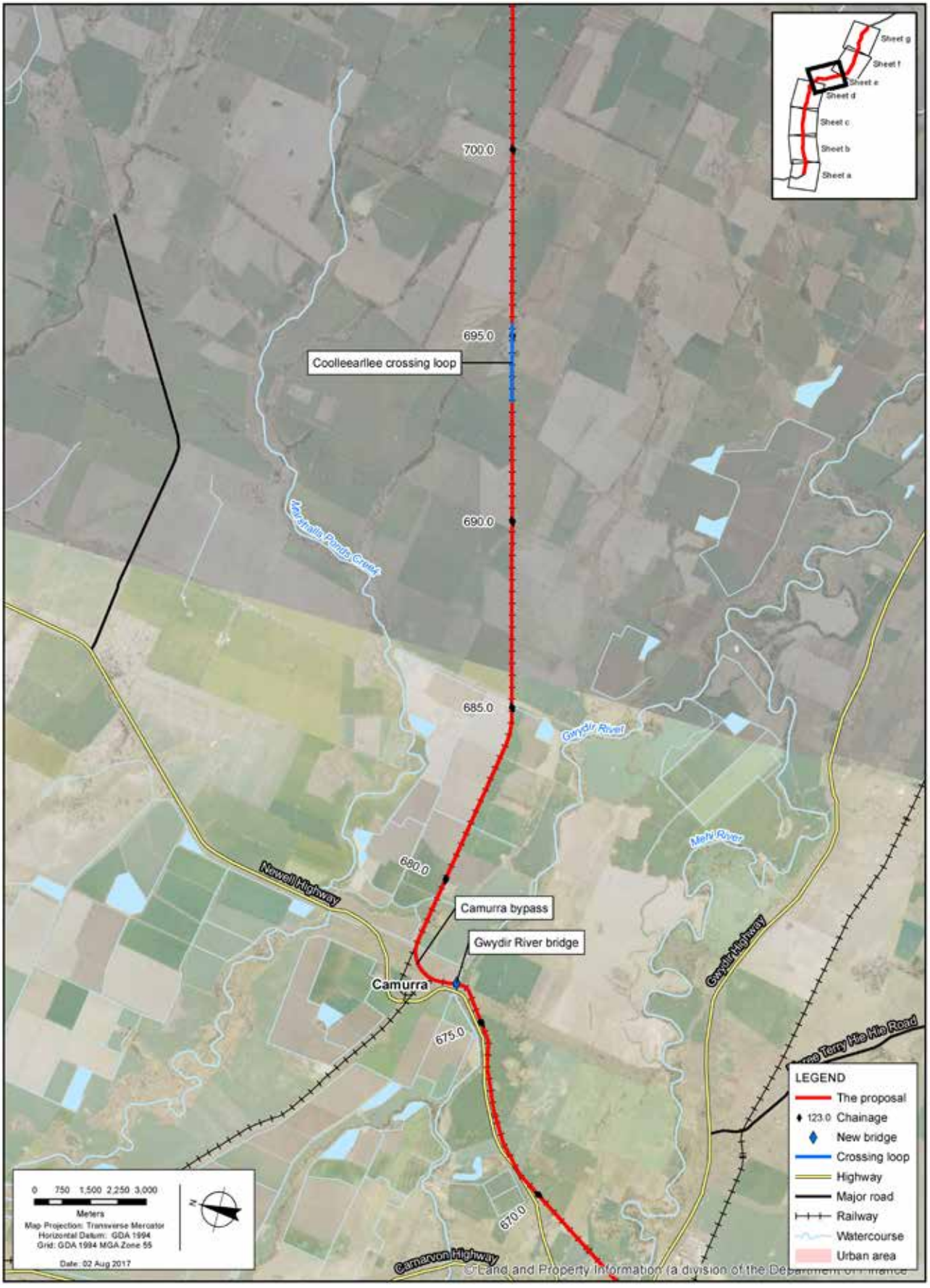
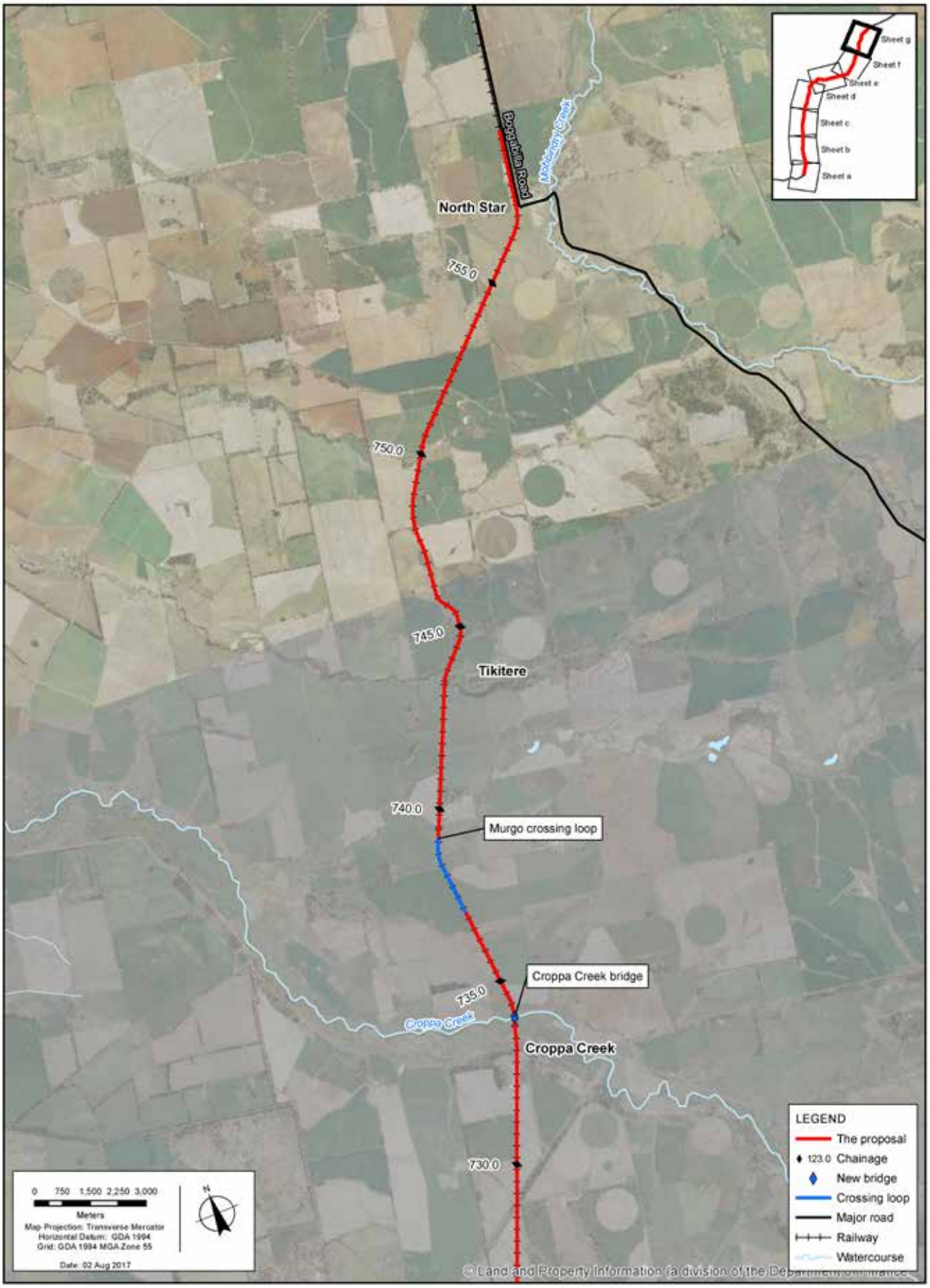


Figure 2.2f Proposal site

Figure 2.2g Proposal site



The proposal is for construction of 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 will 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 will occur to allow for construction and to maintain the safe operation of the railway.
The operational phase at year 2040 will 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 the proposed development described in the Programme Business Case (ARTC, 2015) for rail traffic and associated activities projected at the year 2040.

The following additional assessment areas outside the proposal site have also been considered for the biodiversity and heritage assessments:

- an approximate 60 metre buffer around culverts/ underbridges and the new bridges over the Mehi and Gwydir rivers and Croppa Creek
- an approximate 120 metre buffer around level crossings, and some additional areas to provide flexibility for future planning and design work.

These areas do not currently form the proposal site for the purposes of the EIS.

The need for works in these additional assessment areas would be determined during detailed design. The design of works in these areas would take into account the findings of the biodiversity and heritage assessments.

2.2.2 Description

The southern end of the proposal site commences in Narrabri just to the north-east of the town. From Narrabri, the proposal site extends along the existing Mungindi line rail corridor in a north–south direction for a distance of about 94 kilometres, to just south of Moree (existing rail lines in the study area are described in Section 2.5). In the Narrabri to Moree section, the proposal site is located generally adjacent to the Newell Highway.

Between Narrabri and Moree, the proposal site travels through the towns of Edgeroi, Bellata, and Gurley. From just north of Narrabri to about 3.5 kilometres north of Bellata (a distance of about 46 kilometres), the proposal site is located adjacent to (just to the west of) the road corridor for the Newell Highway. At about 3 kilometres north of Bellata, there is an existing road overbridge to allow the Newell Highway to pass over the rail corridor. At this location, the proposal site includes the location of the proposed new Newell Highway overbridge and approaches, as well as the works within the rail corridor.

The proposal site is then located to the east of the Newell Highway for a distance of about 43 kilometres until just south of Moree near Bulluss Drive. At this point (about 1.3 kilometres south of Moree Station) the highway deviates to the west and travels to the west of Moree via the new Moree Bypass.

The proposal site then passes through Moree along the existing rail corridor in a north-easterly direction towards the locality of Camurra. On the north-eastern outskirts of Moree the proposal site travels over the Mehi River, where a new bridge would be built. Closer to Camurra (which is about 10 kilometres to the north-east of Moree), the proposal site also travels over the Gwydir River and includes a new bridge over the river on the same alignment as the existing bridge. At Camurra, the proposal site includes a new section of rail line to bypass the existing hairpin curve where the corridor for the Mungindi line connects with the Boggabilla line.

From Camurra, the proposal site travels to the east, and then to the north through rural lands and the localities of Crooble and Croppa Creek until it reaches the town of North Star (a distance of about 80 kilometres). At Croppa Creek, the proposal site includes a new bridge over the creek on the same alignment as the existing bridge.

The northern end of the proposal site is located at the western edge of the town of North Star, about 2,200 metres north of North Star Road.

2.3 General biophysical environment of the proposal site

A summary of the key biophysical characteristics of the study area is provided below.

2.3.1 Biodiversity

The majority of the study area has been heavily modified by past and ongoing disturbances associated with the active rail corridor and agricultural activities. Clearance and maintenance of the existing rail corridor has resulted in fragmentation, a high level of disturbance, and degradation of vegetation. No conservation areas, reserves, or large areas of native remnant vegetation are located within or close to the proposal site.

The majority of the proposal site consists of non-native vegetation or cleared land, with patches of native vegetation scattered within and around the proposal site. These patches generally comprise a woodland community, with the dominant canopy species including bimble box, belah, silver-leaved ironbark, and white cypress pine. Extensive areas of natural grasslands also exist. Of the native vegetation present, nine native plant community types were identified, with the most common community being Queensland Bluegrass Mitchell Grass grassland.

Four threatened ecological communities listed under the *Threatened Species Conservation Act 1995* (TSC Act), and four listed under the EPBC Act were identified, including the *Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland* community, which is listed as critically endangered under the EPBC Act.

Three threatened flora species and seven threatened fauna species listed under the TSC Act were recorded during field surveys. Of these, one flora species and two fauna species are also listed under the EPBC Act.

Further information is provided in Chapter 10.

2.3.2 Soils

The proposal site is characterised by an alluvial flood plain associated with the Mehi and Gwydir rivers. The terrain is typically near level to gently undulating. The proposal site is located in the Gunnedah Basin crossing the Goondiwindi thrust fault into the New England Fold Belt east of Camurra.

The subsurface conditions of the Gunnedah Basin are dominated by Quaternary and Tertiary aged river plain sediments, including black and red clayey silt, and black and yellow brown clay soils. Exceptions to this include the Jurassic aged clayey sandstone unit north of Narrabri, and partially consolidated polymictic gravel around Bellata.

Further information is provided in Chapter 14.

2.3.3 Water

The southern end of the proposal site around Narrabri is located in the Namoi River catchment, which includes the Namoi and Peel rivers. The middle section of the proposal site (including Moree) is located in the Gwydir River catchment, within which the Gwydir River is the dominant river system. The northern end of the proposal site is located in the Border Rivers catchment. This catchment comprises the Dumaresq, Severn and Macintyre rivers in northern NSW. The Border Rivers are part of the Murray-Darling Basin.

The proposal site crosses numerous watercourses, including rivers (the Mehi and Gwydir rivers), creeks (such as Croppa, Mulgate, Bobbiwa, Gehan, Tookey, and Gil Gil creeks), other ephemeral watercourses, and canals constructed to convey irrigation waters. There is no existing water quality data for the watercourses crossing the proposal site.

Groundwater around Moree and to the north-west to North Star is generally sourced from the Great Artesian Basin, with numerous wells, dams and irrigation channels noted around Moree in particular.

In general, the study area is characterised by relatively flat land, and the proposal site is located within an area that has been subject to significant floods.

Further information on hydrology, flooding, and water quality is provided in Chapters 15 and 16.

2.4 General cultural environment of the proposal site

A summary of the main cultural characteristics (including land use, heritage, and socio-economic) of the proposal site is provided below.

2.4.1 Land use and property

Land within the proposal site is mainly used for transport (rail) purposes. Apart from within the town of Moree, the land surrounding the proposal site is used mainly for agriculture and grazing purposes, with large rural properties surrounding the majority of the proposal site. Other land uses include roads (including the Newell Highway) and residential (in the towns).

In Moree, the proposal site is surrounded by a mix of land uses, including residential, industrial, open space and transport (roads).

Further information is provided in Chapter 20.

2.4.2 Heritage

Aboriginal heritage

The majority of historical sources indicate that the proposal site generally extends over the country of the Gomeroi people.

The proposal site has been subject to significant disturbance. Within the existing rail corridor, the construction and maintenance of the existing rail line is likely to have resulted in the removal/relocation of archaeological evidence that may have been present. Similarly, there is limited archaeological potential in agricultural land surrounding the existing rail corridor, as this area has been impacted by historical and current agricultural practices.

Sections of the proposal site within the existing rail corridor have been assessed as having low archaeological potential, with the exception of the terrace landforms bordering the Mehi River, Gwydir River and Croppa Creek where deposits may be present below the depth of current disturbance and modern flood deposit. Five areas within the proposal site were identified as having moderate or higher archaeological potential.

Two sites listed under the *National Parks and Wildlife Act 1974* (NPW Act) are located within the proposal site – the Steel Bridge Camp site (10-3-0032), which is an area of potential archaeological deposit at the former Aboriginal fringe camp site, and the Duffys Creek site (10-3-0035), an artefact scatter and area of potential archaeological deposit. These sites were assessed as having low to moderate archaeological significance at ground level, and moderate to high significance below the current depth of disturbance.

In addition, 12 new Aboriginal sites were identified within the proposal site during field surveys. Of these sites, eight are isolated artefacts with low significance, three are artefact scatters with low significance, and one is an artefact scatter with low to moderate significance.

Further information on Aboriginal heritage is provided in Chapter 17.

Non-Aboriginal heritage

The region in which the study area is located was first explored by Europeans around 1812. The first squatter in the Narrabri area established a station in 1834. The Moree to Camurra section of the Mungindi line and the Boggabilla line were opened in 1913 and 1932 respectively as 'pioneer lines' (rail lines constructed to a lesser standard than main rail lines, providing access to mainly agricultural areas).

Three locally listed heritage items are located within the proposal site – Moree Station, which is listed on both the Moree Plains Local Environmental Plan 2011 (the Moree Plains LEP) and Railcorp's section 170 heritage register, and the Mehi River and the Gwydir River rail bridges, which are listed on ARTC's section 170 heritage register. Moree Station is considered by the Moree Plains LEP to have State significance, and the Mehi River and Gwydir River bridges are considered to have local significance.

Nine heritage listed items are located within 80 to 100 metres of the proposal site – three of these are located in Moree, and the rest are located in Bellata.

The heritage assessment noted a number of potential heritage items within/close to the proposal site:

- the existing rail line and remaining elements (such as timber underbridges and remains of former stations) between Narrabri and North Star
- Croppa Creek bridge
- Edgeroi Woolshed (near the site of the former Woolenget Station)
- Anzac Day Crossing of the Boggabilla line at Crooble.

An assessment of significance of the potential heritage items concluded that these items are generally of local significance.

The site of a former Aboriginal fringe camp is located near the Mehi River bridge. Although not a listed archaeological site (under the *Heritage Act 1977*), this area is considered to have archaeological potential.

Further information is provided in Chapter 18.

2.4.3 Socio-economic

The community surrounding the proposal site is concentrated in Narrabri and Moree (described below). Much smaller populations are located in towns/localities around the proposal site, including Bellata and North Star. Scattered residences are located on rural properties.

Narrabri

At the 2011 census, Narrabri had a population of 5,890 people. Both Narrabri and Moree are important regional towns providing a range of services to the surrounding areas. The Newell Highway, a major arterial road linking Melbourne and Brisbane, runs through Narrabri.

Agriculture and mining are the main industries in Narrabri Shire. Agricultural production includes cotton, wheat, barley, oilseeds, grapes and peanuts, with livestock production comprising sheep, cattle, and pigs. Narrabri Shire is located in the Gunnedah Basin, which has one of the largest coal reserves in NSW. Numerous coal and gas operations are located between Narrabri and Gunnedah (Narrabri Shire Council, 2011).

Narrabri has large processing plants for cereal crops and cotton seed. Two important agricultural research institutes are located outside Narrabri – the Australian Cotton Research Institute, which is located about 22 kilometres north-west of the town, and the University of Sydney Plant Breeding Institute, which is located about two kilometres north-east of the town adjoining the proposal site.

Moree

At the 2011 census Moree had a population of 9,346 people. Moree is located at the junction of two major arterial roads – the Newell and Gwydir highways. It is an important agricultural centre, noted for its part in the Australian cotton-growing industry, which was established there in the early 1960s. Wheat and pecan nuts are important crops in the LGA, and sheep and cattle grazing also contribute to the agricultural economy.

Similar to Narrabri, Moree has large processing plants for cereal crops and cotton seed. Key developments around the town include the Moree Gateway and the Moree Solar Farm. The Moree Gateway is a logistics and transport hub located on a 215 hectare site about 3 kilometres south of the town, adjacent to the proposal site, the Newell Highway and the Moree Airport. The Moree Solar Farm is located on a 350 hectare site about 10 kilometres south of town, and about 2.9 kilometres to the east of the proposal site.

2.5 Existing rail facilities and operations

2.5.1 Rail infrastructure

Narrabri and Moree are located on the Mungindi (North West) line, which branches from the Main North line at Werris Creek Station and heads north-west through the towns of Gunnedah and Narrabri to Moree.

Narrabri Station opened in 1897, which was when the Mungindi line was extended from Boggabri to Moree. The existing Moree Station opened in 1904, replacing the original station (located to the north of the existing station), which opened in 1897 when the line was extended from Boggabri.

From Moree, the Mungindi line travels north-west to Mungindi on the NSW-Queensland border. The line was closed between Weemelah and Mungindi in 1974 when rail services were withdrawn following flooding.

The line to Inverell, east of Moree, branches from the Mungindi line at Moree. The Inverell line, which was completed in 1902, was progressively closed between 1987 and 1994. In 2017, a 2.8 kilometre section of the Inverell line was reinstated under the NSW Government's Fixing Country Rail program, between Moree and the Broadbent Grain receival facility to the east of Moree.

North Star is located on the disused Boggabilla line, which branches from the Mungindi line at Camurra (about 10 kilometres north-west of Moree). North Star Station was opened in 1932 with the opening of the Boggabilla line. From Camurra, the Boggabilla line travels north for about 130 kilometres to Boggabilla on the Queensland border. In 1987 the line was truncated at North Star. The remainder of the line was closed to normal operations in 2013 but is still used occasionally.

Figure 2.3 provides a schematic drawing of the rail network in the study area.

Track characteristics

The existing track is a mixture of rail weights (47 and 53 kilograms per metre) mainly supported on steel sleepers. The track was originally constructed for light traffic on the existing sub-grade materials. Over time, the track has been re-ballasted and maintained, but no significant improvements have been made to the track formation.

Sections of track pass through low lying flood prone areas, and wash-aways have occurred in the past after heavy rain events. The maintenance access track along the existing rail corridor is not continuous and can be impassable during and after wet weather.

There are about 12 sidings between Narrabri and North Star that provide access to and from the main line for private operations.

2.5.2 Rail operations

Passenger services

The Northern Tablelands Xplorer, run by NSW TrainLink, travels between Sydney and Moree via Werris Creek and Narrabri. In the proposal site, trains stop at Bellata and Moree twice a day (to and from Sydney Central).

Freight services

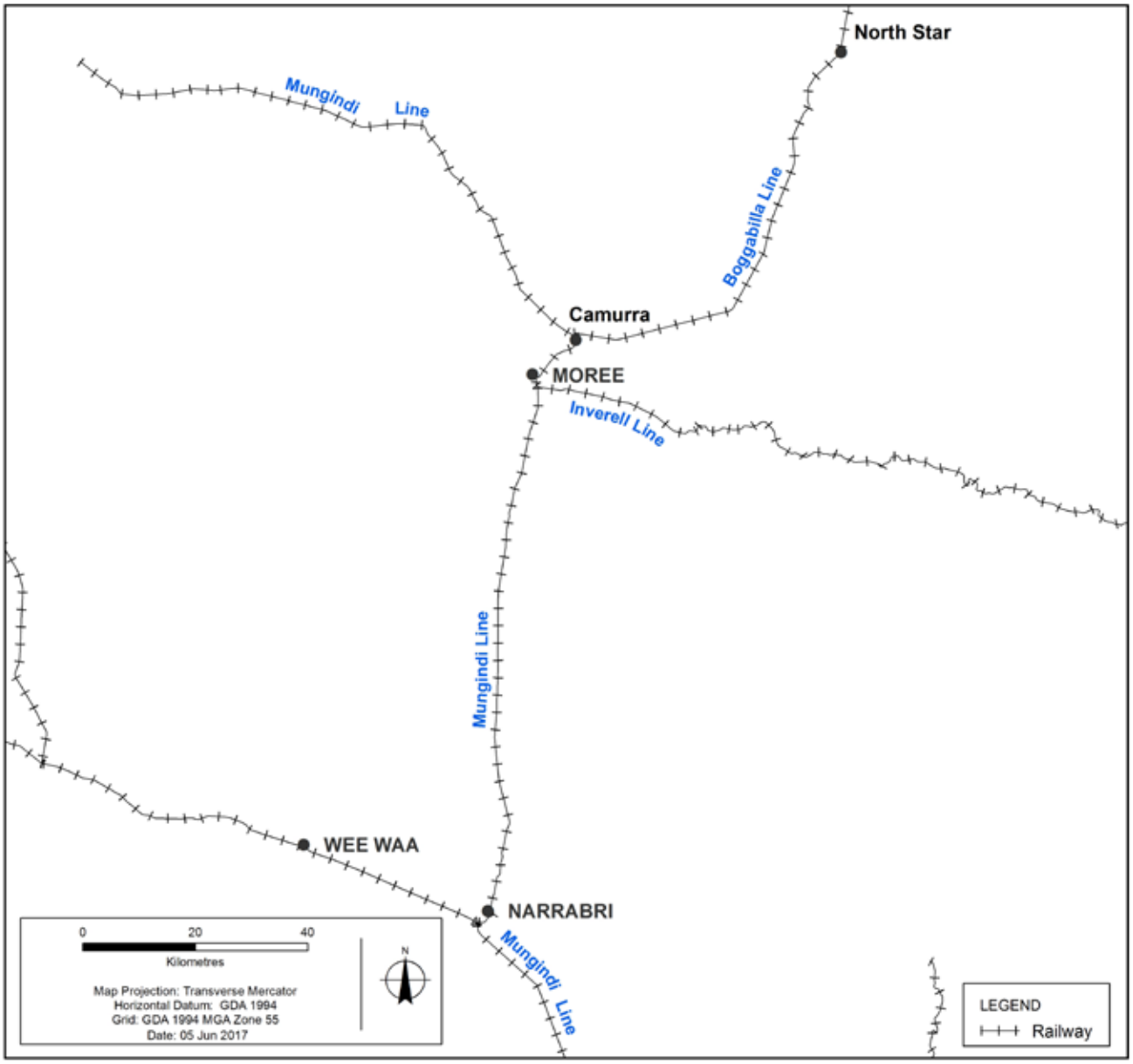
Occasional grain/goods trains operate on an as needs basis. Annually, there is currently an average of two grain trains per day carrying about 1.7 million tonnes of grain per year. This is likely to increase with the opening of the section of the Inverell line between Moree and the Broadbent Grain facility.

Trains using the line have a maximum length of 1,800 metres. Train speeds between Narrabri and Moree are limited to a maximum of 90 to 100 kilometres per hour, with local speed restrictions due to limitations associated with the existing track. Between Moree and North Star, train speeds are limited to a maximum of 80 kilometres per hour. There are also local speed restrictions.

Maintenance

Maintenance works and other minor works along the Mungindi line, and along the Boggabilla line as far as North Star, are undertaken by ARTC in accordance with existing ARTC procedures and processes, and relevant State legislative requirements.

Figure 2.3 Existing rail lines in the study area



3. Statutory context

This chapter provides a review of the legislation and environmental planning instruments that are relevant to the environmental assessment and approval of the proposal. The permissibility and approval pathway is summarised, and other planning instruments and legislation that are relevant to the assessment and approval of the proposal are considered.

3.1 Overview of the approval pathway

The proposal would be permitted without consent in accordance with *State Environmental Planning Policy (Infrastructure) 2007* (the Infrastructure SEPP), and is subject to assessment under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The capital investment value of the proposal is estimated to be over $50 million, and as a result, the proposal is State significant infrastructure under *State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional Development SEPP). The proposal is therefore subject to approval under Part 5.1 of the EP&A Act. Approval requirements under the EP&A Act are described in Section 3.2.

Other approvals and permits are also required, including approval as a controlled action under the EPBC Act. The requirements under other legislation are described in Sections 3.4 and 3.5.

3.2 Environmental Planning and Assessment Act 1979

The EP&A Act and the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) provide the framework for development assessment in NSW. The EP&A Act and the EP&A Regulation include provisions to ensure that the potential environmental impacts of a development are considered in the decision making process prior to proceeding to construction.

The key requirements of the EP&A Act in relation to the assessment and approval of the proposal are considered below.

3.2.1 Application of 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. In accordance with section 110(1), ARTC would be the proponent and a determining authority for the proposal.

Section 111 imposes a duty on 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'*.

Section 112(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 112, ARTC considers that the proposal has the potential to significantly affect the environment. As a result, an EIS is required.

3.2.2 State significant infrastructure and the application of Part 5.1 of the EP&A Act

State significant infrastructure is development that is so declared under section 115U of the EP&A Act. Under section 115U(2), development may be declared to be State significant infrastructure by a State environmental planning policy. Section 115U(3) specifies that:

> *'Development that may be so declared to be State significant infrastructure is development of the following kind that a State environmental planning policy permits to be carried out without development consent under Part 4:*
>
> *(a) infrastructure,*
>
> *(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.'*

The proposal is for infrastructure, and is for an activity for which the proponent is the determining authority and, in their opinion, requires an EIS (refer to Section 3.2.1).

Clause 14 and Schedule 3 of the State and Regional Development SEPP operate to make the proposal State significant infrastructure (refer to Section 3.3.2). The proposal is therefore subject to Part 5.1 of the EP&A Act. Under section 115W of the EP&A Act, the approval of the Minister for Planning is required for State significant infrastructure.

In accordance with section 115X (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 Director-General.*
>
> *(3) The application is to be lodged with the Director-General.'*

This document provides the information required to support the proponent's application for approval of the proposal. In accordance with the requirements of section 115X it addresses the SEARs (refer to Section 3.7.1).

Critical State significant infrastructure

Section 115V 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 115V 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. The proposal remains subject to assessment under Part 5.1 of the EP&A Act and requires the approval of the Minister for Planning.

The proposal has been declared by the Minister for Planning as critical State significant infrastructure under section 115V of the EP&A Act. The Minister has amended Schedule 5 of the State and Regional Development SEPP.

3.2.3 Land owner's consent/ notification requirements

Clause 193 of the EP&A Regulation provides owner's consent and notification requirements for State significant infrastructure projects. Clause 193(1) specifies that:

> *'The consent of the owner of the land on which State significant infrastructure is to be carried out is required for an infrastructure application or modification request unless the application or request relates to any of the following:*
>
> *(a) State significant infrastructure proposed to be carried out by a proponent that is a public authority,*
>
> *(b) critical State significant infrastructure.*
>
> *(c) State significant infrastructure comprising any one or more of the following:*
>
> *(i) Linear transport infrastructure,*
>
> *(ii) Utility infrastructure,*
>
> *(iii) Infrastructure on land with multiple owners designated by the Secretary for the purposes of this clause by notice in writing to the person making the application or request.'*

As the application for the proposal is being made by a public authority and is for linear transport infrastructure, the consent of individual land owners will not be required to make the application. However, the proponent needs to give notice of the application in accordance with the requirements of clause 193(4).

This clause requires:

> *'(4) Notification if consent not required*
>
> *If the consent of the owner of the land is not required for an infrastructure application or modification request under this clause, the proponent is required to give notice of the application or request:*
>
> *(a) by written notice to the owner of the land before, or no later than 14 days after, the application or request is made, or*
>
> *(b) advertisement published in a newspaper circulating in the area in which the infrastructure is to be carried out:*
>
> *(i) in the case of an infrastructure application—at least 14 days before the environmental impact statement that relates to the infrastructure is placed on public exhibition, or*
>
> *(ii) in the case of a modification request—no later than 14 days after the request is made.*

Notification under clause 193(4) was undertaken in the Narrabri Courier and the Moree Champion on 12 September 2017, and in the Warialda Standard on 13 September 2017.

3.2.4 Environmental Planning and Assessment Regulation 2000

Clauses 6 and 7 of Schedule 2 of the EP&A Regulation set out requirements for the form and content of an EIS. These requirements are included in Appendix C.

In addition, clause 193A specifies that:

> *'For the purposes of section 115ZM (e) of the Act, a proponent must, when preparing an environmental impact statement for State significant infrastructure on land less than 200 kilometres from the Siding Spring Observatory, take into consideration the Dark Sky Planning Guideline.'*

The proposal at the Narrabri end is within 200 kilometres of the Siding Spring Observatory. Therefore, consideration has been given to the *Dark Sky Planning Guideline: Protecting the observing conditions at Siding Spring* (Department of Planning and Environment, 2016) in Chapter 19.

3.3 NSW environmental planning instruments

3.3.1 State Environmental Planning Policy (Infrastructure) 2007

The Infrastructure SEPP clarifies the consent arrangements for infrastructure projects. According to clause 8(1) *'if there is an inconsistency between this policy and any other environmental planning instrument, whether made before or after the commencement of this policy, this policy prevails to the extent of the inconsistency'*.

The proposal meets the definition of rail infrastructure facilities, which are defined by clause 78 of the Infrastructure SEPP as 'railway tracks, associated track structures, rail freight terminals, sidings and freight intermodal facilities'.

Clause 79(1) provides that development for the purpose of a railway, or for rail infrastructure facilities, may be carried out by or on behalf of a public authority without consent on any land. This clause also specifies the conditions whereby such development can be carried out without consent on land reserved under the *National Parks and Wildlife Act 1974* (NPW Act). As the proposal site is not reserved under the NPW Act, these conditions do not apply, and the proposal is permissible without consent.

3.3.2 State Environmental Planning Policy (State and Regional Development) 2011

Sections 89C(2) and 115U(2) of the EP&A Act provide that a SEPP may declare any development, or any class or description of development, to be State significant infrastructure or State significant development. The State and Regional Development SEPP provides definitions of State significant infrastructure and State significant development. The proposal does not meet the definitions of State significant development.

Clause 14 of the State and Regional Development SEPP provides that development is State significant infrastructure if it is wholly or partly permissible without development consent under Part 4 of the Act, by virtue of the operation of a SEPP, and it meets the definitions provided in Schedule 3 to the State and Regional Development SEPP.

As noted above, the Infrastructure SEPP provides that the proposal is permissible without consent. Schedule 3 (item 3) of the State and Regional Development SEPP includes the following definition of 'rail infrastructure' - *'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.'* The capital investment value of the proposal is over $50 million. As the proposal meets the requirements of clause 14 it is defined as State significant infrastructure.

3.3.3 Other environmental planning instruments

Section 115ZF(2) of the EP&A Act provides that environmental planning instruments do not apply to or in respect of State significant infrastructure, except where they apply to the declaration of infrastructure as State significant infrastructure.

3.4 Other NSW legislative requirements

3.4.1 Approvals not required

The following approvals are not required for approved State significant infrastructure (in accordance with section 115ZG of the EP&A Act):

- a permit under section 201, 205 or 219 of the *Fisheries Management Act 1994* (FM Act)
- an approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*
- an Aboriginal heritage impact permit under section 90 of the NPW Act
- an authorisation referred to in section 12 of the *Native Vegetation Act 2003* (or under any Act repealed by that Act) to clear native vegetation or State protected land
- a bushfire safety authority under section 100B of the *Rural Fires Act 1997*
- a water use approval under section 89, a water management work approval under section 90, or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000* (Water Management Act).
- Division 8 of Part 6 of the *Heritage Act 1977* (relating to making heritage orders) does not apply to prevent or interfere with the carrying out of approved State significant infrastructure.

3.4.2 Approvals to be applied consistently

The following approvals cannot be refused if necessary for the carrying out of approved State significant infrastructure (in accordance with section 115ZH of the EP&A Act):

- an environment protection licence under chapter 3 of the *Protection of the Environment Operations Act 1997* (POEO Act)
- consent under section 138 of the *Roads Act 1993* (Roads Act).

The approval requirements of these Acts as they relate to the proposal are summarised below.

3.4.3 Consideration of requirements under other NSW Acts

Other NSW environmental planning legislation that are directly relevant to the approval and assessment of the proposal are considered below.

Protection of the Environment Operations Act 1997

The POEO Act establishes, amongst other things, the procedures for issuing licences for environmental protection on aspects such as waste, air, water and noise pollution control. Environment protection licences are generally required for scheduled activities or scheduled development work.

The definitions of scheduled activities provided in Schedule 1 include:

'33 Railway systems activities

1. This clause applies to railway systems activities, meaning:

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 would therefore require an environment protection licence.

ARTC would obtain an environment protection licence for construction of the proposal. In relation to operation, ARTC currently holds a licence to carry out railway systems activities on other parts of the NSW rail network (licence number EPL3142). It may be appropriate to either amend this licence to include the operation of the proposal or to obtain a new licence. Licensing requirements for the proposal would be considered in consultation with the Environment Protection Authority (EPA).

Roads Act 1993

Under Section 138, Part 9, Division 3 of the *Roads Act 1993*, approval from the relevant roads authority is required to impact, or carry out work on or over, a public road. Clause 5(1) of Schedule 2 of the Roads Act exempts public authorities from this requirement, except in relation to works on or over classified and Crown roads.

The proposal would involve works to the Newell Highway as part of the proposed road overbridge near Bellata. Approval would be sought under section 138 for these works. As noted in Section 3.4.2, approval under section 138 of the Roads Act cannot be refused if it is necessary to carry out a State significant infrastructure project.

Water Management Act 2000 and Water Act 1912

The Water Management Act and *Water Act 1912* (Water Act) control the extraction of water, the use of water, the construction of works such as dams and weirs and the carrying out of activities in or near water sources in NSW. The provisions of the Water Management Act are being progressively implemented to replace the Water Act. Since 1 July 2004 the new licensing and approvals system has been in effect in those areas of NSW covered by operational water sharing plans.

Temporary dewatering and construction activities that interfere with aquifers are generally identified as aquifer interference activities in accordance with the Water Management Act and the *NSW Aquifer Interference Policy* (Department of Primary Industries), 2012). However, the aquifer interference approval provisions of the Water Management Act have not commenced, and licensing of these activities is carried out under Part 5 of the Water Act. A licence under Part 5 is required for any dewatering activity that would require the extraction of more than 3 megalitres of groundwater per year. Excavation would be undertaken as part of the proposal. Although groundwater may be intercepted, it is unlikely that any dewatering would exceed 3 megalitres of groundwater per year.

Extraction of groundwater is proposed as part of the requirements for water during construction (described in Chapter 8). A licence would be sought under Part 5 of the Water Act if required.

Crown Lands Act 1989

The *Crown Lands Act 1989* (Crown Lands Act) sets out how Crown land is to be managed. In particular, in relation to actions affecting Crown land:

- All actions are to be consistent with the 'principles of Crown land management'.
- An assessment must be carried out prior to any dealings in Crown land (such as a lease).
- Specific use of Crown land generally needs to be authorised by a lease, licence or other permit.

In summary, the principles of Crown land management are that, as appropriate:

- environmental protection principles be observed
- natural resources be conserved wherever possible
- public use and enjoyment, and multiple use be encouraged
- the land and its resources be sustained in perpetuity
- it be occupied, sold, or otherwise dealt with consistent with these principles.

An authorisation under the Crown Lands Act to allow occupation of Crown land must be obtained. The potential impacts of the proposal on land use, including Crown land, are considered in Chapter 20.

Transport Administration Act 1988

The *Transport Administration Act 1988* (Transport Administration Act) provides for the administration and management of transport infrastructure and transport agencies in NSW. Under section 99B of the Transport Administration Act, a rail infrastructure owner may close any level crossing provided that, prior to closing the crossing, it notifies Roads and Maritime and the local council, and receives Ministerial approval.

Transport for NSW reviews all applications for level crossing closures before they are submitted to the Minister to ensure that the relevant issues have been considered, and adequate consultation has been undertaken.

As described in Chapter 7, the proposal includes changes to a number of level crossings. ARTC is undertaking, and will continue to undertake, necessary consultation to confirm the changes required. Approval for closures, if required, would be obtained in accordance with the requirements of the Transport Administration Act.

3.5 Commonwealth requirements

3.5.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act, proposed 'actions' that have the potential to significantly impact on matters of national environmental significance, the environment of Commonwealth land, or that are being carried out by an Australian Government agency, must be referred to the Australian Minister for the Environment and Energy for assessment. If the Minister determines that a referred project is a 'controlled action' under the EPBC Act, the approval of the Minister would be required.

An EPBC Act protected matters search was undertaken on 7 September 2015 for an area within a 10 kilometre radius of the proposal site. The results of the search indicated that the proposal has the potential to impact on two protected matters:

- threatened ecological communities – four EPBC Act listed threatened ecological communities have the potential to be impacted
- threatened species – two EPBC Act listed fauna species and one flora species have the potential to be impacted.

As a result of the potential for impacts on protected matters, the proposal was referred to the (then) Australian Minister for the Environment in June 2016 (EPBC Referral 2016/7729). On 26 September 2016, the Australian Government Department of the Environment and Energy notified that the proposal is a controlled action, with the controlling provision being 'listed threatened species and communities' (under section 18 of the EPBC Act).

As part of the overall approval process for the proposal, the proposal will be assessed by the NSW Department of Planning and Environment in accordance with the Bilateral Agreement made (between NSW and the Commonwealth) under section 45 of the EPBC Act relating to environmental assessment. The assessment requirements are defined by the SEARs (provided in Appendix A). Following this assessment, the Australian Minister for the Environment and Energy will make a separate decision whether or not to approve the proposal under the EPBC Act.

Further information on potential biodiversity impacts, including the assessment of the potential impacts on EPBC Act listed threatened species and communities, is provided in Chapter 10.

3.6 Summary of approval and notification requirements

In summary:

- The proposal is permissible without consent under the Infrastructure SEPP. The proposal is State significant infrastructure, and it requires approval from the Minister for Planning under Part 5.1 of the EP&A Act.
- An environment protection licence under the POEO Act is required for the construction and operation of the proposal.
- Landowners need to be notified in accordance with clause 193(4) of the EP&A Regulation.
- Approval to close level crossings may be required under section 99B of Transport Administration Act.
- A licence would be sought under Part 5 of the Water Act if extraction of more than 3 megalitres of groundwater per year is required to construct the proposal.
- The proposal is a controlled action under the EPBC Act and requires approval under the EPBC Act from the Australian Minister for the Environment and Energy.

3.7 The assessment process

3.7.1 Environmental assessment requirements

Under section 115Y(1) of EP&A Act, *'When an application is made for the Minister's approval for State significant infrastructure, the Secretary is to prepare environmental assessment requirements in respect of the infrastructure'*. These identify the general requirements for the EIS, and the key issues to be assessed. The SEARs for the proposal were originally issued on 17 February 2016. Amended SEARs, which included the original SEARs with slight amendments, and additional assessment requirements for matters of national environmental significance under the EPBC Act, were issued on 8 November 2016.

The requirements outlined in the SEARs, together with where they are addressed by this EIS, are provided in Appendix A.

3.7.2 Public exhibition and submissions

If the EIS is considered to meet the requirements, the Department of Planning and Environment would place it on public exhibition for at least 30 days. During the exhibition period, submissions would be invited from relevant agencies and members of the public. The Department would provide ARTC with a copy of the submissions. ARTC would then be asked to respond to the issues. ARTC may modify the proposal if required and practicable. If the proposal is modified in response to the issues raised, a preferred infrastructure report would be prepared to describe the scope of the revised project. Otherwise, a submissions report would be prepared. The Department would make the required report publicly available.

Further information on the proposed approach to consultation during the exhibition period is provided in Chapter 4.

3.7.3 Assessment and approval

Following the exhibition period, the Department of Planning and Environment will, on behalf of the Minister for Planning, review the EIS and the submissions/preferred infrastructure report. The Department will prepare an assessment report, which is submitted to the Minister for Planning for determination. The Minister may refuse the proposal, or approve it with any conditions considered appropriate. The Minister's approval and the assessment report would be published on the Department of Planning and Environment's Major Projects website following determination. Approval under the EPBC Act from the Australian Minister for the Environment and Energy will be advised separately.

4. Consultation

This chapter summarises the community and stakeholder consultation undertaken prior to and during preparation of the EIS, and the consultation proposed to be undertaken during the design and delivery of the proposal. The key issues relevant to the EIS are summarised. Further information is provided in the consultation report, included in Appendix D.

4.1 Consultation approach, objectives and strategy

4.1.1 Overall approach and objectives

ARTC's values commit the organisation to active engagement with stakeholders and the community. For Inland Rail, effective communication and stakeholder engagement are fundamental to reducing risk, optimising route alignment, minimising social and environmental impacts, securing statutory approvals, and gaining and maintaining the social licence to operate. ARTC believes that identifying, engaging and effectively communicating with stakeholders is critical to the successful delivery of Inland Rail.

ARTC's approach to consultation for Inland Rail aims to:

- build awareness, understanding, and support for Inland Rail among customers, stakeholders and the community
- harness a sense of ownership through advocates of Inland Rail
- create an active dialogue with customers, communities and other stakeholders
- identify and manage issues and opportunities
- achieve a design that minimises the potential for environmental and community impacts
- actively seek opportunities to create beneficial outcomes for stakeholders, while not compromising the scope and budget of Inland Rail (for example, improving local rail and road interfaces where it benefits Inland Rail and improves community safety and amenity).

4.1.2 Consultation plan

Stakeholder and community engagement for Inland Rail is an evolving process that commenced in 2010. In early 2015, ARTC developed the *Inland Rail Strategic Stakeholder and Engagement Plan*. The aim of the plan was to inform early engagement with key local councils, including those within which the proposal site is located, ahead of the commencement of formal consultation and fieldwork.

ARTC's approach to stakeholder engagement during this early stage was as follows:

- provide an update to key stakeholders
- revisit issues raised by councils and other local stakeholders during early consultations
- discuss any issues identified during technical studies in the priority construction areas
- understand the council's views of Inland Rail within their respective Regional Plans
- seek input regarding key local stakeholder groups (local business and community leaders) to be engaged through future consultation
- identify new opportunities and issues associated with delivery of Inland Rail at a local level.

This approach was welcomed by the local councils, who were actively seeking information and urging early engagement.

Later in 2015, ARTC developed the *Communication and Engagement Plan Narrabri to North Star* to guide engagement with the local community. As defined by the plan, consultation has been, and will continue to be undertaken, over five phases:

- development of the business case
- planning, design and approvals (including preparation of the EIS)
- construction
- commissioning and handover
- operation.

The communication and engagement activities are tailored in the plan for each phase, and generally include:

- meetings and briefings
- workshops
- community information sessions
- phone, email and written correspondence
- project website
- distribution of information, including mail outs.

4.1.3 Stakeholder identification

A stakeholder is defined as a person, group or organisation who has an interest in a project and/or is directly or indirectly impacted by the project.

The key stakeholders for Inland Rail include:

- elected members of the parliaments of NSW and Australia
- local councils
- government agencies
- landowners and residents with the potential to be directly or indirectly impacted by the proposal
- community and environment groups
- traditional owners
- utility providers
- representatives of neighbouring and related projects.

A full list of stakeholders is provided in the consultation report in Appendix D.

4.2 Consultation process and activities

4.2.1 General activities

A summary of the activities and tools employed to provide information on the proposal is provided in Table 4.1.

Table 4.1 Consultation tools

Consultation and communication tool	Purpose	Timing
Community contact mechanisms: ▸ toll free community information line (1800 732 761) ▸ project email (inlandrailenquiries@artc. com.au) ▸ Inland Rail website (www.inlandrail.com.au)	▸ Obtain feedback and measure awareness of the proposal . ▸ Provide information and promote channels through which stakeholders can communicate their views, issues, and concerns.	Commenced in 2014 and ongoing.
Printed information – distributed to people on the mailing list and at communication sessions: ▸ fact sheets ▸ project information packs ▸ mail outs	▸ Raise awareness and understanding of the proposal. ▸ Provided to stakeholders to increase understanding of the proposal. ▸ Provide information on land access guidelines and procedures.	Commenced in 2014 and ongoing.
Community information sessions	▸ Provide information on the proposal to the local community. ▸ Seek local input to inform the design process and EIS.	Held in Moree and Narrabri in May 2016 and again in Narrabri in November 2016. Held in North Star in June and October 2016.

Consultation and communication tool	Purpose	Timing
Workshops	▸ Discuss the proposal and address specific questions and concerns in person. ▸ Provide an opportunity for stakeholder input to inform the design process and EIS.	Commenced in August 2015 and held on a regular basis.
Landowner face-to-face meetings	▸ Raise awareness of the proposal and the potential impacts on landowners. ▸ Provide an opportunity for landowners to ask questions and have input into the design and EIS.	Commenced in March 2016 and ongoing.
Stakeholder meetings and briefings	▸ Opportunity to address specific questions and issues in person. ▸ Provide an opportunity for stakeholder input to inform the design process and development of the EIS.	Commenced in 2014 and ongoing.
Submissions	▸ Submissions from local councils and businesses have been invited to provide an opportunity for local knowledge and views to be shared with the proposal team.	Early 2015.
Local media: ▸ advertisements ▸ media releases	▸ Raise awareness and understanding. ▸ Provide information and promote channels through which stakeholders can communicate their views, issues and concerns. ▸ Celebrate project milestones publicly.	Ongoing.
Project database	▸ Record all correspondence relating to the proposal, including feedback, concerns, and comments.	Established in 2014, ongoing.

4.3 Results of consultation relevant to the EIS

A summary of the key issues raised during consultation relevant to the EIS, including the potential impacts to be considered and the information to be provided by the EIS, is provided in Table 4.2. More detailed information on the issues raised by individual stakeholders is provided in Appendix D.

Table 4.2 Summary of issues raised relating to the EIS

Issue category	Issues raised in relation to potential impacts to consider	Where addressed in the EIS
Traffic/access	▸ Impacts on private and public level crossings.	Chapters 7 and 9
	▸ Impacts on heavy vehicle movements particularly during peak harvest times.	Chapter 9
	▸ Safety impacts associated with proposal and motorists and heavy vehicle movements over the rail alignment.	Chapters 9 and 25
	▸ Consideration of pedestrian safety at crossings and illegal corridor access in Moree.	Chapters 9, 21 and 25
Biodiversity	▸ Impact of weeds and management strategies to prevent spread to neighbouring agricultural properties.	Chapter 10
	▸ Impact on threatened flora and fauna and associated management.	
Noise	▸ Impact of noise and vibration during operation.	Chapters 11 and 12
Flooding	▸ Impact of flooding on construction and operation.	Chapter 15
	▸ Flooding impacts on farmer accessibility, due to proposal.	
Heritage	▸ Impacts on culturally important locations to be assessed.	Chapter 18
Socio-economic/safety	▸ Potential benefits of the wider Inland Rail project including increased opportunities for education, employment and vocational training; increased modal competition between road and rail; improved road safety and community amenity.	Chapter 21 and 25
	▸ Amenity impacts to residential receivers near the proposal.	
	▸ Impacts on safety and the need for rail safety education.	
	▸ Consider impacts on Moree Gun Club and current firing range.	
	▸ Impacts on community due to community division in Moree (due to rail line in centre).	
Visual amenity	▸ Visual impacts during operation, and the need to consider mitigation strategies such as tree screening.	Chapter 19
Land use/properties	▸ Process of property acquisition.	Chapters 20 and 21
	▸ Potential impacts on travelling stock reserves.	
Bushfire	▸ Corridor maintenance to avoid bushfire and other damage.	Chapter 25

4.3.1 Consultation undertaken as an input to the SEARs

A summary of issues raised by government agencies consulted by the Department of Planning and Environment during preparation of the SEARs is provided in Table A.4 in Appendix A, together with a reference to where they are addressed in the EIS.

4.4 Consultation during exhibition of the EIS

The EIS will be placed on public exhibition for a minimum of 30 days. During that time, the consultation tools implemented during preparation of the EIS will continue to be used, where relevant. Consultation tools used during this period will include:

- advertisements in the local media giving information regarding the proposal and display of the EIS
- issuing of newsletters to the community (Council newsletters, e-newsletter, other)
- briefings to key stakeholders including Councils
- community information sessions.

The EIS will be available for viewing at the following locations:

- Moree Plains Shire Council – Administration/ Customer Service Centre, Level 2, 30 Heber Street, Moree, NSW, 2400
- Moree Community Library – 36 Balo Street, Moree, NSW, 2400
- Narrabri Shire Council – Admin Building, 46-48 Maitland Street, Narrabri, NSW, 2390
- Narrabri Library – 8 Doyle Street, Narrabri, NSW, 2390
- Wee Waa Library – 106 Rose Street, Wee Waa, NSW, 2388
- Dhiiyaan Aboriginal Centre – 38 Albert Street, Moree NSW 2400
- Gwydir Shire Council – 33 Maitland Street, Bingara, NSW, 2404
- Gwydir Shire Council – 58 Hope Street, Warialda, NSW, 2402
- North Star Post Office – 17 Edward Street, North Star, NSW, 2408
- Croppa Creek Store – 6 Buckie Road, Croppa Creek, NSW, 2411.

The EIS will also be made available for viewing on the Department of Planning and Environment and Inland Rail websites. The public will be able to review the EIS and send submissions to the Department of Planning and Environment for consideration.

Community information sessions and briefings will be held during the public exhibition period to enable community members and representatives to ask questions.

At the completion of the public exhibition period the Department of Planning and Environment will provide ARTC with a copy of all public and government submissions. ARTC will deal with any submissions received in accordance with the *Environmental Planning and Assessment Regulation 2000*. A submissions report will be prepared responding to the issues raised, and will be made available for viewing on the Department of Planning and Environment website. ARTC will continue to liaise directly with key stakeholders regarding the proposal's progress. If changes to the proposal need to be made, a preferred infrastructure report would be prepared.

While all submissions received will be posted on the Department of Planning and Environment website, if requested, the privacy of submitters will be protected by removing names from submissions.

4.5 Consultation during design and delivery of the proposal

4.5.1 Consultation and community feedback

Consultation with the community and key stakeholders would be ongoing in the lead up to, and during construction. The consultation activities would ensure that:

- the community and stakeholders have a high level of awareness of all processes and advanced notice of activities associated with the proposal
- accurate and accessible information is made available
- a timely response is given to issues and concerns raised by the community
- feedback from the community is encouraged
- opportunities for input are provided.

The 1800 phone number and proposal email address would continue to be available during construction, along with a 24-hour construction response line. Targeted consultation methods, such as letters, notifications, signage and face-to-face communications, would continue to occur. The Inland Rail website and social media platforms would also include updates on the progress of the proposal.

The following communication tools and activities used during the construction phase would include:

- development of a communication management plan detailing a complaints handling process
- proposal email address
- 1800 phone number
- updates to the Inland Rail website
- targeted consultation and notifications such as letters, notifications, and face to face communication
- construction signage.

4.5.2 Complaints management

The construction contractor engaged to construct the proposal would be required to implement a complaints management procedure during construction of the proposal. This procedure would be defined within the construction environmental management plan (CEMP), which the contractor would be required to prepare and have approved by ARTC prior to construction commencing.

The complaints management procedure would include the following at a minimum:

- contact details for a 24-hour project response line and email address, for ongoing stakeholder contact throughout the proposal
- provision of accurate public information signs while work is in progress
- staging of works, developed in consultation with relevant stakeholder groups, to minimise disruption and impacts to community activities and functions
- management of complaints in accordance with ARTC's emergency management procedure, specifically:
    - details of all complaints received will be recorded
    - verbal and written responses describing what action will be taken will be provided to the complainant within time limits (unless the complainant agrees otherwise).