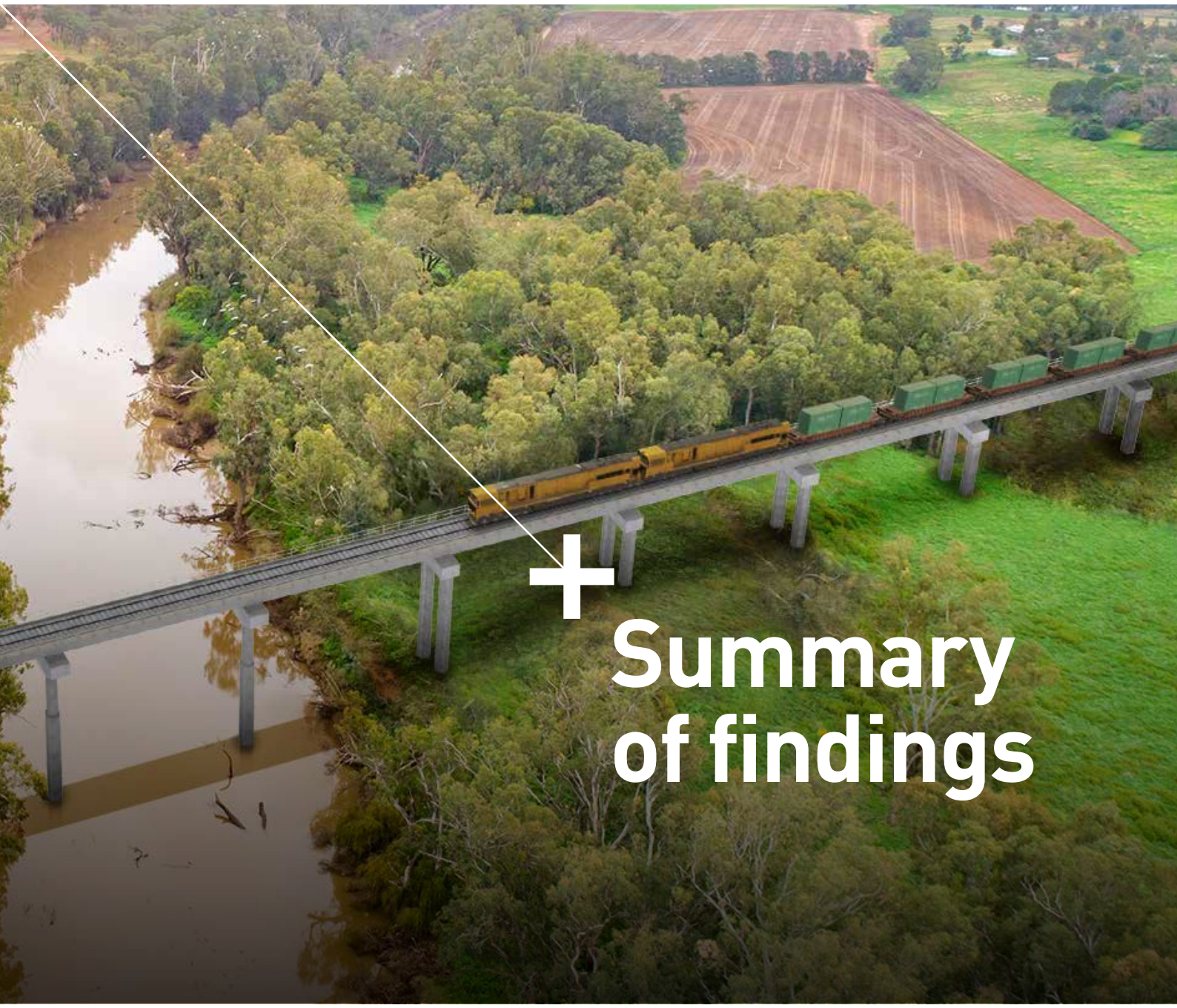
INLAND RAIL



Summary of findings

Narromine to Narrabri project

Environmental Impact Statement

ARTC

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

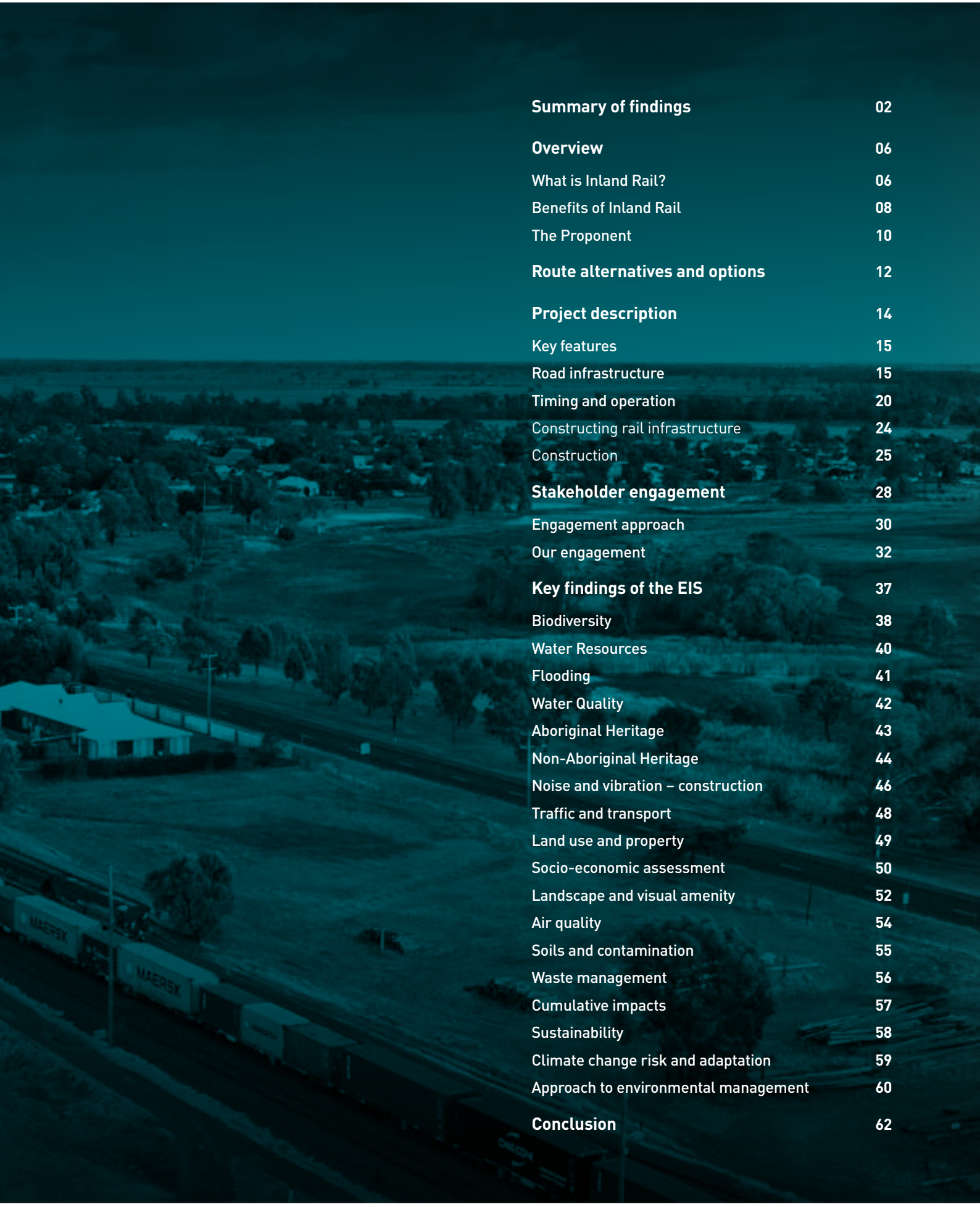
ACKNOWLEDGEMENT OF COUNTRY

Inland Rail acknowledges the Traditional Custodians of the land on which we work and pay our respect to their Elders past, present and emerging.

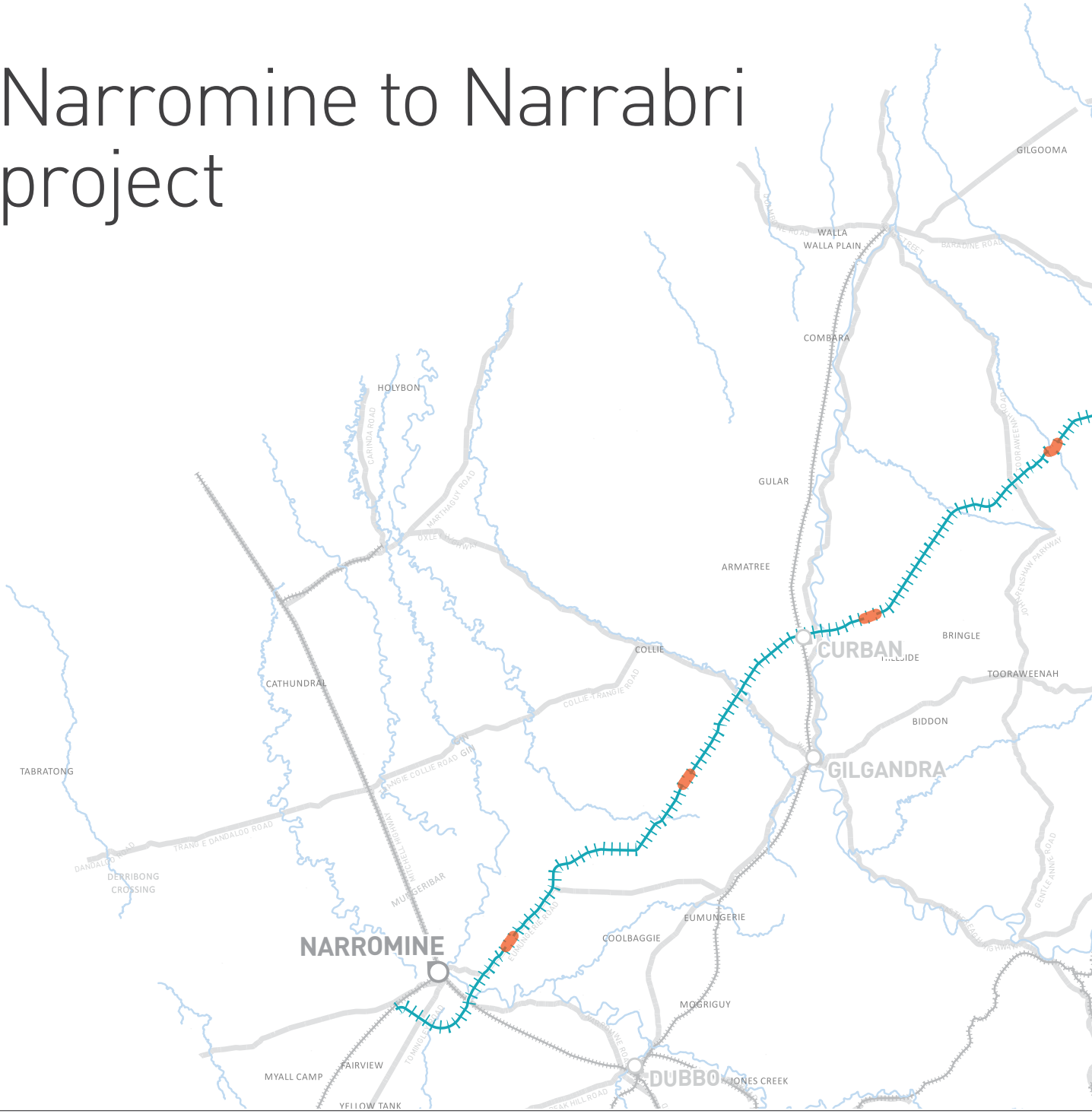
Front cover:

MACQUARIE RIVER BRIDGE, NARROMINE VIEW LOOKING WEST

Disclaimer: Project visualisations are for illustrative purposes and not to scale. Please note, the Reference Design may change as a result of further investigations, government approvals or during detailed design.



Narromine to Narrabri project



Narromine to Narrabri involves:

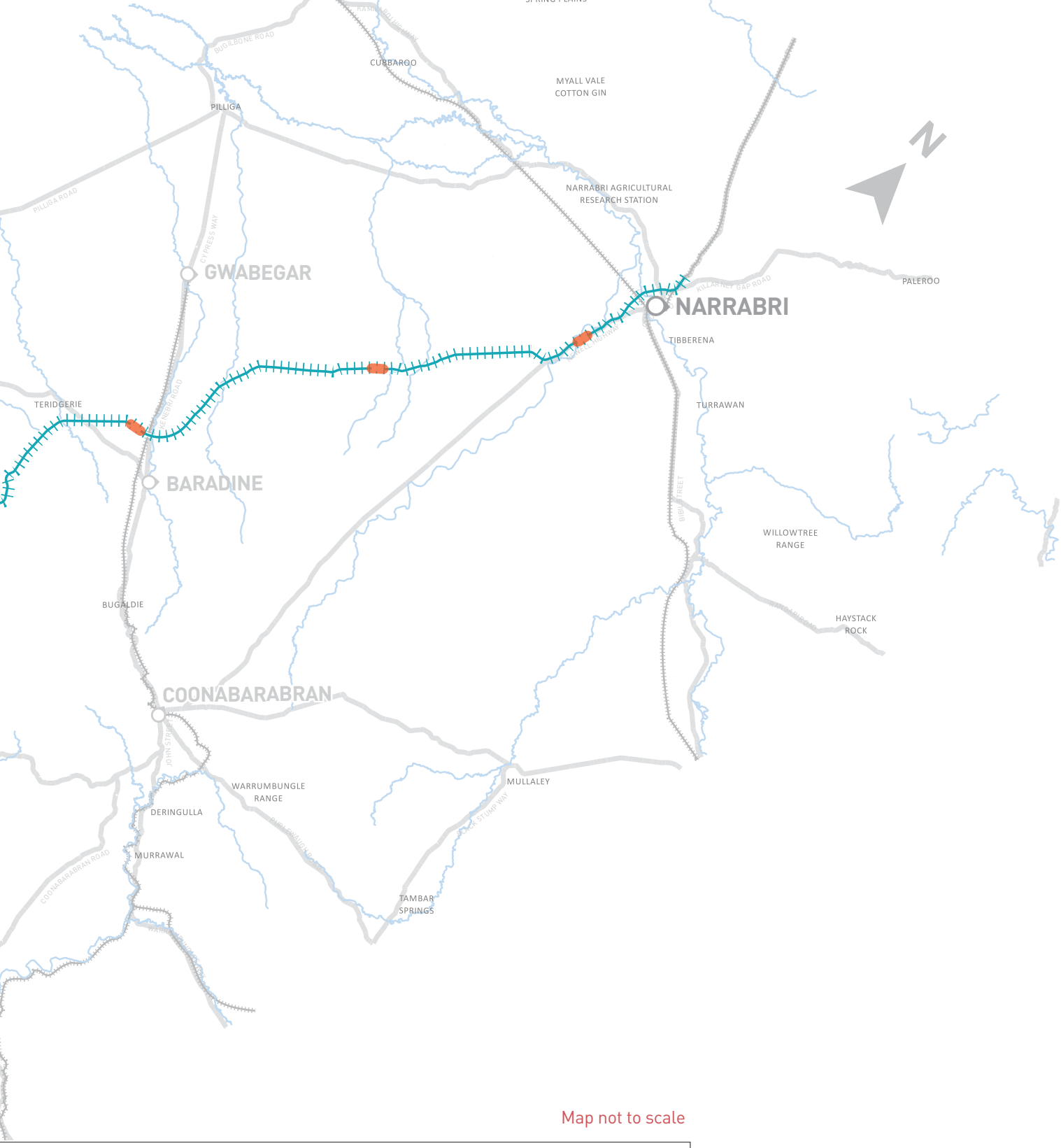
306km new single track within greenfield rail corridor

new rail connections and possible future connections with existing Australian Rail Track Corporation (ARTC) and Country Regional Network (CRN) rail lines

7 crossing loops so trains can pass each other

58 new bridges and 15 new viaducts over rivers, floodplains, roads and rail lines (total length: around 16km)

initially to accommodate **1,800m long double-stacked freight trains**



Map not to scale

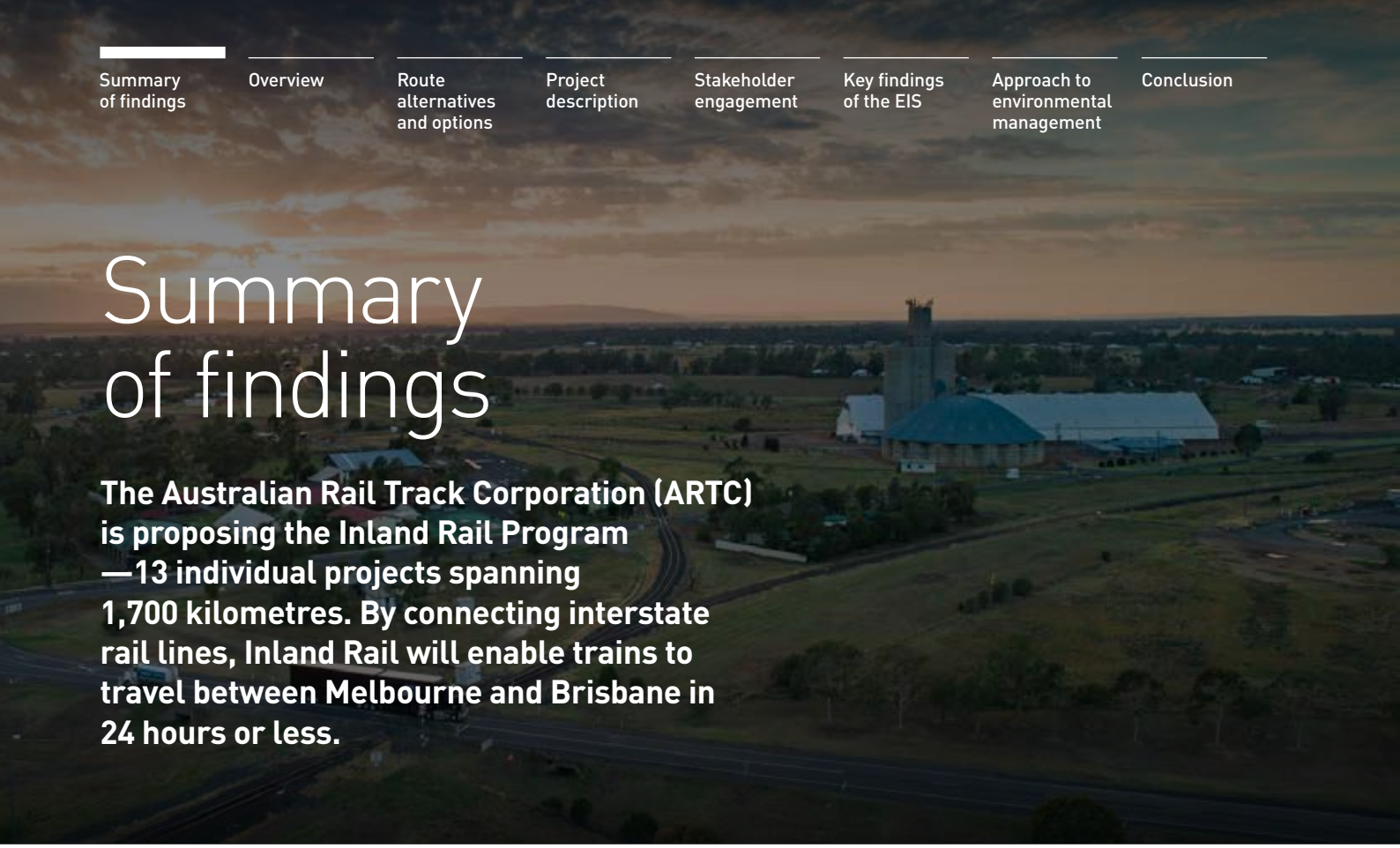
51 new public level crossings to maintain access to public roads that cross the rail corridor

ancillary works including road re-alignments, utility relocations, signalling and communications, drainage, signage and fencing

Narromine to Narrabri project links to the Parkes to Narromine and Narrabri to North Star projects

LEGEND

- N2N project alignment
- Major roads
- Existing rail
- Watercourses
- Crossing loop



Summary of findings

The Australian Rail Track Corporation (ARTC) is proposing the Inland Rail Program —13 individual projects spanning 1,700 kilometres. By connecting interstate rail lines, Inland Rail will enable trains to travel between Melbourne and Brisbane in 24 hours or less.

DPIE Major Projects Portal:

bit.ly/2HLJAvi

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter 0: Executive summary**
- **Chapter A3: Statutory context**
- **Chapter A9: Assessment approach and methodology**
- **Appendix A: Secretary's environmental assessment requirements**
- **Appendix B: EIS form and content requirements**
- **Appendix D: Strategic planning review**

Narromine to Narrabri Project

The Narromine to Narrabri Project is one of 13 projects that, when combined, will make up the Inland Rail Program.

The Narromine to Narrabri section under assessment includes 306km of new single-track standard gauge railway and associated rail infrastructure to be established within a new rail corridor. The Project will enable trains to connect with other sections of Inland Rail to the north and south and be constructed to accommodate double-stacked freight trains up to 1,800m long and 6.5m high.

The Project traverses five Local Government Areas (LGAs):

- Narromine and Gilgandra LGAs
- Coonamble and Warrumbungle LGAs
- Narrabri LGA.

Purpose of this 'Summary of findings'

An Environmental Impact Statement (EIS) has been prepared for the Narromine to Narrabri Project. The EIS describes the Project, considers potential environmental, social and economic impacts of the Project, and identifies measures to avoid, minimise and mitigate these impacts.

The EIS is a robust, thorough and comprehensive document with analysis and input from technical and scientific experts to demonstrate the Project is based on sound environmental principles and practices that have met the NSW Department of Planning, Industry and Environment (DPIE) assessment requirements.

This document provides a high-level overview of key parts of the EIS prepared for the Narromine to Narrabri Project. It presents a summary of the Inland Rail Program and the Narromine to Narrabri Project, then outlines planning and assessment processes, stakeholder engagement activities, and key potential impacts and approaches to management and mitigation. Each section will show you where in the EIS you can find more information.

The Summary of findings is intended to be read alongside the Project's approach to mitigation and management detailed in:

- **Chapter D5: Approach to mitigation and management** – compiles the key potential impacts and the measures proposed to avoid, minimise, manage or offset the impacts identified in the EIS. It also provides a compilation of the performance outcomes for the Project and the proposed approach to design refinements during future stages.
- **Appendix I: Outline Construction Environmental Management Plan** – The management of environmental impacts during construction will be documented in the Construction Environmental Management Plan (CEMP), to be prepared by the construction contractor(s). It will define how specific environmental issues are to be managed during construction in accordance with the mitigation measures provided in the EIS and the conditions of approval. An outline of the CEMP, including the required sub-plans and a guide to the general construction management measures required in each is provided in Appendix I.

The summary document also explains how you can make a submission to the DPIE about the EIS.

State Significant Infrastructure and Australian Government requirements

State Significant Infrastructure (SSI) in NSW includes major transport developments which have wide community significance due to their size, economic value or potential impacts. Such projects are assessed via an SSI application and an EIS under the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

Major projects which could have a significant impact on matters of national environmental significance may also require a referral to the Australian Government's Department of Agriculture, Water and the Environment (DAWE) in addition to Ministerial approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Narromine to Narrabri Project has been referred to both DPIE and DAWE and designated an SSI project under the EP&A Act and a controlled action under the EPBC Act.

ARTC is currently seeking that the Project be declared Critical State Significant Infrastructure (CSSI) by the Minister under the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP), and this matter is currently undetermined. CSSI projects are high priority infrastructure projects essential to the State. Section 5.13 of the EP&A Act provides that any SSI may also be declared to be CSSI if it is '...of a category that, in the opinion of the Minister, is essential for the State for economic, environmental or social reasons'. If declared, the Project remains subject to assessment under Part 5.2 of the EP&A Act and requires the approval of the Minister for Planning and Public Spaces.

Planning and assessment process

ARTC is seeking approval to construct and operate the Narromine to Narrabri section of Inland Rail under the EP&A Act and the EPBC Act.

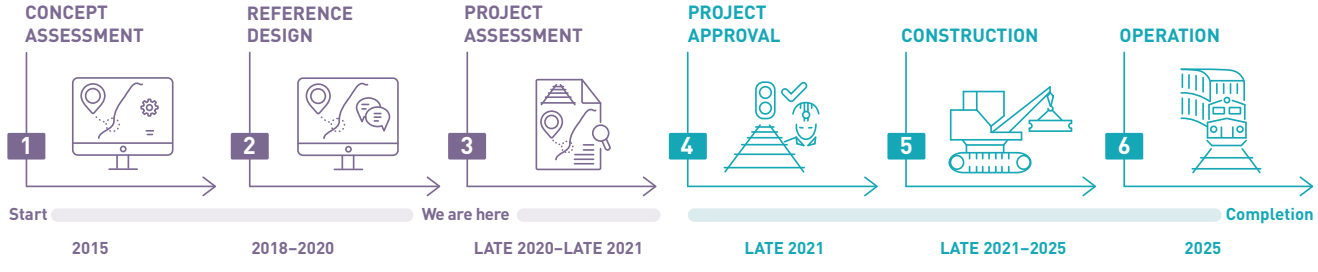
The EIS supports an application for approval of the Project under Part 5 Division 5.2 of the EP&A Act. It addresses the DPIE Secretary's Environmental Assessment Requirements (SEARs) dated 28 November 2018. Revised SEARs that address project features comprising of borrow pits, minor realignment at Black Hollow and future rail connections are dated 9 September 2020. The SEARs are included in **Appendix A: Secretary's environmental assessment requirements.**

The Project is also a controlled action under the EPBC Act and requires approval from the Australian Government Minister for the Environment. The EPBC Act assessment requirements are detailed in the SEARs.

The EIS was submitted to DPIE as required under the SSI assessment process. It outlines the Project's key features, assesses its potential environmental and social impacts during construction and operation, and offers proposed mitigation measures.

The EIS will be on public exhibition for a minimum of 28 days. It is available to view via **bit.ly/2TlL1CK** Community members and other stakeholders can provide feedback and make formal submissions.

Narromine to Narrabri Project timeline



**Timeframes are indicative and are subject to change*

How to have your say

Any person, group or organisation can make a submission about the Project's EIS to DPIE. During the exhibition period, the public is invited to view the EIS and lodge a submission to DPIE. Submissions are considered by DPIE when evaluating the EIS.

DPIE will also request that ARTC provides an appropriate response to each submission, to be submitted to DPIE in a Response to Submissions Report for public view.

Online

To make a submission online, please follow the steps below:

To make a submission online, please follow the steps below:

1. View the EIS and other project documents at **bit.ly/3kHsbCd**
2. Log in or create a user account
3. Find the Narromine to Narrabri Project (SSI 18_9487) and check the submission box
4. Before making your submission, please read DPIE's privacy statement. DPIE will publish your submission on its website in accordance with the privacy statement
5. Your submission can either be typed or uploaded as a PDF and must include:
   - the application name and number
   - a statement on whether you support or object to the proposal
   - the reasons why you support or object to the proposal
   - a declaration of any reportable political donations made in the last two years.
6. Agree to the online statement and lodge your submission

By post

You may also lodge your submission via post by sending it to:

Director Transport Assessments
Department of Planning, Industry and Environment

Locked Bag 5022
Parramatta NSW 2124

Written submissions must include:

- your name and address, at the top of the letter only
- the name of the application and the application number
- a statement on whether you support or object to the proposal
- the reasons why you support or object to the proposal
- a declaration of any reportable political donations made in the previous two years.

All submissions must reach DPIE before the close of the exhibition period. All submissions will be made public in line with DPIE's objective to promote an open and transparent planning system. If you do not want your name published, please state this clearly at the top of your submission. DPIE can be contacted on **1300 305 695.**

What happens after the Submission period?

Following the submission period, DPIE provides ARTC with submissions received and publishes submissions online. ARTC will respond to submissions through a submissions report to DPIE.

There may be requirement to prepare a Preferred Infrastructure Report to address project design changes as a result of the public submissions process.

DPIE then assesses the Project and makes a recommendation to approve the Project or not, including either conditions of consent or reasons for refusal. The recommendation is referred to the NSW Minister for Planning and Public Spaces, or a delegate, for determination.

Under the joint agreement between the NSW and Australian governments for matters governed by state and federal environmental law, DPIE's Environmental Assessment Report and Minister's decision is forwarded to DAWE with a recommendation for the Australian Government Minister on whether the controlled action should be approved, with or without conditions.

ARTC help is available

If you're unable to access the EIS or supporting documents online, or have any questions, please contact ARTC Inland Rail on **1800 732 761.**

If you need help with reading, or if English is your second language, please call **13 14 50.** This free service will help you read this document and other relevant project information.

EIS Structure

The Main EIS Report (Parts A to D) provides a plain-English summary of the key findings of the specialist assessments for the community and agencies. The structure of the EIS recognises the size and extent of the Project and potential impacts. The EIS consists of five parts designed to make the information accessible and easier to navigate and understand. The EIS considers the three main aspects of the Project – rail infrastructure, road infrastructure and key construction infrastructure.

EIS Part E Map Book provides detailed mapping information for the Project site and Project features across numerous map sheets at a scale that aids interpretation, including:

- Environmental baseline – a range of existing environmental data and information
- Construction phase – land required (the construction footprint), access and infrastructure
- Project design features – permanent operational footprint, features and infrastructure.

Other volumes provide supporting Technical Reports, which provide results of detailed issue-specific impact assessments.

PART A

Introduction, Project background and description

PART B

Impact assessment – rail and road infrastructure

PART C

Impact assessment – key construction infrastructure

PART D

EIS synthesis and conclusion

PART E

Map Book

SPECIALIST TECHNICAL REPORTS

Overview

Inland Rail will transform the way freight is moved around the country. It will connect regional Australia to markets more efficiently, drive substantial cost savings for producers, manufacturers and consumers, and deliver significant economic benefits for regional communities along the alignment.

Australia faces increasing pressure to efficiently, effectively and safely transport ever increasing volumes of freight, especially between our major cities.

The east coast of Australia comprises 18 million residents or 79% of Australia's total population. Export trade through east coast ports is estimated to contribute approximately $260 million annually.

What is Inland Rail?

Inland Rail is a significant piece of national transport infrastructure that will enhance Australia's existing rail network and serve the interstate freight market.

The Inland Rail route

approximate length **1,700km**

uses **existing interstate rail corridor** through Victoria and southern New South Wales

approximately **400km of existing corridor**, mainly in western New South Wales

approximately **600km of new corridor** in northern New South Wales and South East Queensland

Narromine to Narrabri is one of the **13 Inland Rail projects**

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter A1: Introduction**
- **Chapter A5: Strategic Context and need for the Proposal**

Justification for Inland Rail

Currently, there is no continuous inland rail link between Melbourne and Brisbane. Interstate rail travels between Melbourne and Sydney, via Albury and between Sydney and Brisbane along the coast. The existing north–south coastal railway does not have the capacity to meet the future demand for freight due to congestion and the inability to accommodate double-stacked trains, which will impact freight productivity, transport costs and passenger services. When complete, Inland Rail will also reduce by 500km the rail distance between Brisbane, Adelaide and Perth with trains using the newly constructed 5.3km North West Connection near Parkes.

However, to provide a viable option compared with trucks, Inland Rail must deliver freight in times close to those achieved by trucks, cheaper than trucks, and with reliability and predictability comparable to trucks.

The infrastructure has been designed to accommodate 1,800-metre-long trains and double-stacked containers. However, shorter and single-stacked trains will also operate. This will provide a high degree of interoperability with the most freight configurations available.

Consequences of not proceeding with Inland Rail

Not progressing with Inland Rail would potentially hinder the national economy. The continuing growth in domestic freight demand requires urgent attention. Without making a step-change in rail efficiency and performance, pressure on the road networks will increase, freight costs will rise, consumers will pay more for products, and productivity in important sectors could decline.

Without Inland Rail, road would increasingly become the dominant mode, with rail becoming less relevant. A continued over-reliance on road transport to meet the future east coast freight demand will increase the vulnerabilities to demographic changes that are, even today, driving shortages of long-distance truck drivers and increasing costs.

What Inland Rail will offer

ARTC's service offering is central to the delivery and competitiveness of Inland Rail and reflects the priorities of freight customers. Developed in consultation with key market participants and stakeholders, the key elements to be delivered by Inland Rail for competitive and complementary service offering compared to other modes include:

- **reliability:** 98% defined as the percentage of goods delivered on time by road freight, or available to be picked up at the rail terminal or port
- **price:** cheaper relative to road transport as a combined cost of access to the rail network, rail haulage, and pick-up and delivery
- **transit time:** 24 hours or less from Melbourne to Brisbane
- **availability:** services available with departure and arrival times that are convenient for customers.

Benefits of proceeding with Inland Rail

The key overall benefits of Inland Rail include:

- **Improved network efficiency and reliability:** transit time between Melbourne and Brisbane of less than 24 hours with 98 per cent reliability, which matches current road transport levels.
- **Safety improvements:** up to 15 serious crashes involving fatalities and serious injuries will be avoided every year. Road congestion on some of Australia's busiest highways, including the Hume, Newell and Warrego, will also be reduced.
- **Boost to the Australian economy:** Inland Rail is expected to increase Australia's GDP by $16 billion during its construction and first 50 years of operation.
- **Job creation:** Inland Rail is expected to create up to 16,000 new jobs at the peak of construction, with an additional 700 long-term jobs once it is operational.
- **Improved sustainability:** moving freight by rail is four times more fuel efficient than moving freight by road. Carbon emissions will be reduced by 750,000 tonnes per year and truck volumes will be reduced in more than 20 of our regional towns (based on a 2050 estimate).

ARTC's service offering is central to the delivery and competitiveness of Inland Rail and reflects the priorities of freight customers, including:

- **improved access to and from regional markets:** By diverting two million tonnes of agricultural freight from road to rail, Inland Rail will support more efficient transport 8.9 million tonnes of agriculture freight
- **reduced rail costs:** reduced costs for inter-capital freight travelling between Melbourne and Brisbane by $10 per tonne.
- **increased capacity of the transport network:**
  - additional rail paths for freight (160 round trip paths per week)
  - 105% increase on current freight paths on the coastal route alone
  - improved capacity for passenger services in Sydney and Brisbane
  - removing 200,000 truck movements (5.4 billion net tonne kilometres of freight) from roads each year from 2049–50.
  - **reduced distances travelled:** when Inland Rail is completed it will result in a 200km reduction in rail distance between Melbourne and Brisbane, and a 500km reduction between both Brisbane and Perth and Brisbane and Adelaide.
- **reduced travel time:** reducing the travel time for freight trains from Goondiwindi to the Port of Brisbane by about 4.5 hours.
- **improved sustainability:** providing an alternative north–south freight path to counter weather, climatic or other disaster disruption to the transport network.

These benefits are illustrated right in Figure 01.

Inland Rail will deliver on key national priorities for infrastructure and economic policy, providing a comprehensive rail transport system that links manufacturers and producers with consumers, creates jobs and strengthens industry. Better infrastructure and an effective national freight operation are key to delivering efficient supply chains, improving Australia's global competitiveness and lifting our nation's wealth and prosperity.

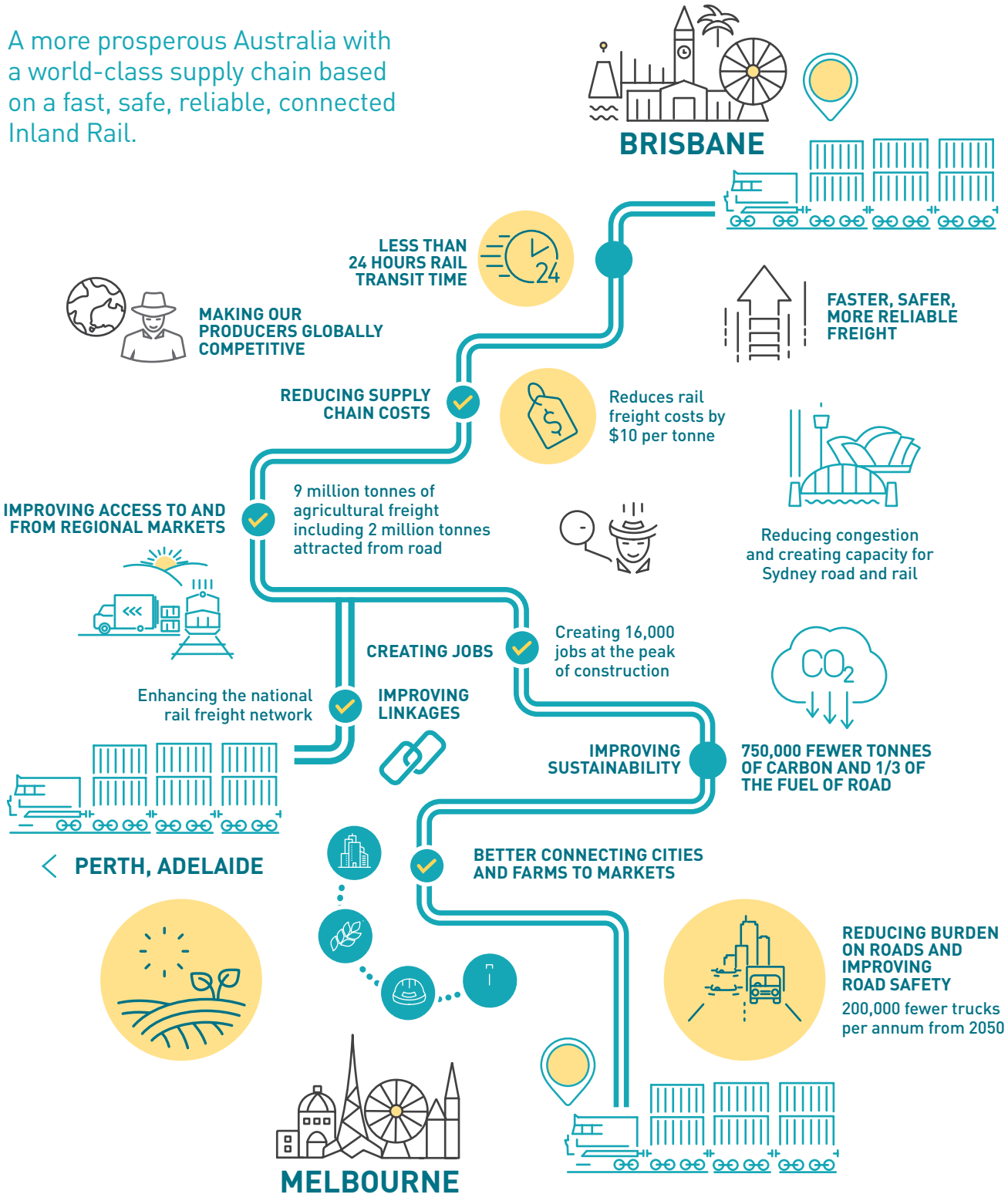
The Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) manages the Australian Government's rail investments.

The Australian Government is investigating the following infrastructure investments that will support the development of Inland Rail:

- intermodal terminals connecting ports, regional networks and capital cities between Melbourne and Brisbane
- the Interface Improvement Program integrating regional lines into the national freight rail network.

The benefits of Inland Rail

A more prosperous Australia with a world-class supply chain based on a fast, safe, reliable, connected Inland Rail.



The Proponent

The ARTC network moves commodities including general freight, coal, iron ore, other bulk minerals and agricultural products—supporting industries and businesses that are vital to Australia's economy.

ARTC was created in 1997 as a 'one stop shop' for all operators seeking to access the national interstate rail network. ARTC plays a critical role in the supply chain by managing and maintaining 8,500km of rail network across five states, investing in building, extending and upgrading the rail network to get freight off the road and onto rail.

As the operator and manager of Australia's national rail freight network, ARTC has successfully delivered more than $5 billion in capital upgrades to the national rail freight network. ARTC has been tasked with developing a program to deliver Inland Rail under the guidance of the DITCRD.


GATTON
BRISBANE
HELIDON
CALVERT
GOWRIE
ACACIA RIDGE
KAGARU
TOOWOOMBA
BROMELTON
NSW/QLD BORDER
GOONDIWINDI
INGLEWOOD
YELARBON
NORTH STAR
NSW/QLD BORDER
MOREE
NARRABRI
BINNAWAY
GILGANDRA
NARROMINE
DUBBO
PARKES
FORBES
STOCKINBINGAL
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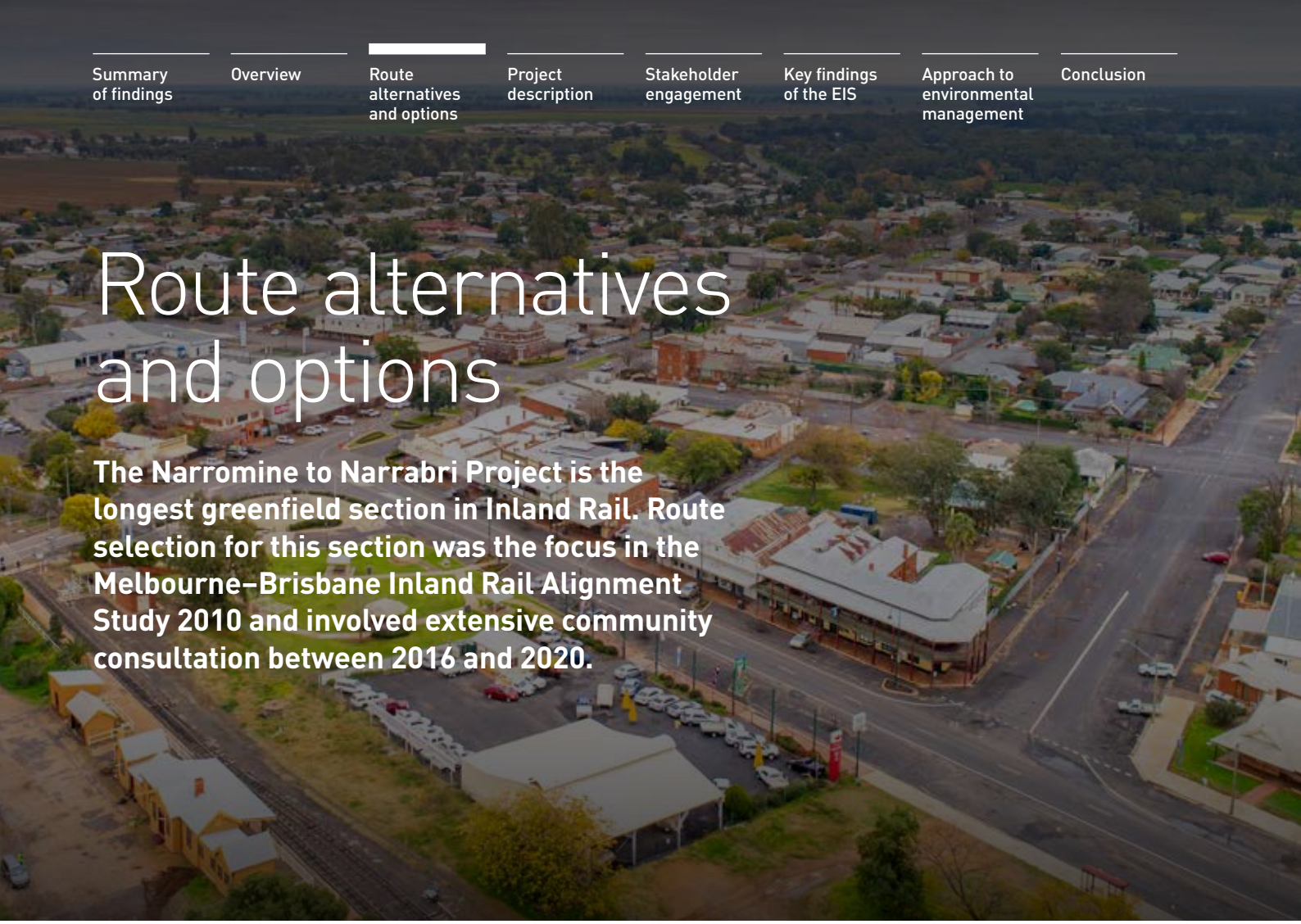
WAGGA WAGGA
ALBURY
WODONGA
SEYMOUR
BEVERIDGE
TOTTENHAM
MELBOURNE



Route alternatives and options

The Narromine to Narrabri Project is the longest greenfield section in Inland Rail. Route selection for this section was the focus in the Melbourne–Brisbane Inland Rail Alignment Study 2010 and involved extensive community consultation between 2016 and 2020.

The Melbourne–Brisbane Inland Rail Alignment Study was a broad assessment of the preferred route between Melbourne and Brisbane.

Route selection

Previous studies and investigations have considered alternatives to the Inland Rail Program, including progressive road upgrades for road freight, maritime shipping, air freight, or other rail solutions such as upgrading the existing east coast railway.

Alternative routes for Inland Rail were considered in:

- North–South Rail Corridor Study (Department of Transport and Regional Services, 2006)
- Melbourne–Brisbane Inland Rail Alignment Study (ARTC, 2010).

Overall, constructing an inland railway was the preferred option.

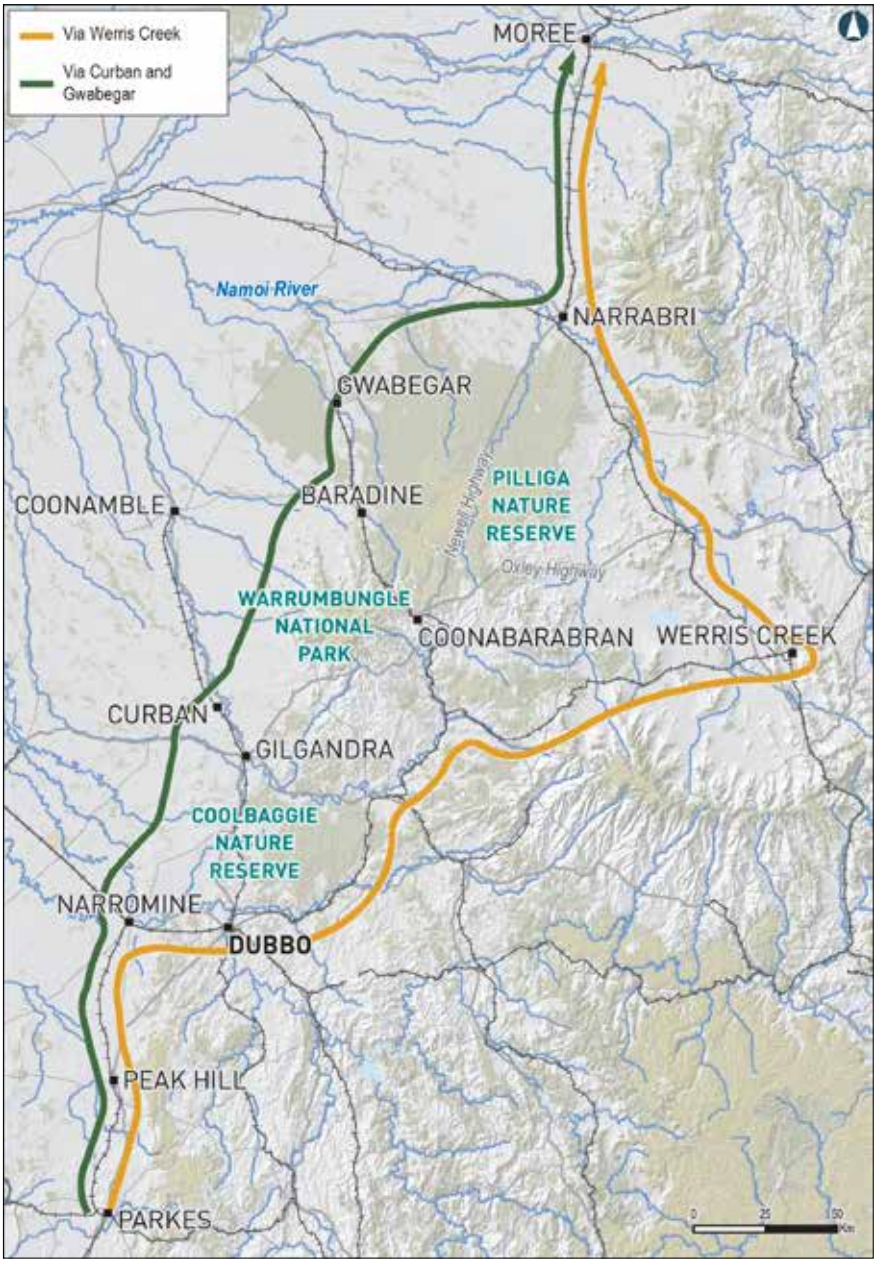
Chapter A6: Alternatives and Options provides a summary of the publicly available route selection documentation for the Narromine to Narrabri Project to meet the requirements of the SEARs. Chapter A6 also refers to more detailed information in the Inland Rail Melbourne to Brisbane Route History 2006–2019 report (ARTC, 2020) and various multi-criteria analysis (MCA) reports. No new information on route selection is presented in the EIS.

The Inland Rail Route History 2006–2019 and MCA reports can be found on the Inland Rail website at **inlandrail.com.au**

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter A6: Alternatives and options**
- **Appendix C: Consultation report**



Narromine to Narrabri Options – 2010 Inland Rail Alignment Study (IRAS)

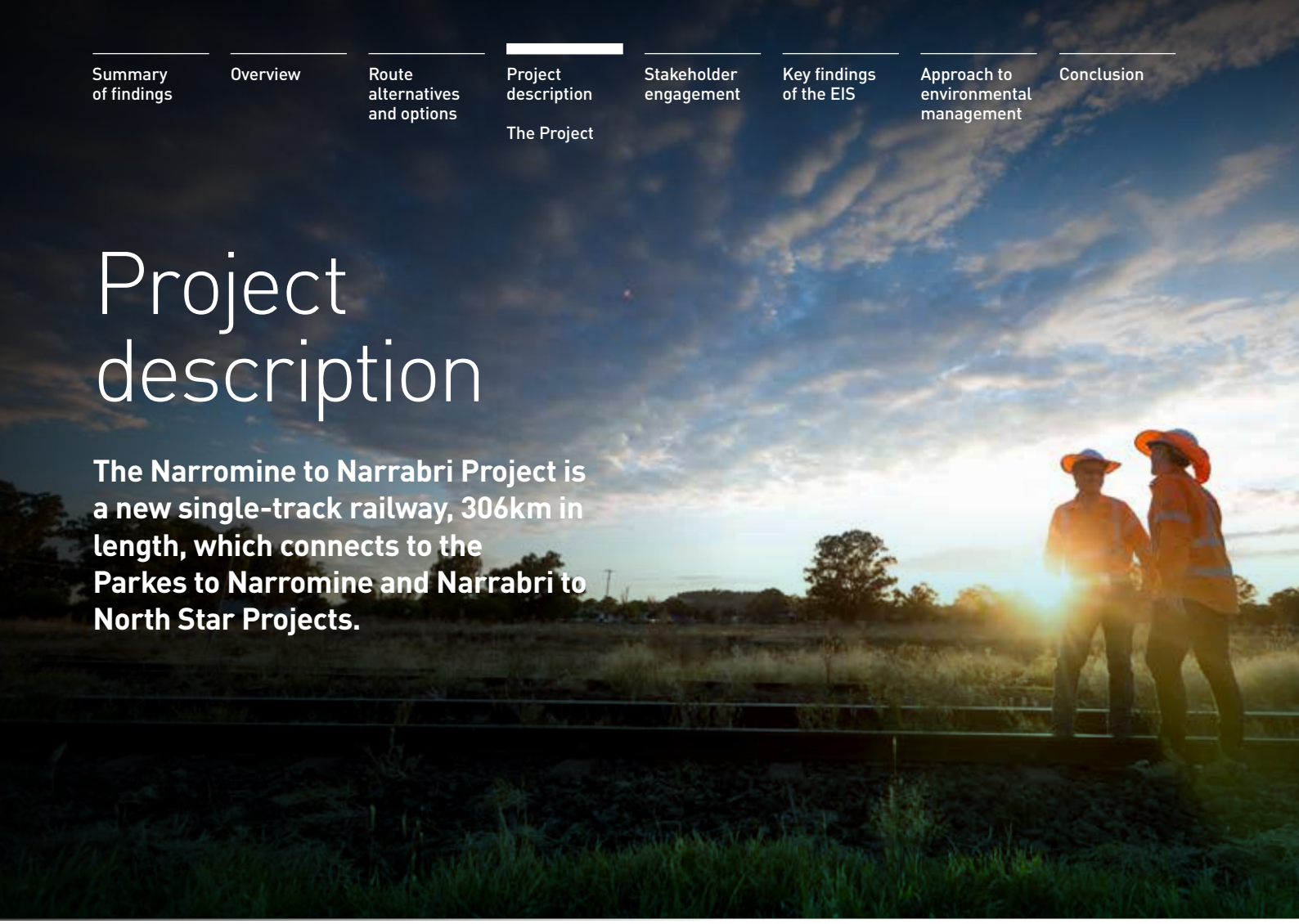
Options considered for Project features

Options assessments were undertaken for the following features of the Project:

- connections with other rail lines
- crossing loops
- public road interactions
- private road interactions
- construction material – borrow pits to supply material and options for disposal of spoil
- construction water.

Project description

The Narromine to Narrabri Project is a new single-track railway, 306km in length, which connects to the Parkes to Narromine and Narrabri to North Star Projects.



The Project include 73 new bridges and viaducts, ranging in length from 15 metres to 3,940 metres.

The Project

ARTC is seeking approval to construct and operate the Narromine to Narrabri Project of Inland Rail.

The Project consists of 306km of new single-track standard gauge railway and associated infrastructure such as crossing loops, bridges, viaducts and level crossings. The Project also includes changes to some roads to facilitate construction and operation of the new section of railway.

Location

The southern end of the Project commences near the northern end of the Parkes to Narromine section of Inland Rail, about 950 metres south-west of The McGrane Way/Craigie Lea Lane intersection, Narromine.

The Project extends east through rural land south of Narromine for about six kilometres before heading north, crossing the Narromine to Dubbo Line, the Mitchell Highway and the Macquarie River. It continues crossing, and then follows, Eumungerie Road before crossing the Oxley Highway and heading north-east.

The Project crosses the Dubbo to Coonamble Line and Castlereagh River at Curban then extends north towards Baradine. North of Baradine, the line heads south of Merriwindi State Forest before travelling north-east through the Pilliga East State Forest. After leaving the forest, it extends adjacent to the Newell Highway south of Narrabri, crossing the Narrabri to Walgett Line south-west of Narrabri.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter A2: Location and setting**
- **Chapter A7: Proposal features and operation**
- **Chapter A8: Construction of the Proposal**

The Project then extends to the west of Narrabri, crossing the Narrabri Creek/Namoi River west of Narrabri, continuing over Wee Waa Road and Kamilaroi Highway to the north-west of Narrabri. It generally follows the Newell Highway north before re-joining the southern end of the Narrabri to North Star section of Inland Rail.

The location of the Project is shown in the figures below. Further information can be found in **Chapter A2: Location and setting.**

Key features of Narromine to Narrabri Project

The Project consists of the following key features:

Rail infrastructure

- new railway track within 40 metre-wide new rail corridor (may be wider in some locations to account for topography, embankments and cuttings)
- Seven crossing loops located at Burroway, Balladoran, Curban, Black Hollow/Quanda, Baradine, The Pilliga and Bohena Creek
- 73 new bridges and viaducts, ranging in length from 15 metres to 3,940 metres
- approximately 630 culverts banks of varying types and sizes
- 51 new public level crossings (12 with active controls providing warning devices in the form of flashing lights and bells, and boom barriers for motorists)
- four stock underpasses at travelling stock reserves
- new rail connections and possible future rail connections with existing ARTC and Country Regional Network services
- ancillary utilities, signalling and communications, power, fencing and signage infrastructure.

Road infrastructure

Changes to some roads would be required to establish the new rail corridor and railway, including:

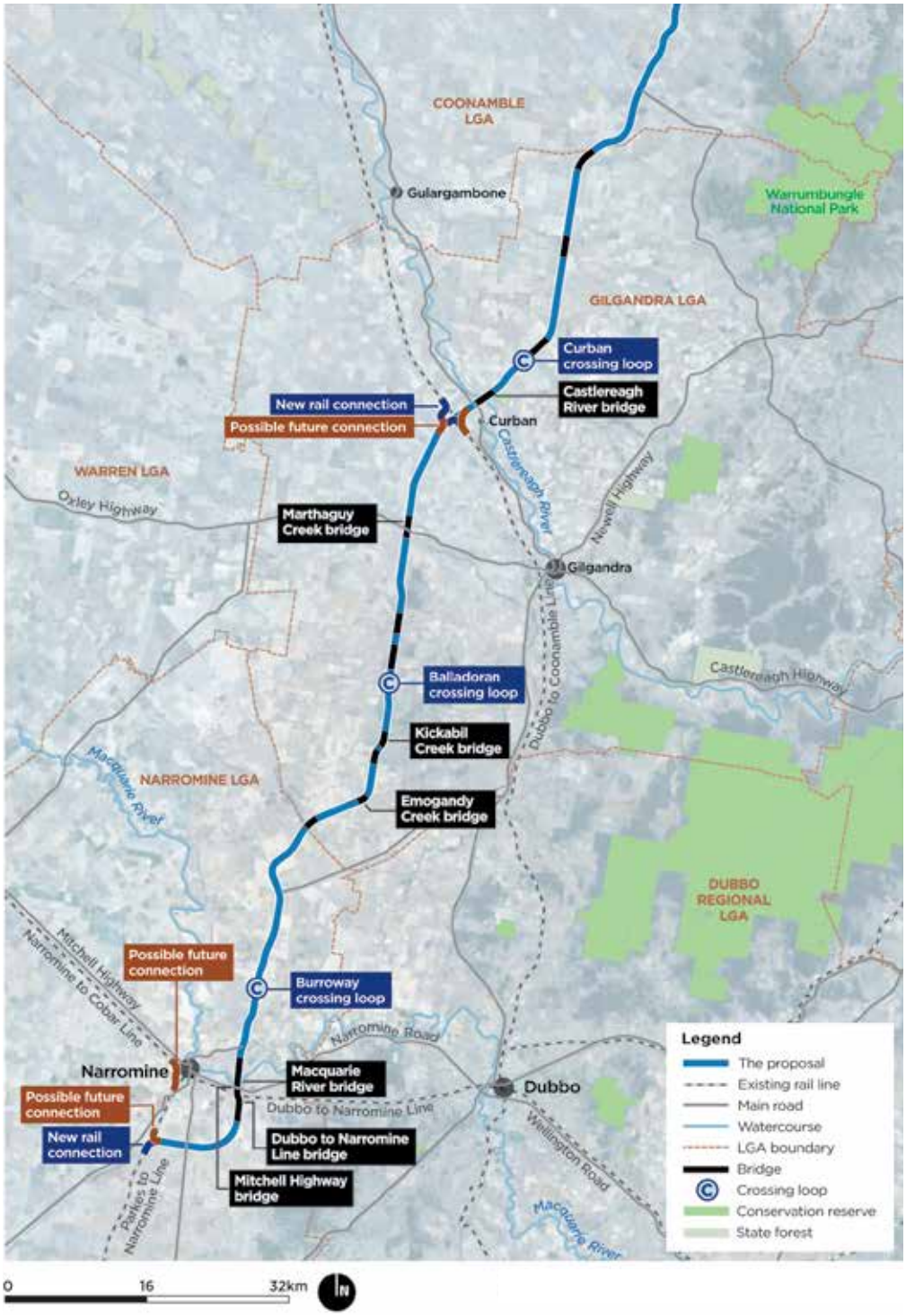
- public road closure at Dappo Road with alternative access arrangements of Dappo Road, Brooks Road, Nalders Access Road and Munns Road
- public access track/ road reserve closures and realignment
- realignment of 53 public roads, including:
  - realignment of Pilliga Forest Way in the Pilliga East State Forest for a distance of 6.7km to avoid the new rail corridor
  - realignment of 52 roads for short sections to suit the proposed new level crossings, including any additional tie-in work that may be required.
  - public access track/ road reserve closures and realignment at:
  - Bardens Road, which is a vehicle access track managed by Gilgandra Shire Council
  - 13 forestry tracks/roads within State forests managed by the Forestry Corporation of NSW
  - 46 paper roads
- operational access roads within the rail corridor

Temporary construction infrastructure

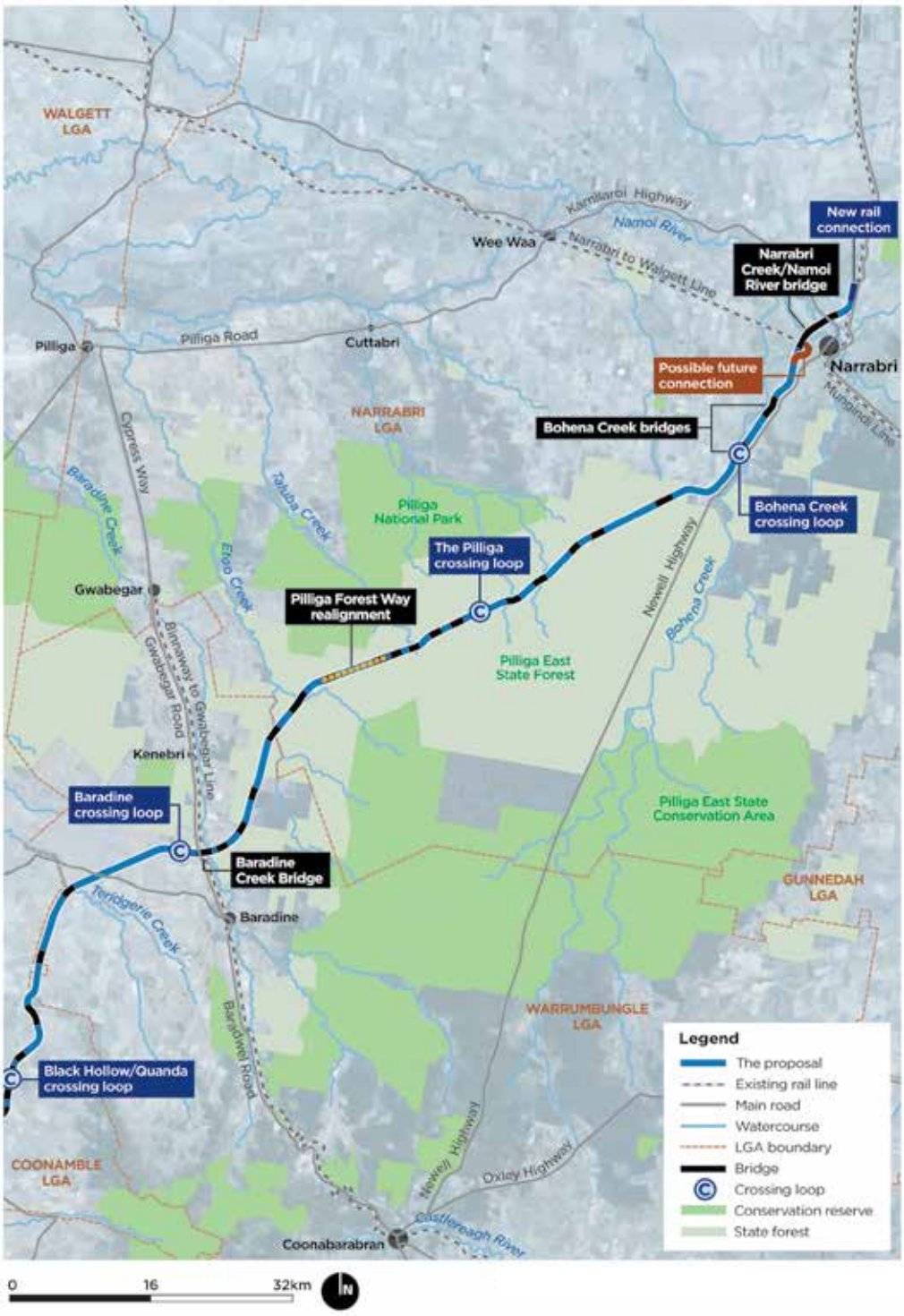
- four borrow pits
  - borrow pit A – Tantitha Road, Narromine
  - borrow pit B – Tomingley Road, Narromine
  - borrow pit C – Euromedah Road, Narromine
  - borrow pit D – Perimeter Road, Narrabri
- three main compounds, which would include a range of facilities to support construction (multi-function compounds), located at:
  - Narromine South
  - Curban
  - Narrabri West
- temporary workforce accommodation for the construction workforce:
  - within the Narromine South multi-function compound
  - Narromine North
  - Gilgandra
  - Baradine
  - within the Narrabri West multi-function compound.

Other construction infrastructure would include a number of smaller compounds of various sizes located along the Project, concrete batching plants, laydown areas, welding yards, a concrete pre-cast facility and groundwater bores for construction water supply.

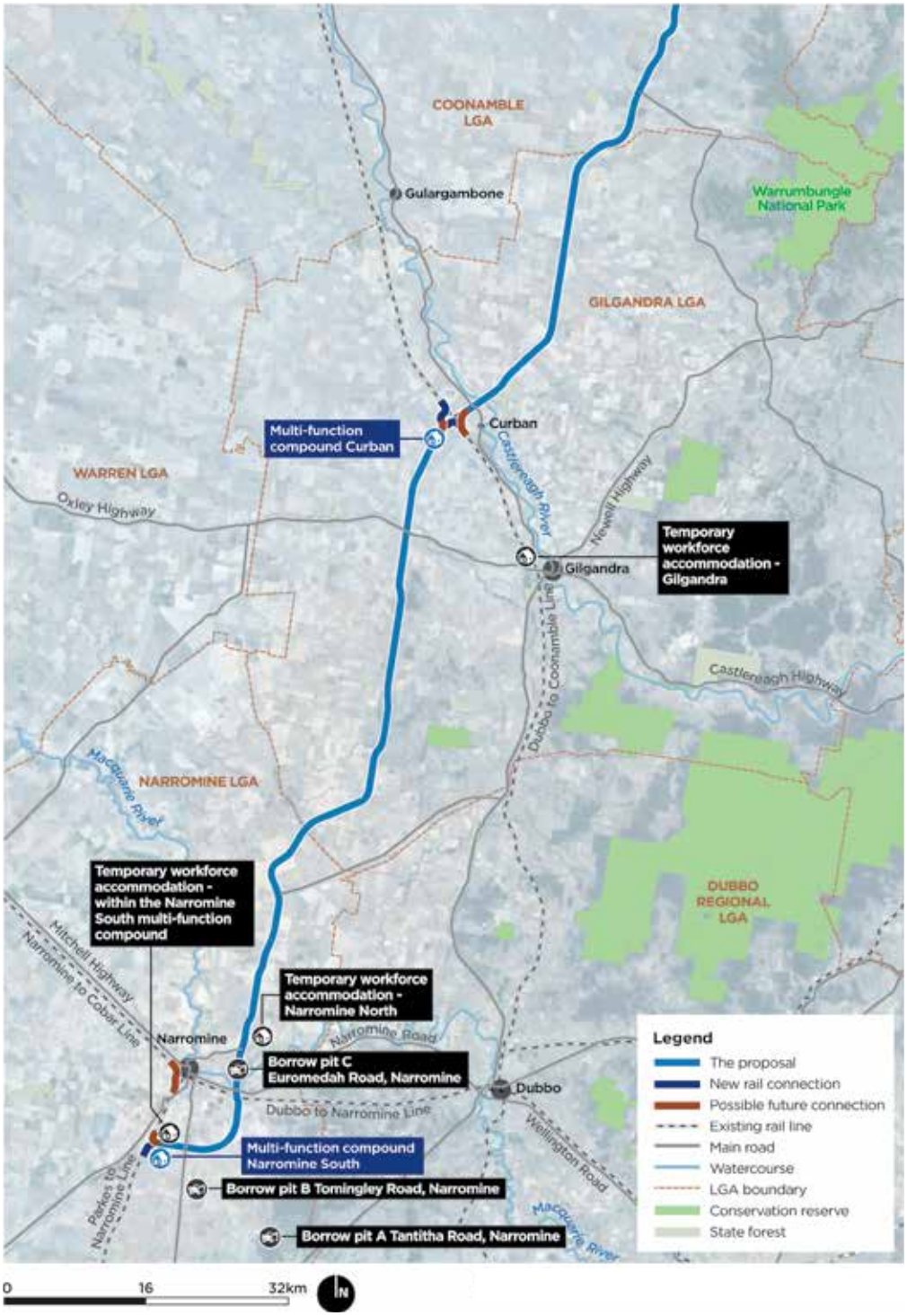
Key features of proposal – map 1



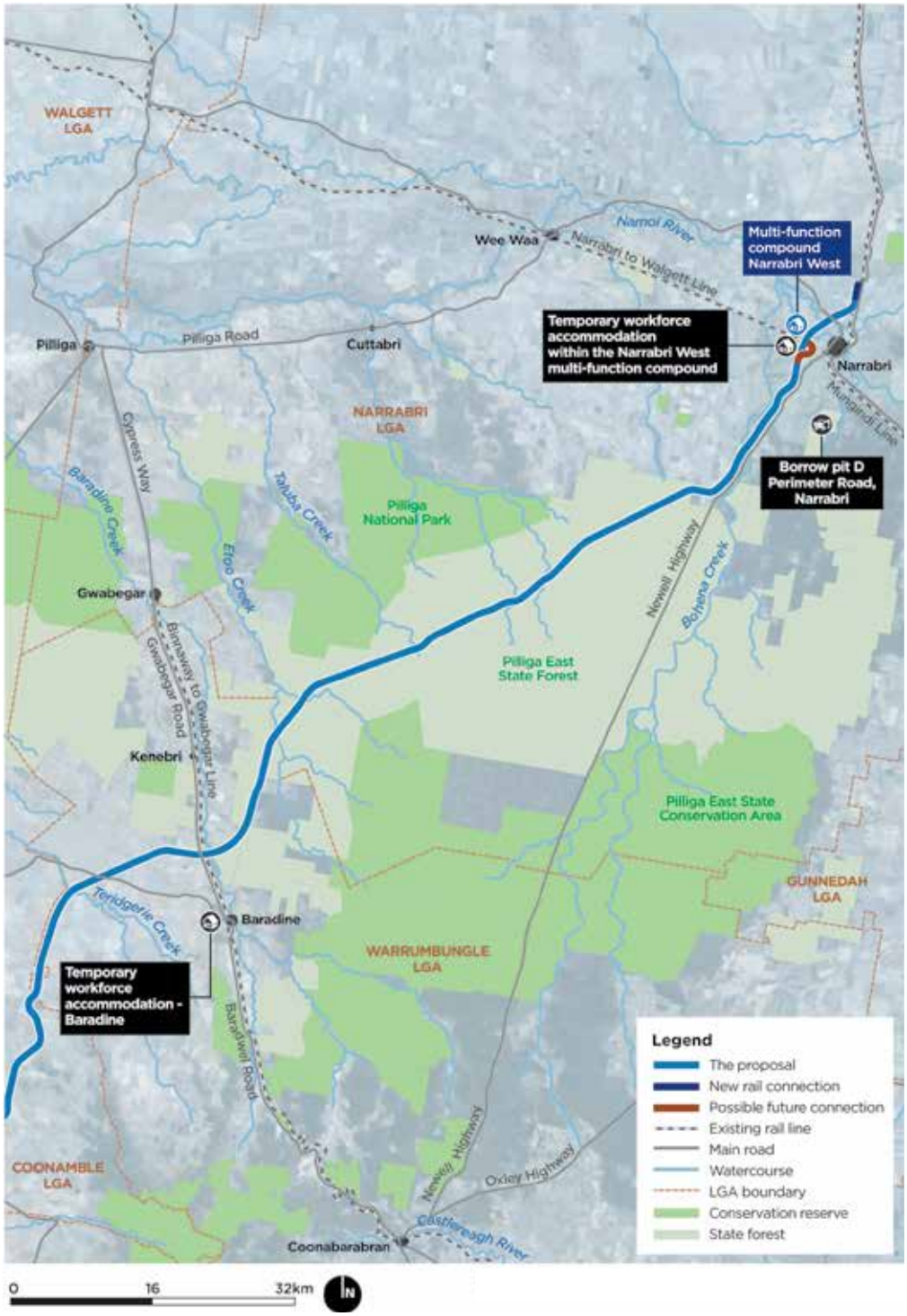
Key features of proposal –map 2



Key construction infrastructure – map 1



Key construction infrastructure – map 2



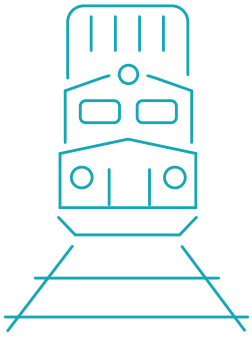
Timing and operation

Subject to approval of the Project proposal, construction is planned to occur between late 2021 and 2025. The line will be managed and maintained by ARTC and train services will be provided by a variety of operators. Train services are not expected to be fully operational until all 13 sections of Inland Rail are complete. This is planned for 2025.

2025

10 trains per day

(in both directions), **10 million** tonnes per annum



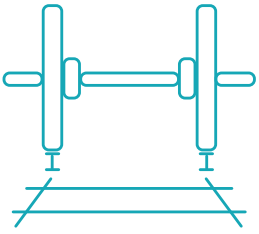
2040

14 trains per day

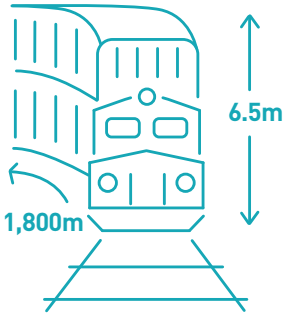
(in both directions), **17.5 million** tonnes per annum

The Project is designed to support double-stacked, 21–25 tonne axle load intermodal (i.e. container) trains up to 1,800 metres long and 6.5 metres high.

double-stacked containers



21–25 tonne axle loads

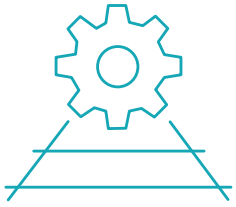


up to **1,800 metres** long and **6.5 metres** high

Depending on the tonne axle load, train speeds will vary between 80 kilometres per hour (km/hr) and 115km/hr.

80km/hr to 115km/hr speeds

In addition, the Project footprint is **future-proofed** to accommodate 30 tonne axle load intermodal trains up to 3,600 metres long and 6.5 metres high, travelling at 80km/hr.



30 tonne axle load intermodal trains
3,600 metres long
6.5 metres high
travelling at **80km/hr**

VIEW LOOKING NORTH EAST OVER THE ISLAND ROAD AND NARRABRI CREEK

Disclaimer: Project visualisations are for illustrative purposes and not to scale. Please note, the Reference Design may change as a result of further investigations, government approvals or during detailed design.

KAMILAROI HIGHWAY OVERBRIDGE

Disclaimer: Project visualisations are for illustrative purposes and not to scale. Please note, the Reference Design may change as a result of further investigations, government approvals or during detailed design.

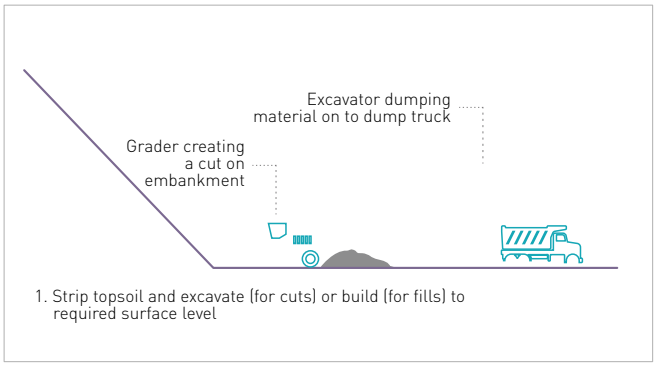
PILLIGA FOREST, BARADINE VIEW LOOKING NORTH OVER THE FOREST AND CUMBIL ROAD

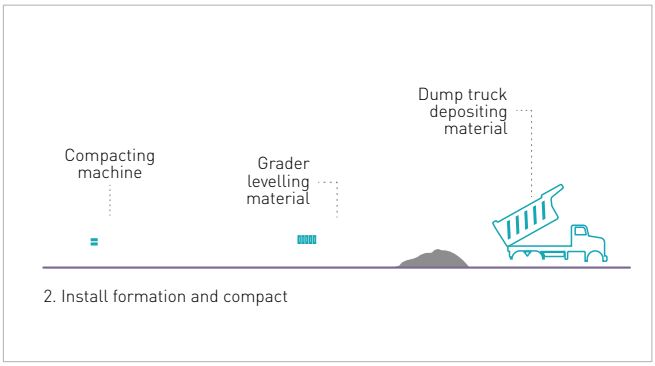
Disclaimer: Project visualisations are for illustrative purposes and not to scale. Please note, the Reference Design may change as a result of further investigations, government approvals or during detailed design.

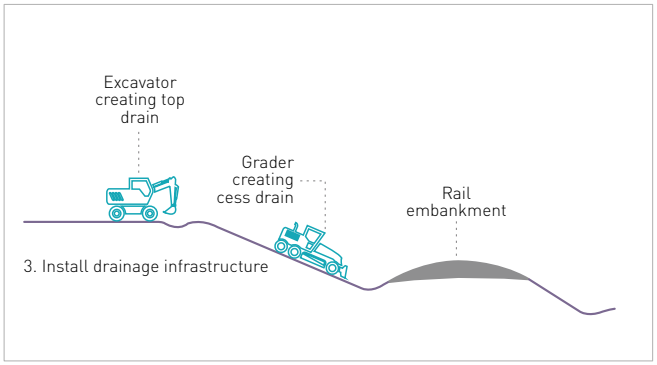
CONSTRUCTION OF INLAND RAIL

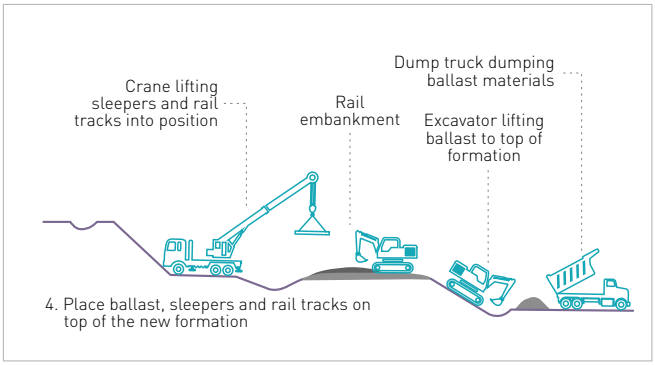
Constructing rail infrastructure

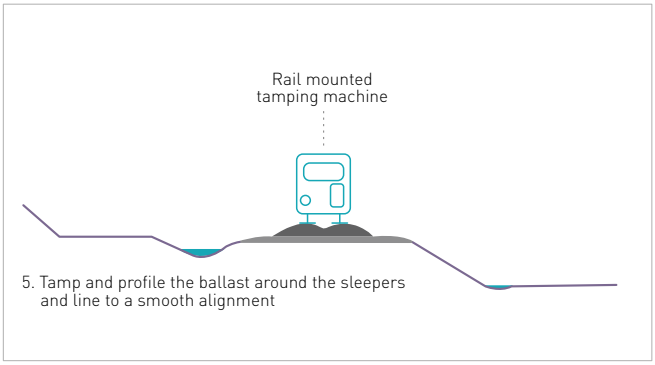
Main line track works include foundation, formation and track works. The following diagram shows typical activities undertaken in the lead up to and during construction. Impacted residents and stakeholders will be notified in advance of construction activities and impacts will be minimised through ongoing environmental monitoring and management.

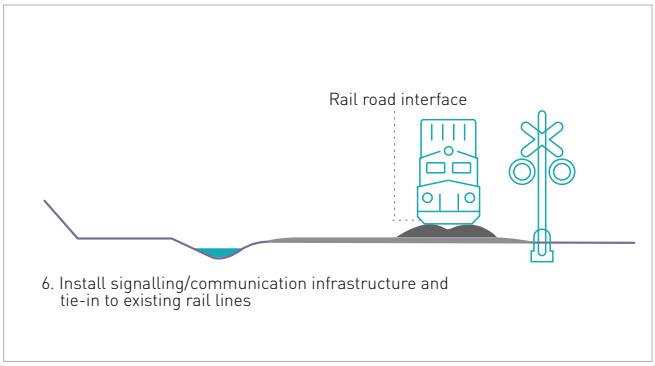












Typical construction activities for track works [see above]

Construction will include the following activities

Pre-construction

- delivering rail track and sleepers
- site establishment and preliminary activities
- installing site environment management and traffic controls
- erecting temporary site delineation fencing
- clearing and removing vegetation where required
- establishing construction infrastructure, including borrow pits, construction compounds and temporary workforce accommodation
- utility diversions and adjustments.

Main construction works

- earthworks
- rail infrastructure including track works, crossing loops, level crossings, bridges and culverts
- road infrastructure including culverts, drainage, pavement and operational access roads
- testing and commissioning.

Finishing and rehabilitation

- demobilising or relocating construction compounds and facilities
- removing all materials, waste and redundant structures
- removing temporary fencing and establishing permanent fencing
- decommissioning site access roads that are no longer required
- restoring and revegetating disturbed areas where required.

Proposed construction hours

To shorten the duration of construction as much as practicable and minimise associated disruptions to the community, the following construction hours are proposed:

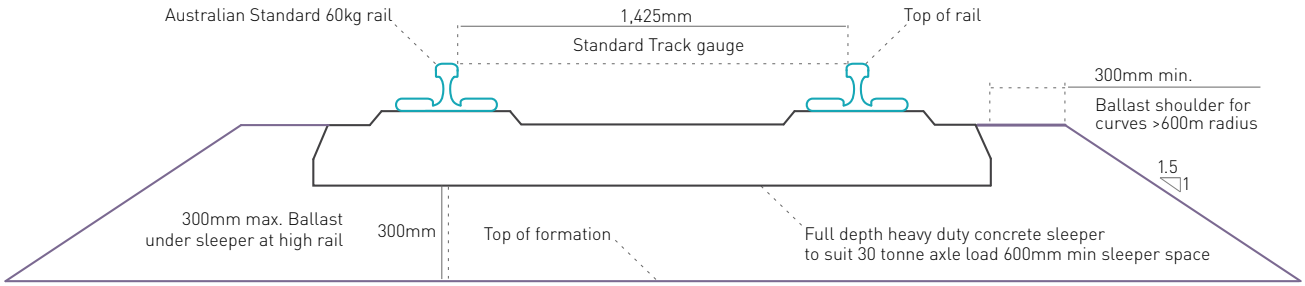
- **Monday to Sunday:** 6am–6pm (7 days/week)
- **Public holidays:** no work.

Construction workforce

- peak construction workforce of around 2,000 people.

Track design

The proposed new railway in the NSW section of the Project is designed to support up to 30 tonne axle loads and will consist of 60 kilograms/metre steel rail installed at the standard gauge track spacing of 1,435 millimetres.
The track will be supported by heavy duty concrete sleepers at 600 millimetre spaces, resting on an approximately 300 millimetre thick bed of ballast rock.



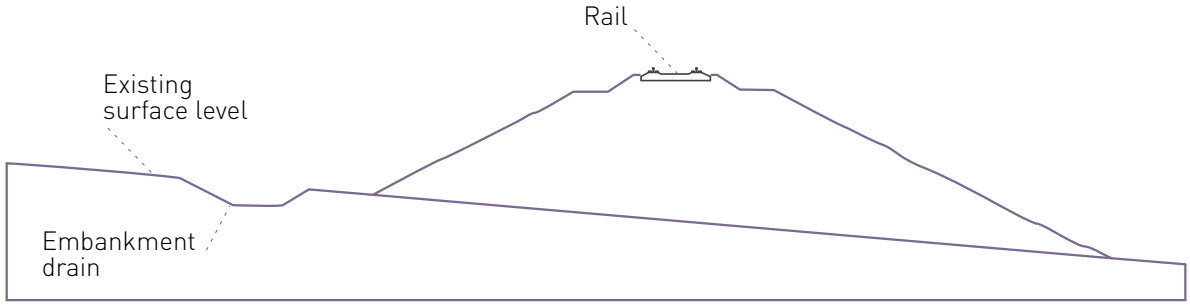
TYPICAL TRACK FORMATION CROSS SECTION (STANDARD GAUGE)

Track drainage

Two types of track drainage are currently proposed:

1. embankment drains are proposed within the permanent footprint, adjacent to the track
2. catch drains are proposed within the permanent footprint, on the uphill side of cuttings.

Due to topographical constraints, track drainage is not required along the entire length of the alignment. Rather, track drainage is proposed at specific locations along the proposed alignment where the gradient is steep enough to divert surface runoff to the nearest bridge or culvert location.

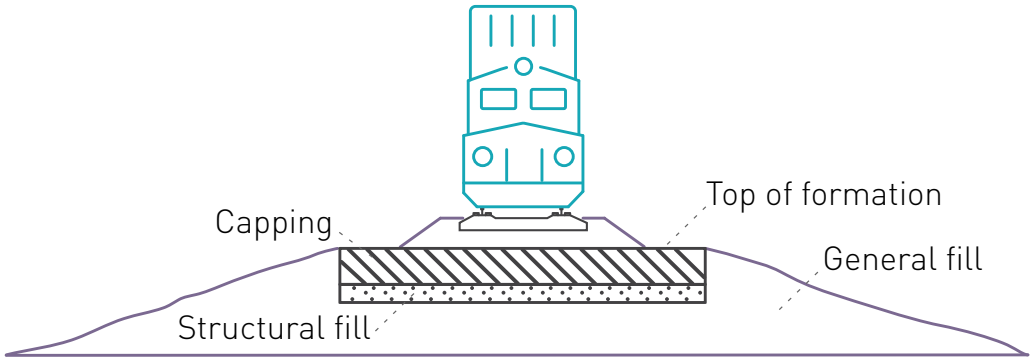


INDICATIVE EMBANKMENT DRAIN DESIGN

Embankment design

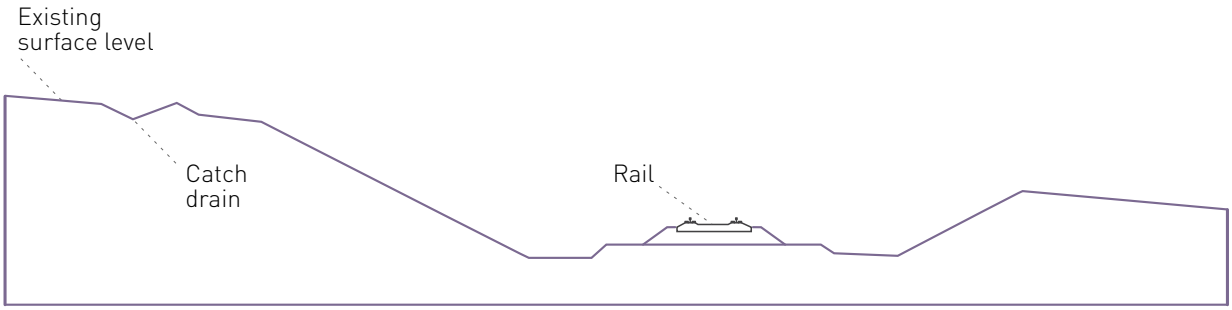
The track will be supported by an earth embankment made up of general fill and engineered gravels.
In some cases, where low strength or highly reactive soils exist below the proposed embankment, some earth may need to be removed and replaced with better material or suitably treated to ensure the rail is built on a sound foundation. The embankments for the Project are mostly two metres high, but can be up to 7.5 metres high, not due to site environmental requirements, but due to topography/ max grade requirements.

REPRESENTATIVE EMBANKMENT HEIGHT (2 METRES HIGH)

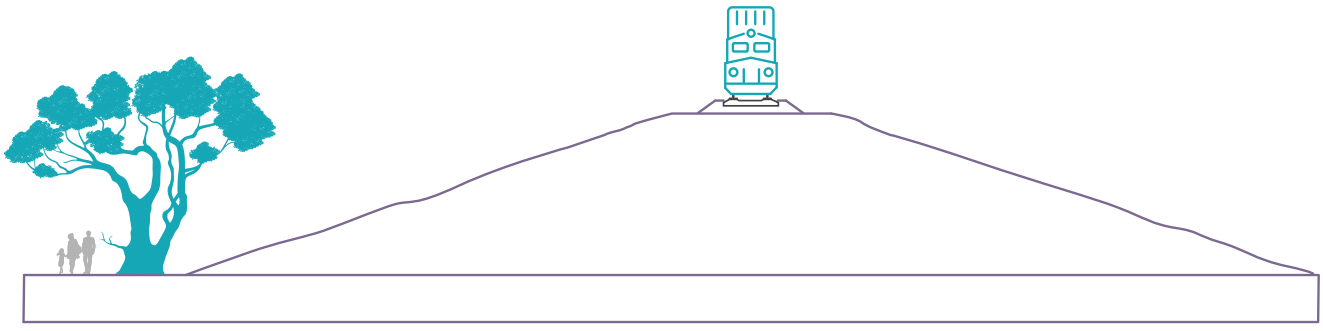


STRUCTURE OF THE FORMATION AND EMBANKMENT

As with culverts, the design and location of track drainage will be refined during the detailed design phase in order to minimise potential impacts. Both types of track drainage may be lined with grass to prevent erosion.



INDICATIVE CATCH DRAIN DESIGN



REPRESENTATIVE EMBANKMENT HEIGHT (7.5 METRES HIGH)

Stakeholder engagement

Consultation with individuals and groups has assisted in highlighting issues and identifying potential impacts and benefits to inform the EIS.

Stakeholder engagement

The Secretary's Environmental Assessment Requirements (SEARs) set the requirements for a comprehensive consultation program to identify broad issues of concern from local and regional community and interest groups, and address issues from Project planning through to construction, commissioning and operation.

Consultation with individuals, groups and organisations across the Narromine to Narrabri alignment has assisted in highlighting issues and identifying potential impacts and benefits to inform the EIS. These interactions have also helped to shape the Project design and inform proposed mitigation measures for implementation in future stages of design, construction, commissioning and operation.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter A4: Consultation**
- **Appendix C: Consultation report**

Major themes

- **The preferred alignment selection process**
- **Transport and access**
- **Flooding and Hydrology**
- **Property acquisition**

Engagement approach and communication tools

ARTC implemented a flexible and proactive engagement approach for the Project. The focus was on fostering meaningful relationships, based on open and responsive conversations, to meet the expectations of the diverse range of stakeholders. A variety of communication and engagement activities have been, and will continue to be, developed to ensure all members of the community have access to up-to-date information and feel involved throughout all stages of the Project.

ARTC identified and carried out the following engagement approach using the International Association of Public Participation (IAP2) guiding principles and communication tools outlined in the infographic to the right:

1 Identify

The key stakeholders for Inland Rail have been identified as:

- elected members of parliament of NSW and Australia
- local councils
- government agencies
- landowners and residents with potential to be directly impacted
- community and environmental groups
- traditional owners
- utility providers
- representatives of neighbouring and related projects.

A range of potential impacts, both positive and negative, were identified including the potential for property acquisition, land-use and property impacts and access to properties.

2 Design and prepare

Four levels of engagement were tailored to each stakeholder group; they follow the IAP2 guiding principles:

1. **Inform:** create awareness amongst stakeholders and communicate progress
2. **Consult:** proactively seek feedback through formal and informal channels
3. **Involve:** consistently involve stakeholders and seek feedback
4. **Collaborate:** actively seek and incorporate all stakeholder feedback into the design.

STAKEHOLDER ENGAGEMENT APPROACH

3 Engage

The following engagement activities have been undertaken by Inland Rail:

- community drop-in sessions
- feedback surveys
- doorknocks
- one-on-one meetings
- e-newsletters
- project factsheets
- regular website updates
- media releases
- workshops
- meetings
- presentations
- Community Consultative Committee
- ongoing consultation with key stakeholders
- letterbox drops.

4 Feedback

- Inland Rail maintained relationships to consistently seek feedback at all stages of the proposal
- the purpose to capture feedback during stakeholder engagement and to identify issues by stakeholder category is addressed throughout the chapter
- opportunities for future feedback will include the exhibition period for the Narromine to Narrabri project.

5 Review

The intent of this phase is to enable Inland Rail to implement a continuous improvement loop to assess the adequacy and effectiveness of engagement and where required, change the nature of the engagement. This is evident through the implementation of drop-in sessions.

Our engagement

Central to our engagement practices was ensuring that our most impacted stakeholders – landowners – were provided with up-to-date and clear information in an accessible manner that best suited their needs. The timeline below provides an overview of what these activities included.

MAY 2016

PROJECT ANNOUNCED

The Australian Government announced Inland Rail would be delivered through ARTC in partnership with the private sector.

OCTOBER 2016

LANDOWNER PROJECT UPDATE

Letters were sent to 616 landowners advising them that the Minister for Infrastructure and Transport was considering the proposed study area for the Inland Rail project.

NOVEMBER 2016

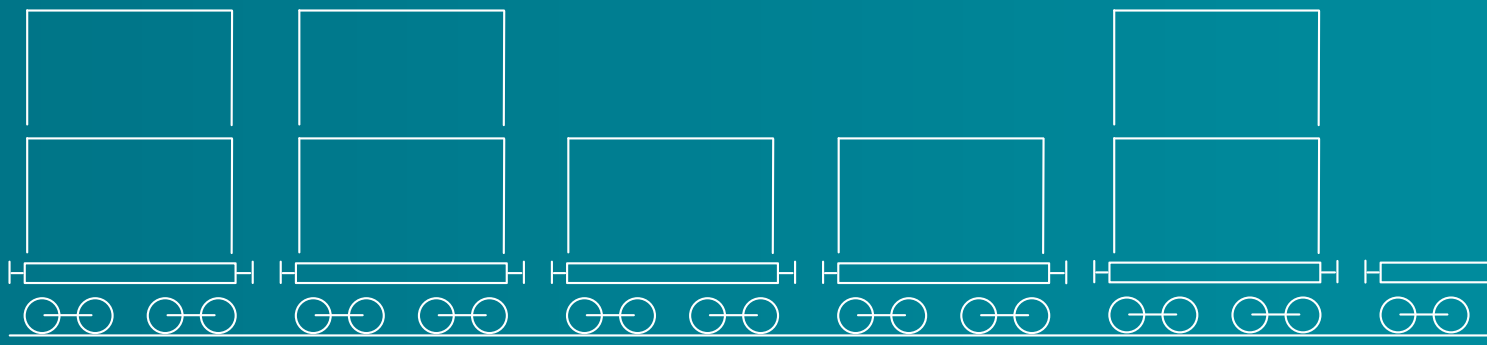
COMMUNITY INFORMATION MEETINGS

Information sessions were conducted to enable communities to learn more about the Narromine to Narrabri Project and preliminary field investigation findings.

MAY 2017

FUNDING COMMITTED

In the 2017-18 Federal Budget, the Australian Government committed $8.4 billion additional investment in ARTC for the construction of Inland Rail.



NARROMINE TO NARRABRI COMPRISES 306KM OF NEW TRACK

JUNE 2019

N2N 'POP UP' STALLS

Information stalls were set up at local towns along the alignment.

AUGUST 2019

NARROMINE COMMUNITY INFORMATION SESSIONS

Information sessions were held at Narromine to receive feedback on preliminary design work.

JULY 2019 – FEBRUARY 2020

FACE-TO-FACE MEETINGS – FOCUSED AREA OF INVESTIGATION (FAoI)

Meetings were held with more than 100 landowners impacted by the 150- to 400-metre-wide FAoI.

MARCH 2020

COMMUNITY INFORMATION SESSIONS – FAoI

Information sessions were held across the alignment, providing an update on the refinement of the wider study area to a narrower focused area.

DECEMBER 2017

COMMUNITY INFORMATION MEETINGS

Information sessions were held to discuss the route selection process, the proposed Narromine to Narrabri study area and next steps.

FEBRUARY 2018

LANDOWNER FACE-TO-FACE SESSIONS – STUDY AREA

Meetings were held with 200 landowners residing within the 2- to 5-km-wide study area.

SEPTEMBER 2018

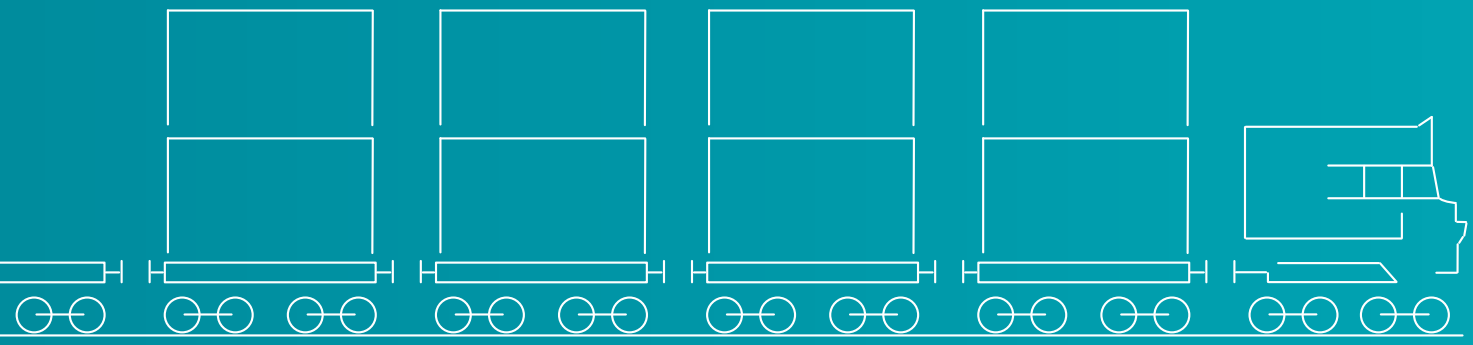
COMMUNITY INFORMATION AND DROP-IN SESSIONS – STUDY AREA

Information sessions were held to update the community on the Project, including the upcoming Reference Design and EIS process.

JANUARY 2019

COMMUNITY CONSULTATIVE COMMITTEE (CCC) ESTABLISHED

CCCs with three subcommittees at Narromine, Gilgandra and Narrabri were established. These forums allowed discussions between Inland Rail's project team and representatives of the community, stakeholders groups and councils.



AND WILL REDUCE THE OVERALL JOURNEY TIME

JULY 2020 – OCTOBER 2020

FACE-TO-FACE MEETINGS – FINAL RAIL CORRIDOR

Meetings were held with landowners in the final rail corridor and landowners nearby who may potentially be impacted by construction and operational noise and flooding.

AUGUST 2020

DRAFT EIS BRIEFINGS

Five EIS briefing sessions were held for the broader community and key stakeholders.

OCTOBER 2020

COMMUNITY INFORMATION SESSIONS – FINAL RAIL CORRIDOR

Information sessions were held to update the community on the final rail corridor and upcoming public exhibition of the EIS.

Narromine to Narrabri stakeholders

5

Local governments

15

Federal and State Government agencies

6
Emergency services

9

Local Aboriginal Land Councils

1000+

Meetings with landowners

20

About 20 meetings with government agencies

25+

Community information sessions and pop ups

20

e-newsletter updates

16

CCC meetings

12

Stalls at local town shows

22

Community organisations sponsored

25+

Meetings and site visits with Indigenous stakeholders

What we heard

Stakeholders and community members raised various topics during the preparation of the EIS in meetings, briefings and information sessions, and via email and phone. The table below summarises the key topics raised by stakeholders.

KEY TOPICS RAISED	GOVERNMENT OFFICIALS AND AGENCIES	IMPACTED LANDOWNERS	INDIGENOUS STAKEHOLDERS	WIDER COMMUNITY
Project scope	✓	✓	✓	
Project design and features	✓	✓	✓	✓
Project justification and need		✓		✓
Operation of the project	✓	✓	✓	✓
Construction of the project	✓	✓	✓	✓
Flooding	✓	✓		✓
Traffic and transport	✓	✓		✓
Noise and vibration	✓	✓		✓
Air quality	✓	✓		
Hazards and risks	✓	✓	✓	✓
Visual amenity		✓	✓	
Biodiversity	✓	✓		✓
Cultural heritage	✓	✓	✓	
Soils	✓	✓		
Waste management	✓	✓		
Social and economic	✓	✓	✓	✓
Public safety	✓	✓	✓	✓
Land acquisition process	✓	✓		✓

Case studies: Engagement influencing design

Feedback received by stakeholders and landowners has led to tangible changes in the Project design. One of the main topics raised by stakeholders was the location of the new rail alignment. The case studies below provide examples of design changes made as a result of this engagement.

Black Hollow

In February 2020, ARTC completed the focused area of investigation process, where the Narromine to Narrabri study area (up to five-kilometres-wide in places) was narrowed to between 150- to 400- metres-wide. As part of the process, ARTC engaged with all the directly-affected landowners. Out of these discussions, a design refinement was identified for an alternative alignment at Black Hollow.

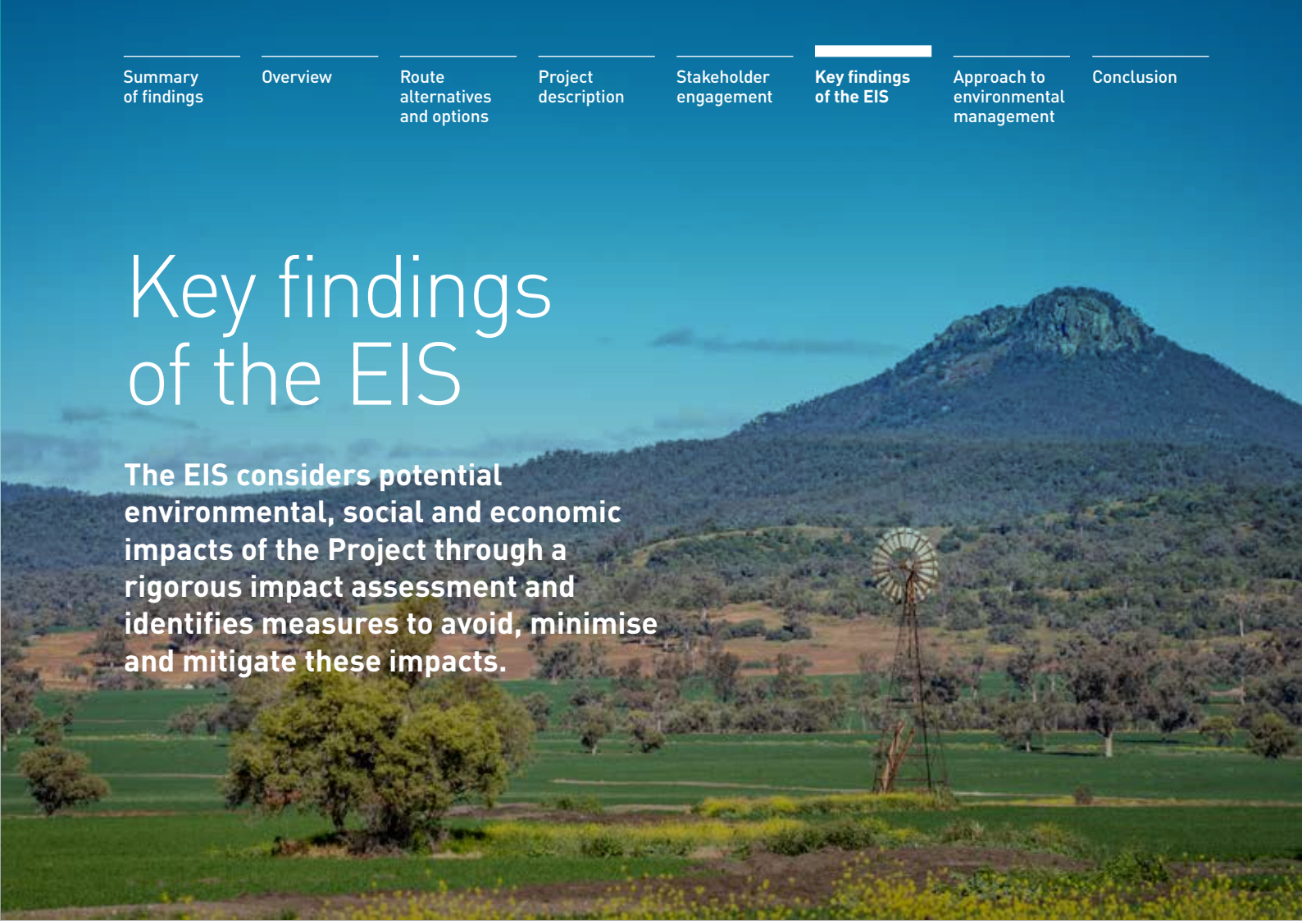
Following consultation with the impacted landowners, it was requested that ARTC consider relocating the alignment from the eastern side of the property to the western side. This would move the alignment further away from the house on the property and assist reducing the impacts to the property's access. ARTC did a full review of this request, which required additional design work and a change to the SSI application. Following these activities, ARTC agreed to relocate the alignment to the western side of the property. This was achieved without adversely affecting other landowners in the area.

Curban

During ARTC's consultation on the focused area of investigation, it was identified that the proposed rail corridor would significantly impact a landowner's house and farming infrastructure. Following various meetings and discussions in 2019, the landowner advised ARTC that their preferred option was for ARTC to relocate the alignment to the west of the house. One of ARTC's guiding principles in route selection is to minimise property impacts.

Further design work and environmental investigations were completed, confirming there would be no adverse impacts by relocating the alignment. As a result, ARTC accepted the landowner's request and moved the alignment further away from the landowner's house.

Key findings of the EIS



The EIS considers potential environmental, social and economic impacts of the Project through a rigorous impact assessment and identifies measures to avoid, minimise and mitigate these impacts.

The Project will incorporate environmental management and design features to ensure that potential impacts are managed and mitigated as far as practicable.

A project of this scale which involves constructing a large section of new rail corridor will inevitably have some impacts on the local environment and community. The Project will incorporate environmental management and design features to ensure that potential impacts are managed and mitigated as far as practicable.

Most potential construction related impacts will be effectively mitigated by the implementation of best practice construction management, including environmental management approaches described in:

- **Section D5.2** – Approach to environmental management and
- **Section D5.3** – Compilation of mitigation measures

During construction of the Project, environmental performance will be managed through the Construction Environmental Management Plan (CEMP).

During operation of the Project, environmental performance will be managed through ARTC's Environmental Management System, which ensures compliance with relevant legislation, EIS mitigation measures and conditions of approval.

This summary document is intended to be read alongside the Project's approach to mitigation and management detailed in:

- **Chapter D5** – Approach to mitigation and management and
- **Appendix I** – Outline Construction Environmental Management Plan.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter D5: Approach to mitigation and management**
- **Appendix I: Outline Construction Environmental Management Plan**

Biodiversity

Potential impacts on biodiversity are a key consideration for the EIS. To mitigate the potential impacts on biodiversity, a comprehensive biodiversity offset strategy is being prepared.

Biodiversity impact assessments of the Project were undertaken, including:

- a terrestrial biodiversity assessment prepared in accordance with the NSW *Biodiversity Conversation Act 2016 (BC Act)*, Biodiversity Assessment Method (OEH, 2017) and NSW Biodiversity Offsets Scheme
- an aquatic biodiversity assessment
- an assessment of the potential impacts on matters listed under the EPBC Act.

The majority of the southern and central portions of the Project site are located on land cleared for agriculture with areas of native grasslands and native woodland. Large sections of the northern end of the Project site, where it crosses the Pilliga East State Forest, are located in areas dominated by vegetation associated with State forests. The Project also passes through vegetated areas associated with travelling stock reserves, such as at Bohena Creek near Narrabri and the Macquarie River at Narromine.

Native vegetation cover represents about 52 per cent of the Project site, including about 1,125 hectares of native woodland and forest vegetation in good condition, containing an overstorey of mature trees. In addition, about 600 hectares of native grassland and seven hectares of shrubland and wetland is present.

Potential impacts

The main impact on biodiversity will occur during construction, as a result of the clearing of native vegetation within the Project site.

At this stage of the design, it is estimated that the Project will require the permanent removal of about 1,732 hectares of native vegetation. This vegetation includes threatened ecological communities listed under the BC Act and/or the EPBC Act.

The main potential impacts on aquatic ecological systems will be as a result of the construction of new watercourse crossing structures along the Project site. No significant impacts on aquatic threatened species or communities are predicted.

Mitigation measures

ARTC is committed to minimising the environmental impacts of the Project.

The area of direct impact will be further refined during detailed design to reduce the amount of vegetation clearing required as far as practicable. To mitigate the potential impacts on biodiversity, a comprehensive biodiversity offset strategy is being prepared. This includes consideration of potential offset sites and/or opportunities to purchase biodiversity credits to offset the impacts of the Project.

Impacts on aquatic ecosystems will be minimised by implementing the construction mitigation and management measures provided by the EIS.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B1: Biodiversity**
- **Technical Report 1 – Biodiversity development report**
- **Technical Report 2 – Aquatic ecology assessment**

Water resources (hydrology and groundwater)

Water is an important resource for construction. Water from deep groundwater bores will be the primary supply for construction activities like earthworks and dust suppression.

The Project will require about 4,635 mega litres of water for construction, most of which will be sourced from deep groundwater bores from below the Great Artesian Basin (GAB).

Potential impacts

There may be some impacts on a small number of existing groundwater bore users, due to extraction of groundwater from the deep groundwater bores. However, with the exception of one existing bore, these impacts are within the minimal impact considerations outlined in the NSW Aquifer Interference Policy.

Potential impacts on groundwater levels in the shallow groundwater system beneath the Project site are also considered unlikely.

The passive or direct extraction of groundwater can lead to the lowering of the groundwater table or drawdown within the surrounding aquifer. Modelling indicates the proposed extraction will change groundwater levels within the GAB—and the underlying rock aquifer that the bores will target—by less than one metre. This change is within the bounds of natural variability due to climate and recharge processes.

The application of construction water sourced from deep groundwater bores could result in impacts on the water quality of shallow groundwater and/or surface water due to differences in water quality or water being unsuitable for construction use. Further testing and analysis will be undertaken as part of the detailed design to confirm the suitability of this water during construction.

The concentration of overland flows under bridges and through drainage structures could increase flow velocities and result in scour at outlets and worsening of existing erosional processes within watercourses if scour protection is not provided.

Changes to overland flows are also anticipated due to the presence of construction infrastructure.

Mitigation measures

Mitigation measures will be provided to minimise impacts on hydrology and groundwater. These will be implemented during the detailed design and construction phases.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B2: Water Resources and**
- **Technical Report 4 – Groundwater assessment**

Flooding

The Project incorporates design measures to avoid or minimise potential impacts on flooding and watercourses.

When new rail and road infrastructure is built, it is important to ensure that it will not be adversely affected by flooding and that the infrastructure does not contribute to flooding impacts. Detailed flood modelling has been undertaken to ensure that potential flooding issues are identified and managed appropriately.

Potential impacts

During construction, there is potential for inundation of construction infrastructure—such as compounds and temporary workforce accommodations—during flood events. This could pose a risk to workers and the public and result in the mobilisation of construction materials in flood waters. There is also potential for construction activities to impede flood waters and affect surrounding residences and land uses.

During operation, the introduction of the new rail infrastructure will change the flooding regime, which has the potential to affect surface water flows across floodplains.

Overall, changes in flood levels, hazards, velocities and inundation times are generally limited and highly localised. About one per cent of buildings in the study area that are already affected by flooding are predicted to be impacted by more than 10 millimetres in the one per cent annual exceedance probability event.

Twenty two sensitive buildings are predicted to experience an increase of between 10 and 100 millimetres, of which all but one experience above floor flooding under existing conditions. The majority of these buildings are located in Narrabri and Narromine.

For some flood events, there could be minor increases in impacts on existing rail lines (the Parkes to Narromine, Dubbo to Coonamble and Mungindi lines).

The majority of watercourses crossed by the Project are already experiencing high levels of degradation and erosion due to existing land use and flow velocities. For most watercourses, flow velocities could reduce or increase marginally. However, these are still likely to cause ongoing erosion and instability.

Mitigation measures

The Project incorporates design measures to avoid or minimise potential impacts on flooding and watercourses. These measures will be further refined during detailed design.

The design would continue to be refined where practicable to not worsen existing flooding characteristics at sensitive buildings, up to and including the one per cent annual exceedance probability event.

A flood and emergency response plan would be prepared and implemented as part of the CEMP. The plan would include measures, process and responsibilities to minimise the potential impacts of construction activities on flood behaviour as far as practicable.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B3: Flooding**
- **Technical Report 3 – Flooding and hydrology assessment**

Consultation

In accordance with the SEARs, consultation has been undertaken and is ongoing with landowners, the broader community, councils, State Government agencies and the Narrabri Floodplain Risk Management Committee. Feedback from this consultation has been used to inform and validate the flood models, which were also independently peer reviewed. ARTC will continue to consult with all relevant stakeholders to mitigate flooding and hydrology impacts.

Water quality

Water quality will be managed in accordance with the requirements of the NSW *Protection of the Environment Operations Act 1997* and the environment protection licence for the Project.

The main potential for water quality impacts could occur during and following rainfall events. The potential impacts of construction mainly relate to erosion and the generation of sediment, particularly during the construction of bridges and culverts in flowing watercourses. This could result in impacts on downstream water quality if management measures are not implemented, monitored and maintained.

To mitigate these impacts, erosion and sediment control measures, including measures for the main watercourse crossings, will be implemented during construction in accordance with the CEMP. A surface water monitoring framework will be prepared to guide the monitoring of water quality.

There is limited potential for operational impacts, with the exception of drainage discharges from the rail corridor. The design will incorporate appropriate erosion and scour protection to minimise the potential for impacts on water quality during operation.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B5: Water quality**
- **Technical Report 5 – Surface water quality assessment**

Aboriginal heritage

Aboriginal heritage assessment is an important component of Project infrastructure planning and assessment.

ARTC has undertaken extensive consultation with representatives of Aboriginal stakeholders and is respectful of the cultural knowledge they hold. Native Title claimant groups and Local Aboriginal Land Councils (LALCs) were involved in field surveys, focus groups and the development of mitigation measures to minimise potential impacts on Aboriginal heritage items and sites.

Potential impacts

Construction will result in direct impacts on 25 Aboriginal heritage items/sites located within the Project site. These included scarred trees, artefact scatters and isolated finds.

- **18** sites were assessed as moderate or lower overall significance
- **5** sites were assessed as moderate to high overall significance
- **6** Potential Archaeological Deposits (PADs) were not assigned significance ratings and will be subject to archaeological testing prior to construction to establish the extent and nature of any subsurface deposits.

Eight Aboriginal heritage item/sites within 10 metres of the Project site were identified as being vulnerable to inadvertent impacts during construction as a result of the movement of vehicles and/or machinery, if appropriate management measures are not implemented.

Eight areas predicted to have moderate to high Aboriginal archaeological potential and/or cultural sensitivity were also identified within the Project site but were not able to be inspected during the assessment due to land access restrictions. As a result, conservative assessments have been undertaken based on the results of the predictive modelling and discussions with registered Aboriginal parties during field surveys. Prior to construction commencing, targeted archaeological surveys will be undertaken in areas of moderate to high cultural sensitivity that have not previously been surveyed.

Mitigation measures

Detailed design will aim to minimise the potential impacts on these sites and areas as much as possible. Where impacts are unavoidable, mitigation measures will be implemented.

Mitigation measures include preparing and implementing an Aboriginal cultural heritage management plan to manage Aboriginal heritage and minimise the potential for impacts during construction, archaeological investigations, archaeological assessment and salvage methodology.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B6: Aboriginal Heritage**
- **Technical Report 6 – Aboriginal cultural heritage assessment**

Non-Aboriginal heritage

Non-Aboriginal heritage features of the study area relate to exploration, grazing and agriculture, travelling stock reserves and forestry. Detailed design and construction planning will minimise potential impacts.

Potential impacts

A heritage-listed item (the Woodvale Park Private Cemetery) and a listed archaeological site (the Curban Inn site) are partially located within the Project site. Both are listed on the *Gilgandra Local Environmental Plan 2011.* No other heritage-listed items are located within or close to the Project site.

Construction could directly impact both sites. It is expected that the graves at the cemetery can be avoided during construction. Assuming this occurs, and an exclusion area is established, the non-Aboriginal heritage assessment concluded that impacts on this site will be negligible. The assessment also concluded that potential impacts on archaeological remains at the Curban Inn site will be minor.

Ten potential heritage items identified during the assessment are located within or close to the Project site. Construction could impact, or have the potential to impact, these items. The assessment concluded that most of these impacts will be negligible (at five sites) or minor (at one site).

However, the assessment identified that the Project would have major impacts on four potential heritage items: the Drinane Public School, corrugated iron hut with chimney, the graves of the Dingwell children, and the two-storey barn/shed at Bohena Creek.

The potential for vibration impacts on heritage structures located close to the Project site is expected to be minimal with implementation of appropriate management measures. This will be confirmed during detailed design and construction planning.

The presence of the new rail infrastructure will also have the potential for a minor visual impact on three potential heritage items.

Mitigation measures

Detailed design and construction planning would aim to minimise the potential impacts on listed and potential heritage items as much as possible. Where impacts are unavoidable, mitigation measures will be implemented.

Measures include:

- preparing a heritage management plan to minimise the potential for impacts during construction
- conducting an archaeological assessment, research design and methodology
- implementing a heritage interpretation strategy
- archival recording.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B7: Non-Aboriginal heritage**
- **Technical Report 7 – Non-Aboriginal heritage assessment and statement of heritage impact**

Noise and vibration

Criteria were established to determine acceptable levels of noise and vibration that should not be exceeded by construction and operational activities. Where these criteria are exceeded, feasible and reasonable mitigation measures will be implemented.

What is a sensitive receiver?

People in the community who may be impacted by noise are called 'sensitive receivers'.

The majority of construction work is proposed to be undertaken between 6am and 6pm Monday to Sunday.

Construction noise and vibration

Approach to working hours

The majority of construction work is proposed to be undertaken between 6am and 6pm, Monday to Sunday. No work will be undertaken every alternate week between the hours of 1pm on Saturday and 7am on Monday, except where affected 'sensitive receivers' agree work can be undertaken or where noise and vibration levels do not exceed the criteria.

These working hours will shorten the overall length of the construction period as far as practicable and minimise associated disruptions to the community.

Work undertaken outside of these hours is referred to as 'out-of-hours' work, which may be required for discrete construction activities. These include work during rail corridor possessions and emergencies, delivery of oversized equipment or structures, and works on public roads and utilities. These works are not expected to exceed 48 hours at any one location.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B8: Noise and Vibration (construction),**
- **Chapter B9: Noise and Vibration (operation),**
- **Technical Report 8 – Noise and vibration assessment – construction and other operations and**
- **Technical Report 9 – Noise and vibration assessment – operational rail**

Examples of sensitive noise receivers

- residential dwellings
- hospitals
- places of worship
- schools
- childcare centres
- open space – passive use (e.g. parkland, bush reserves)
- open space – active use (e.g. sports field, golf courses)

Construction typically requires the use of heavy machinery, which can generate high noise and vibration levels at nearby receivers. The potential impacts may vary greatly depending on the intensity and location of construction activities, the type of equipment used, existing background noise levels, intervening terrain, and prevailing weather conditions.

The construction noise and vibration assessment undertaken for the Project considered reasonable, worst-case scenarios related to:

- site establishment
- utility relocations
- earthworks
- structures e.g. bridges
- rail infrastructure works
- road infrastructure works
- construction compound operations

There is the potential for construction noise to exceed relevant criteria at various receivers along the Project site, including those along the proposed rail corridor, near multi-function compounds and temporary workforce accommodation. There is also potential for blasting overpressure to exceed the relevant criteria at receivers near borrow pits.

Mitigation measures have been developed with the aim of minimising construction noise and vibration impacts. Where noise is above the criteria, all feasible and reasonable work practices to minimise noise will be implemented and all potentially-affected receivers will be informed.

If no quieter work method is feasible and reasonable, affected occupants will be contacted to explain the duration and noise levels of the works and any respite periods provided.

Construction vibration was also assessed. Management and mitigation measures are in place to minimise the potential for significant human discomfort and structural vibration impacts at nearby receiver locations.

Operational noise and vibration

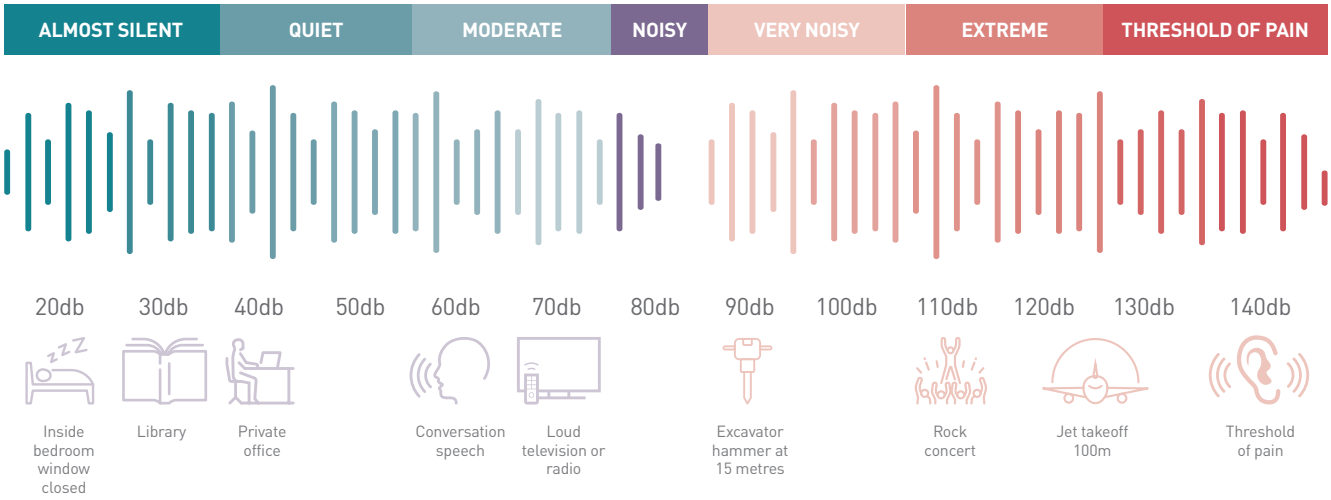
The key potential operational impact is the predicted exceedances of the noise criteria for train movements. The noise modelling predicts that, for the year of full operations (2040), noise levels could exceed the noise criteria at 66 sensitive receivers. The highest forecast noise level is 13 dB(A) above the noise assessment criteria. These receivers are eligible for consideration of feasible and reasonable noise mitigation, which could include at-property treatments. At this stage noise walls are not considered feasible.

As the design progresses, the Project will continue to be refined to minimise the potential for operational impacts. Mitigation options have been identified and will be refined in consultation with affected receivers.

Once Inland Rail has commenced operation, operational noise and vibration compliance monitoring will be undertaken to compare actual performance against that predicted by the operational noise and vibration review. The need for additional mitigation measures will be identified as an outcome of the monitoring.

NOISE LEVEL COMPARISONS

People's perception of noise is strongly influenced by their environment. A noise level that is perceived as loud in one situation may appear quiet in another.



Traffic and transport

Constructing and operating new rail and road infrastructure may affect existing traffic, transport and access arrangements and impact the local and regional community. It is important these potential impacts are identified and understood prior to construction.

The overall aim during construction and operation of the Project is to:

- maintain the safety and efficiency of all affected transport modes for the Project workforce and other transport system users
- avoid or mitigate impacts to the condition of transport infrastructure
- ensure any required works are compatible with existing infrastructure and future transport corridors.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B11: Traffic and Transport**
- **Technical Report 10 – Traffic and transport assessment**

Construction

The Project includes a number of road realignments and a road closure at Dappo Road. This has the potential to result in minor disruptions and delays to local traffic, and temporary access changes and restrictions to private property. Construction will also increase heavy and light vehicle movements on the local road network.

During construction, traffic and transport will be managed by implementing measures detailed in a traffic, transport and access management plan.

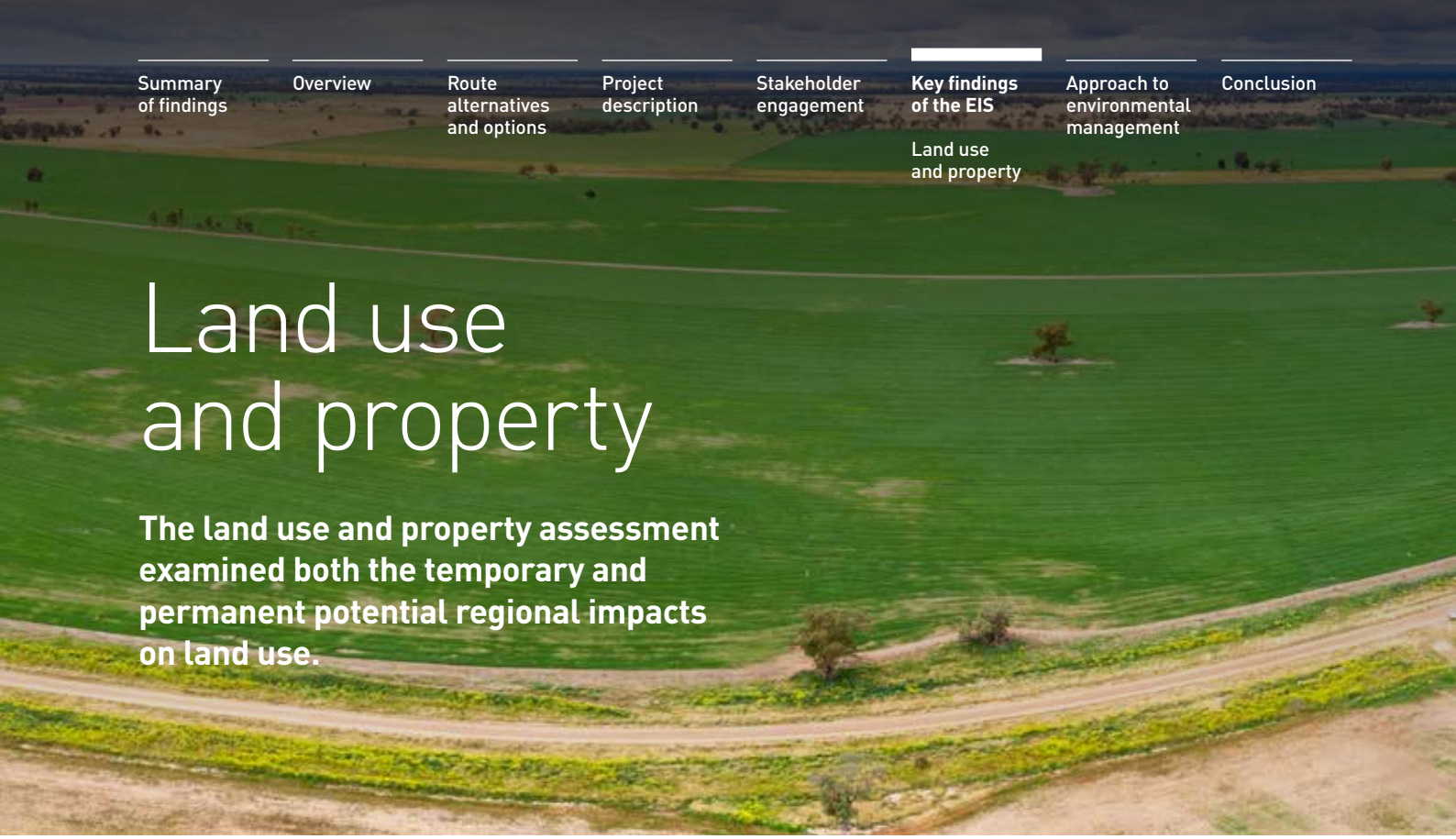
To minimise construction traffic movements and associated impacts on the public road network, construction access tracks will be provided within the construction footprint. This will enable materials and personnel to be transported within the Project site, minimising traffic on local roads as much as possible.

Operation

During operation, the Project will result in impacts on travel time due to the introduction of level crossings. An assessment of potential delays noted that at Castlereagh Highway, which is the busiest location a level crossing is proposed, there would be a maximum delay of 96 seconds and a maximum queue length of 39 metres (about six vehicles).

The frequency of trains, and therefore the likelihood of delays, is likely to increase over time as the number of trains using Inland Rail increases. Given the local nature of most affected roads, this impact would only affect a small number of cars and would have a localised impact.

Overall, it is expected that operation of the Project as part of Inland Rail would have a positive impact on the road network, particularly along major transport routes such as the Newell Highway, by decreasing the amount of heavy freight vehicles on the road. This has the potential to reduce travel times for road users and improve road safety overall.



Land use and property

The land use and property assessment examined both the temporary and permanent potential regional impacts on land use.

The majority of land affected by the Project is currently used for:

- agriculture (about 2,554 hectares or 78 per cent of the Project site)
- native forest production (about 612 hectares or 18 per cent of the Project site).

Agriculture

During operation, direct impacts on land use will result from permanent land requirements and the presence of operational rail and road infrastructure within the operation footprint.

ARTC has conducted extensive consultation with potentially affected landholders to understand key issues and concerns, which has informed design development and proposed mitigation measures.

The Project will require land both temporarily (during construction only) and permanently (for the Project's operational infrastructure).

Temporary land use

Approximately 1,612 hectares will be required during construction.

The temporary construction land requirements are estimated to include about 1,158 hectares of privately-owned land and 454 hectares of publicly-owned land, mainly owned by the NSW Government. Construction will require temporary leasing of land from about 413 properties, including a number of properties affected by the Project's permanent land requirements.

Permanent land use

The permanent land requirements will include use of land within about 274 properties and includes about 1,222 hectares of privately-owned land and 501 hectares of publicly-owned land, mainly owned by the NSW Government.

The Project's land requirements may either partially affect a property, where part of a site is required or parts of a site require adjustments to or relocation of facilities; or fully affect a property if the entire site on which a property is located is required.

As a result of the long linear nature of the Project, the key potential impact on farming operations relate to property severance. The Project has the potential to create some smaller parcels of land that are separated from properties. The size of the areas, configuration and/or access arrangements may affect how these areas of land are used in the future. The access arrangements for affected properties will be developed in consultation with landholders during detailed design.

Native forest production

The Project site extends through and directly affects the following State forests:

- Pilliga East
- Euligal
- Cumbil
- Baradine
- Merriwindi

The Project will permanently affect about 433 hectares of land in these forests, representing about 0.2 per cent of State forest land in the study area.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B12: Land Use and Property**
- **Technical Report 11 – Agriculture and land use assessment**

Socio-economic assessment

ARTC has consulted extensively with potentially affected landholders, the community and other relevant stakeholders to understand and minimise socio-economic impacts and identify beneficial opportunities for local and regional communities.

Socio-economic assessment is a key component of infrastructure planning. Both short-term and long-term socio-economic benefits and impacts have been identified as a result of the construction and operation of the Project.

Construction

Construction of the Project may result in:

- social impacts on property owners/occupants and local communities as a result of land use requirements
- amenity impacts in some areas as construction disrupts the landscape and community
- impacts associated with the inflow of a large workforce into the local area and the installation of temporary workforce accommodation – particularly in Gilgandra and Baradine
- direct impacts on community infrastructure – including the Narrabri Dirt Bike Club and recreation areas in State forests.

Mitigation measures will be provided to mitigate and manage the impacts identified as far as reasonably practicable.These include development of a communication management plan and temporary workforce accommodation plan.

Socio-economic assessment has also identified beneficial impacts during construction, including:

- increased employment opportunities (an estimated workforce of up to 2,000 people at peak periods)
- training opportunities
- flow-on local and regional economic benefits.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B14: Socio-economic Impact Assessment, Technical Report 13 – Social assessment**
- **Technical Report 14 – Economic assessment**

Operation

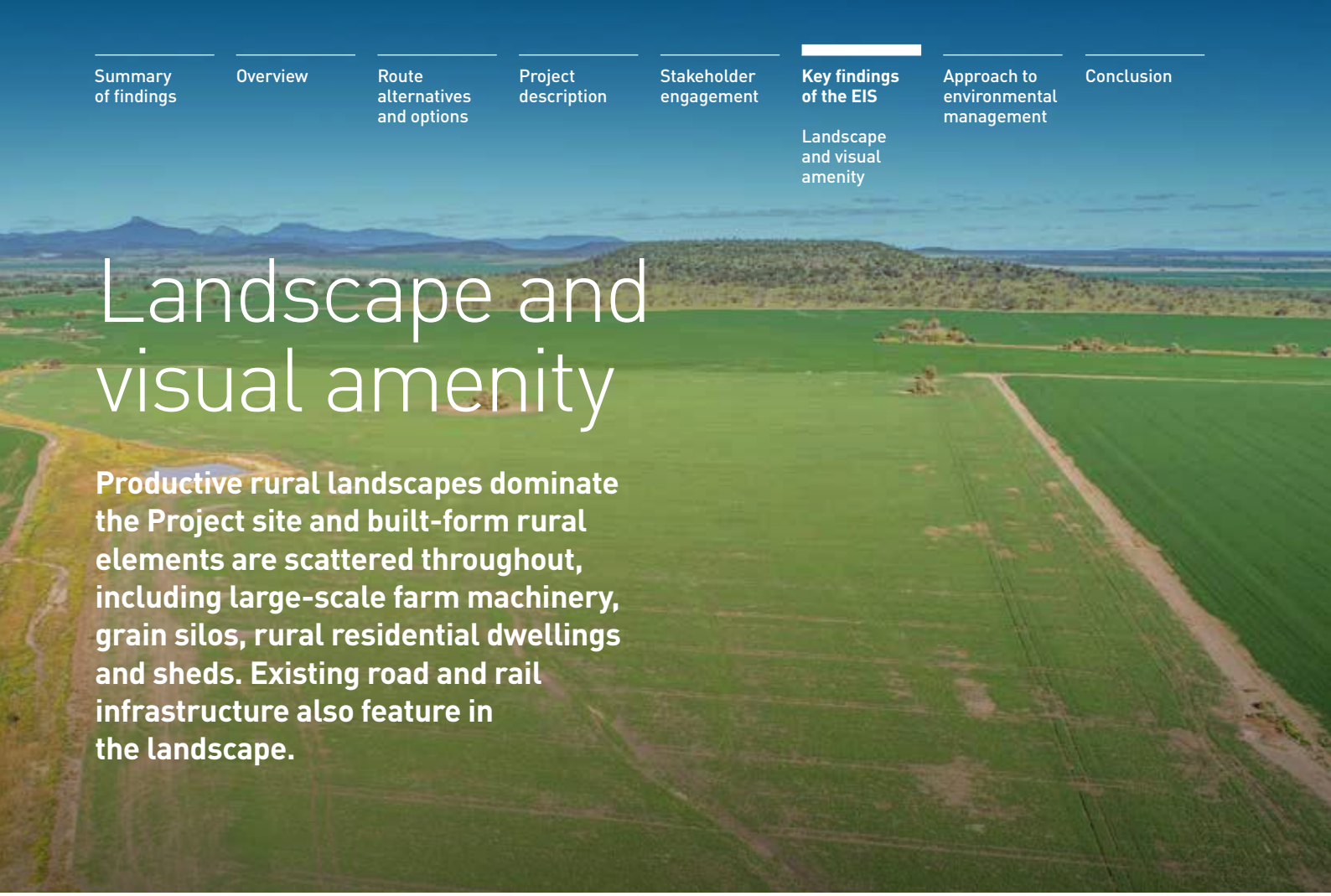
The potential for short-term environmental and social disturbance as a result of construction has to be balanced against the long-term benefits of Inland Rail overall.

During operation, the Project will result in changes in amenity due to increases in noise in some areas and the presence of permanent Project features. However, socio-economic benefits will also result from the operation of Inland Rail.

These benefits include:

- offering better access to and from our regional markets
- enabling regional economic development along the Inland Rail corridor
- providing safety and amenity benefits due to reduced freight transport on major road corridors.

These opportunities will be refined as Inland Rail progresses.



Landscape and visual amenity

Productive rural landscapes dominate the Project site and built-form rural elements are scattered throughout, including large-scale farm machinery, grain silos, rural residential dwellings and sheds. Existing road and rail infrastructure also feature in the landscape.

The Project has been designed to minimise potential impacts, through careful siting of Project elements and by minimising clearing as much as possible. Mitigation measures are in place to further reduce the visual impacts of the Project and will be implemented during the detailed design and construction phases.

Construction

The Project will generate visual impacts during construction as a result of visible elements such as:

- construction works
- machinery and equipment
- stockpiles
- borrow pits
- compounds
- temporary accommodation (in particular at Gilgandra and Baradine)
- partially-constructed structures.

These construction impacts will be temporary and limited to the construction period.

In addition, light generated during construction will be designed to comply with the relevant standards and guidelines and minimise off-site light spill, which is particularly important in the Dark Sky Region.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B13: Visual Amenity,**
- **Technical Report 12 – Landscape and visual assessment**

Operation

Operational impacts of the Project will occur as a result of the introduction of new structures in the landscape, including:

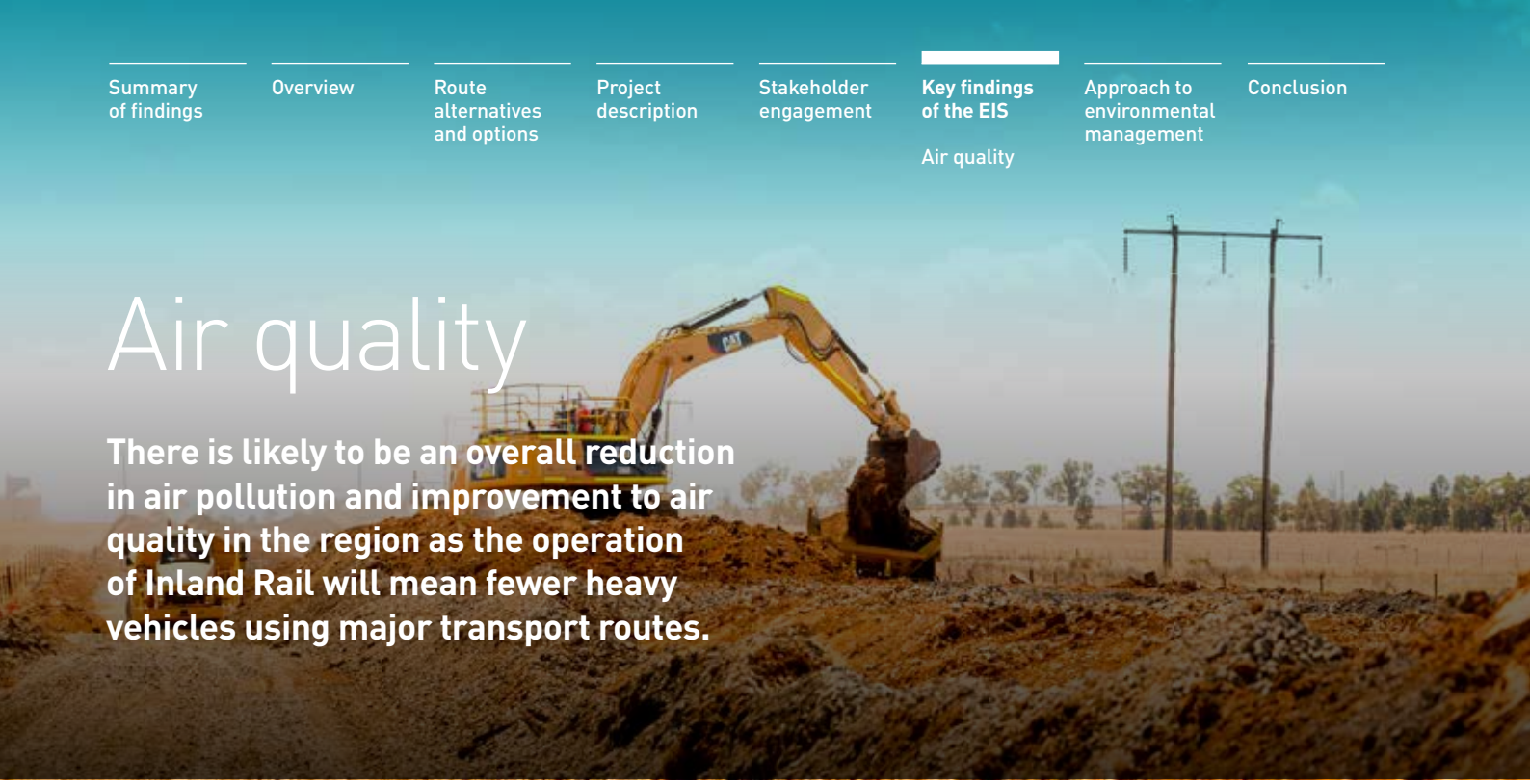
- new rail infrastructure
- bridges
- changes to the appearance of some existing roads.

During the operation of Inland Rail, it is expected that the main potential contributors to lighting impacts will be trains and warning lights associated with active level crossings. As the trains are freight trains, the only source of night-time lighting is likely to be a single light source or a group of lights at the front of the train. These lights, together with the warning lights at active level crossings, are not expected to result in significant impacts on the Dark Sky Region given the relatively limited output.

Mitigation measures

During detailed design, an urban design and landscape plan will be developed to ensure the design is well integrated into its surrounding environment.

A rehabilitation strategy will be prepared to guide rehabilitation planning, implementation, monitoring and maintenance of disturbed areas. The strategy will include measures to provide for the long-term rehabilitation of areas disturbed by construction to assist in minimising the potential for visual impacts as a result of construction.



Air quality

There is likely to be an overall reduction in air pollution and improvement to air quality in the region as the operation of Inland Rail will mean fewer heavy vehicles using major transport routes.

Regional air quality along the Project route is mainly influenced by rural activities, vehicle emissions, mining and exploration activities. The development of Inland Rail may produce an overall improvement to air quality in the region as fewer heavy vehicles will need to use major transport routes. However, air quality impacts are expected during construction.

Construction

The main potential impact on air quality during construction will occur as a result of the generation of dust from construction works and the movement of equipment and machinery along the Project site.

Emissions are also predicted to exceed the relevant criteria at receivers near key construction infrastructure locations like:

- multi-function compounds
- temporary workforce accommodation
- borrow pits.

These issues will be managed by implementing air quality management controls guided by the CEMP.

Operation

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 criteria. Air pollution from transport corridors decreases significantly with distance and is not expected to be an issue for the Project given the distance from the majority of potentially sensitive receivers.

The Project may result in an overall improvement to air quality within the study area as decreasing the number of heavy vehicles using major transport routes, such as the Newell Highway, would reduce air pollution for receivers along these routes.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B10: Air Quality,**
- **Appendix M – Air quality data**

Soils and contamination

Soils within the Project site include dispersive soils, acid sulfate soils and saline soils, which may cause erosion and sedimentation, and contamination of soils and surface waters. Mitigation measures will minimise these risks.

Construction

Construction of the Project has the potential to disturb contaminated soils where ground disturbance occurs in areas where potentially contaminating activities have been undertaken.

Mitigation measures will be implemented to minimise these risks, including:

- implementing a soil and water management plan as part of the CEMP
- implementing protocols for construction in areas of potentially contaminated soils.

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

Operation

Operation of the Project has the potential to contaminate soil and groundwater from leaks and spills of fuel, oils and other hazardous materials during maintenance activities.

However, the risk of this potential impact is considered to be low, given the likely scale and duration of maintenance activities.

Sediment and erosion control plans for exposed soils will be adopted and implemented, which will reduce the risk of environmental impact.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter B4 Soils and contamination**

Waste management

The approach to waste management will be guided by the waste management hierarchy, with a focus on reducing resource use and minimising waste generation as the highest priority.

Wastes generated during construction will be reused and recycled where possible. Wastes that cannot be reused or recycled will be disposed of at appropriately licensed facilities.

Potential impacts

The main wastes that will be generated during construction include:

- vegetation
- construction materials
- general waste
- spoil.

It's estimated the Project will generate about 690,000 cubic metres of spoil. Spoil is excess soil, rock or dirt excavated from the site.Options to reuse spoil have been considered, with the preferred option being to rehabilitate borrow pits.

Mitigation measures

The preferred waste management hierarchy of avoidance, minimisation, reuse, recycling and disposal will be implemented.

Measures to minimise waste, manage waste and conserve resources throughout the construction of the Project are proposed.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter D2: Waste management**

Cumulative impacts

Cumulative impacts can be defined as the successive, incremental and combined effect of multiple impacts, which may in themselves be minor, but could become significant when considered together.

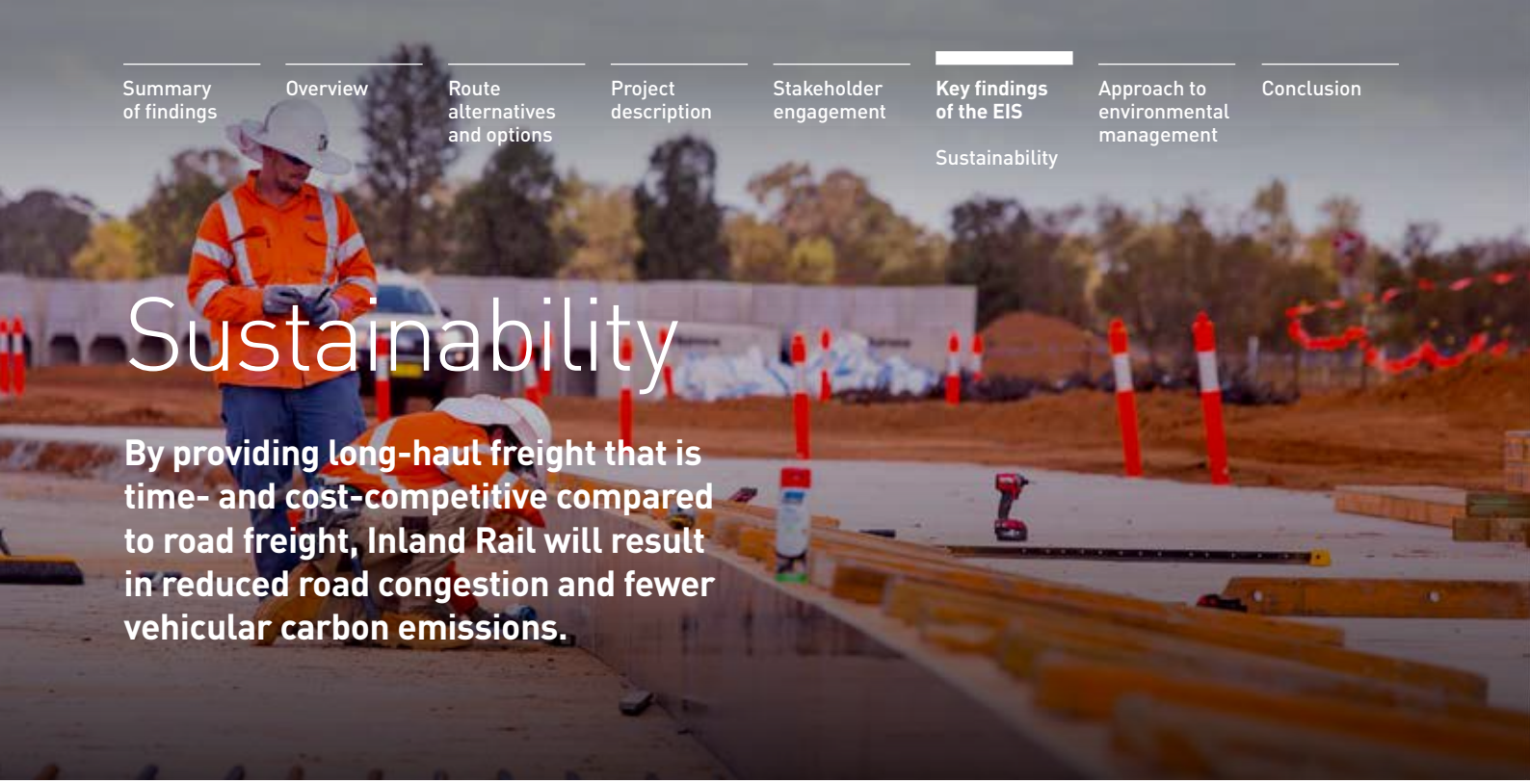
The potential for cumulative impacts resulting from the interaction of the Project with other projects – either existing or proposed – in the surrounding area is considered low. During construction there could be minor cumulative impacts associated with biodiversity, noise, traffic and amenity.

There are no anticipated cumulative impacts during the operational phase of the Project.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter D1: Cumulative Impacts**



Sustainability

By providing long-haul freight that is time- and cost-competitive compared to road freight, Inland Rail will result in reduced road congestion and fewer vehicular carbon emissions.

The *Inland Rail Sustainability Strategy* (ARTC 2019) and *Environment and Sustainability Policy* (ARTC 2018) outline sustainability objectives, targets and commitments for the Project.

Sustainability principles have been incorporated throughout the design development process.

ARTC is committed to achieving a minimum Infrastructure Sustainability Council of Australia (ISCA) rating of 'excellent' for the Project. This requires implementing identified sustainability initiatives during the detailed design, construction and operation stages.

It is estimated that transporting freight on Inland Rail will use one-third of the fuel compared to transporting the same volume via the existing routes.

Sustainability is an important consideration for the Narromine to Narrabri Project. As part of the wider Inland Rail Program, the Project provides opportunities to:

- maximise resource efficiency
- enhance local economic activity
- mitigate potential environmental and social impacts

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter D3: Sustainability**
- **Appendix G – Sustainability in design measures**

Climate change risk and adaptation

A climate risk assessment was undertaken to inform the design and operation of the Project. The assessment considered short-term risks (to 2030) and long-term risks (to 2090) using two climate projection scenarios.

> As the Project lifecycle progresses, risks will be regularly reviewed to ensure that potential climate impacts are reduced so far as is reasonably practicable.

A preliminary climate change assessment was undertaken to consider climate change risks, opportunities and adaptations to inform the design process. Extreme rainfall events, flooding, increased periods of drought, extreme heat and increase in bushfire and fire weather conditions are expected to present the highest risks in the future.

Risks associated with these events involve:

- changing flood patterns and behaviour
- increased flooding, resulting in:
  - inundation of rail infrastructure, drainage systems and water sensitive assets (such as electrical equipment)
  - structural scouring
  - wash out of foundations
- increased incidents of extreme events (heat, rainfall and bushfire) resulting in:
  - impacts on power supply
  - network interruption
  - track buckling
  - disruption of service
- increase in incidence of dangerous fire weather conditions and, possibly, uncontrollable fires resulting in:
  - damage to infrastructure
  - increased operational costs
  - power failure
  - stoppage of freight
  - associated impacts.

Further consideration of the potential for climate change risks will be undertaken to support detailed design. This will include a detailed climate change risk assessment, considering both direct and indirect risks, conducted in accordance with *AS 5334-2013 Climate change adaptation for settlements and infrastructure – A risk based approach.*

Want to know more?

See the following Environmental Impact Statement chapters:

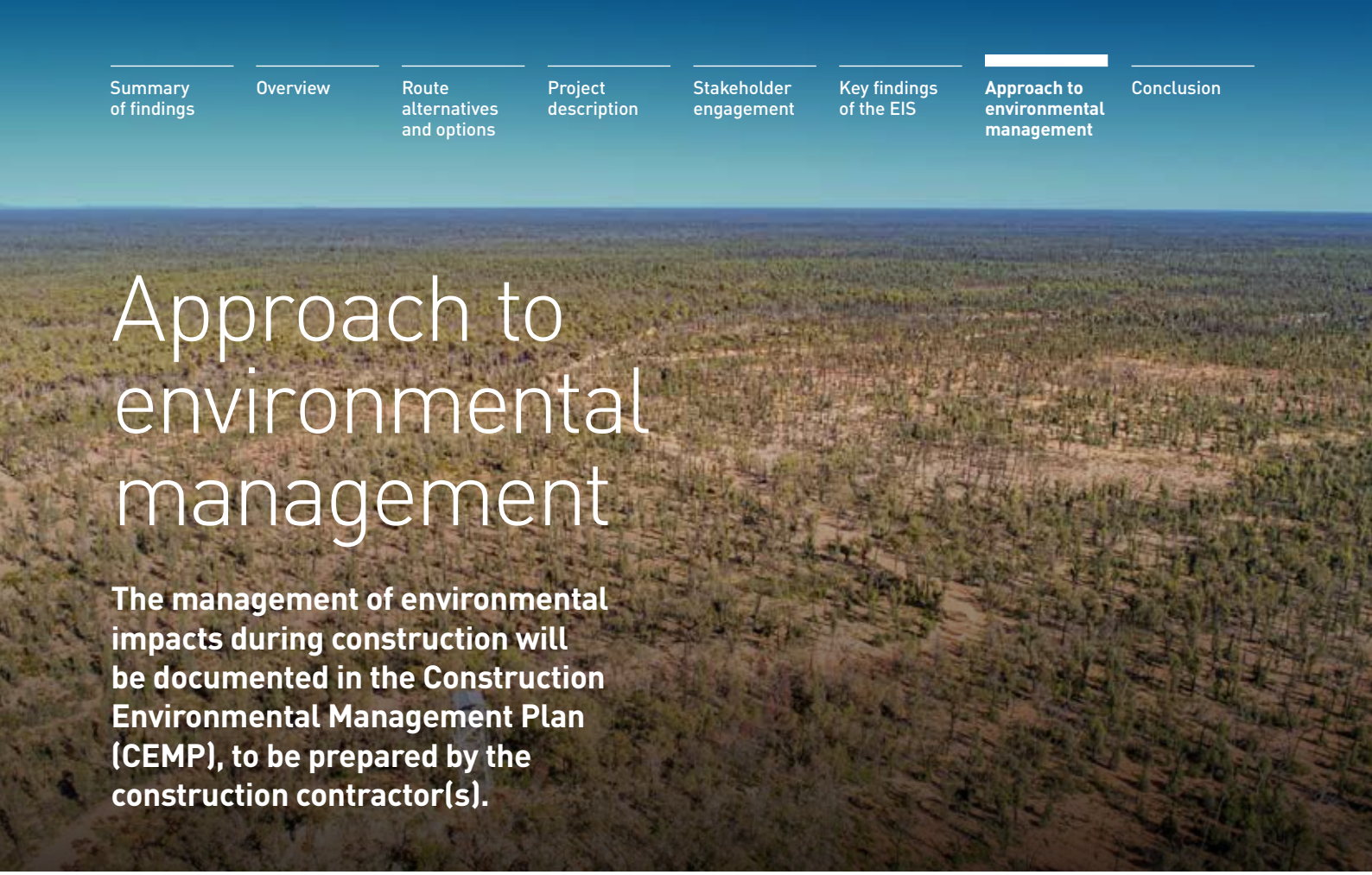
- **Chapter D4: Climate change**
- **Appendix H – Climate change additional information**

Key risks

extreme rainfall and flooding

extreme heat

extreme storm and wind events



Approach to environmental management

The management of environmental impacts during construction will be documented in the Construction Environmental Management Plan (CEMP), to be prepared by the construction contractor(s).

The CEMP will define how specific environmental issues are to be managed during construction in accordance with the mitigation measures provided in the EIS and the conditions of approval.

The purpose of the CEMP is to set out the Project's commitments to environmental management, including the identification of environmental aspects to be managed, and how environmental values will be protected and enhanced. It also identifies mitigation measures relevant to the detailed design of the Project.

The CEMP will be prepared in consultation with relevant agencies and in accordance with the *Environmental Management Plan Guideline for Infrastructure Projects* (DPIE, 2020) and the Inland Rail Construction Environmental Management Framework.

An outline of the CEMP, including the required sub-plans and a guide to the general construction management measures required in each is provided in **Appendix I Outline Construction Environmental Management Plan.**

The CEMP must be endorsed by ARTC and submitted to DPIE for approval no later than one month prior to the commencement of any works, including early works and demolition.

Environmental impacts during operation will be managed by ARTC's Environmental Management System.

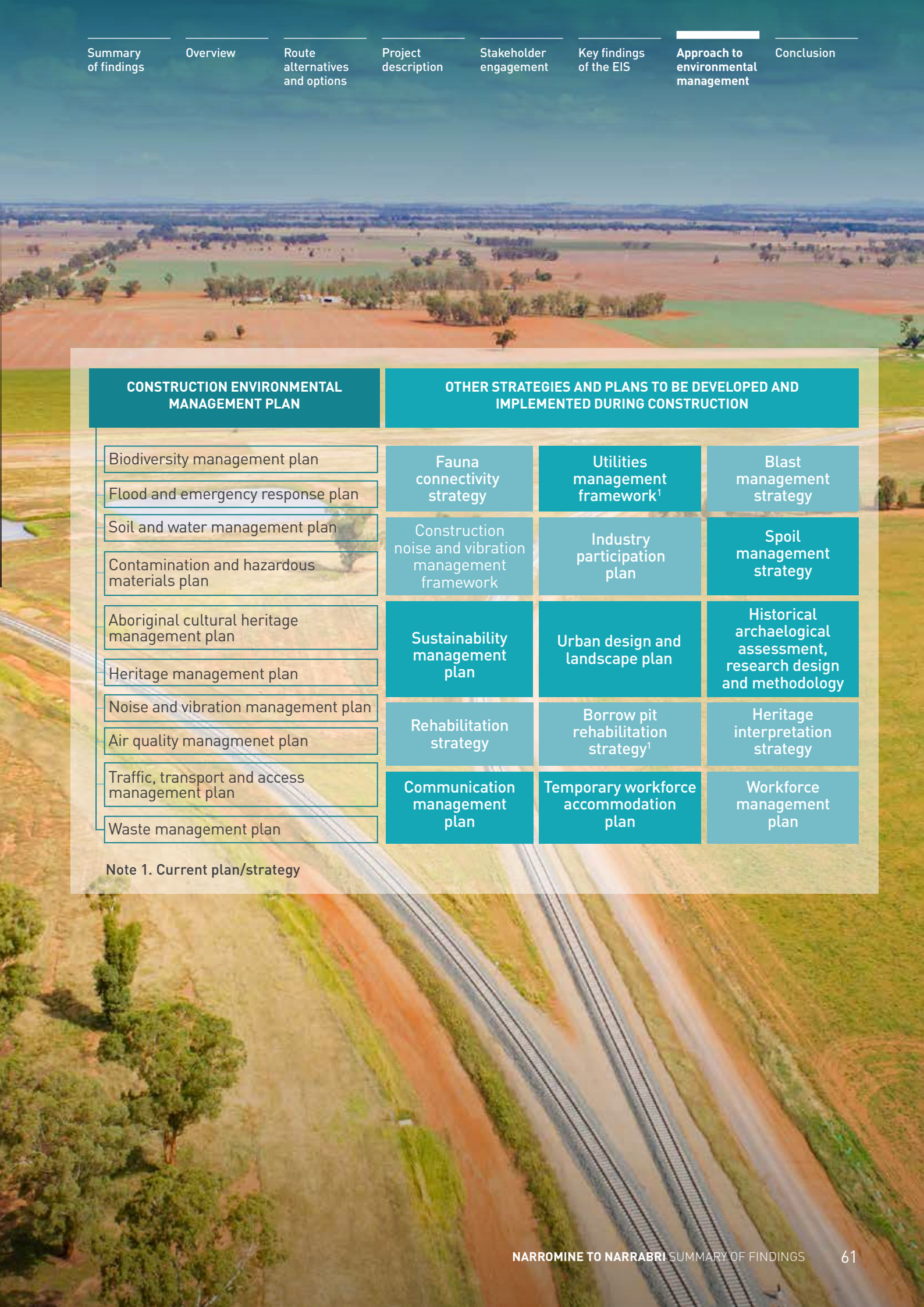
Once in place, the CEMP will be a dynamic document, revised to address community concerns and reflect changes in environmental management procedures, new techniques and relevant legislative requirements.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter D5 Approach to mitigation and management**
- **Appendix I Outline Construction Environmental Management Plan**

Once in place, the CEMP will be a dynamic document, revised to address community concerns and reflect changes in environmental management procedures, new techniques and relevant legislative requirements.



CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN	OTHER STRATEGIES AND PLANS TO BE DEVELOPED AND IMPLEMENTED DURING CONSTRUCTION		
Biodiversity management plan	Fauna connectivity strategy	Utilities management framework[1]	Blast management strategy
Flood and emergency response plan	Construction noise and vibration management framework	Industry participation plan	Spoil management strategy
Soil and water management plan	Sustainability management plan	Urban design and landscape plan	Historical archaeological assessment, research design and methodology
Contamination and hazardous materials plan	Rehabilitation strategy	Borrow pit rehabilitation strategy[1]	Heritage interpretation strategy
Aboriginal cultural heritage management plan	Communication management plan	Temporary workforce accommodation plan	Workforce management plan
Heritage management plan			
Noise and vibration management plan			
Air quality managmenet plan			
Traffic, transport and access management plan			
Waste management plan			

Note 1. Current plan/strategy

Conclusion

Inland Rail offers a safe and sustainable solution to existing freight bottlenecks and provides opportunities for complementary development to maximise the economic growth opportunities associated with the Project.

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 detailed design, construction and operation of the Project.

Australia's freight task is set to experience significant growth over the coming decades. The existing freight infrastructure cannot support this projected growth, with increasing pressure on already congested roads and rail lines through Sydney and increasing use of heavy trucks such as B-doubles and B-triples along the Hume-Pacific and Newell Highway corridors.

Inland Rail will address the growing freight task by helping to move freight off the congested road network, and moving interstate freight off the congested Sydney suburban rail network. It provides a reliable road-competitive solution to the freight task and enables the commercial and social benefits of rail to be leveraged to meet Australia's long-term freight challenge.

Inland Rail will:

- connect key production areas in Queensland, NSW and Victoria with export ports in Brisbane and Melbourne
- provide linkages between Melbourne, Brisbane, Sydney, Adelaide and Perth
- reduce freight transit times
- reduce congestion on rail and road networks
- enable the movement of larger freight volumes via rail, by making the movement of longer and double stacked trains possible.

Inland Rail will provide the backbone infrastructure necessary to significantly upgrade the performance of the east coast rail freight network to better serve future freight demands, while also diverting demand from the constrained road freight and rail passenger network.

Want to know more?

See the following Environmental Impact Statement chapters:

- **Chapter D5 Approach to mitigation and management**
- **Chapter D6: Conclusion and Justification**

The Narromine to Narrabri Project is needed to support the development of the overall Inland Rail network between Melbourne and Brisbane. It is a critical component of Inland Rail and is required to enable Inland Rail to operate.

Potential impacts resulting from the Project are considered manageable through the implementation of the proposed mitigation measures.

The detailed design for the Project will be developed with the objective of minimising potential impacts on the local and regional environment, and the local community. The design and construction methodology will continue to be developed with this overriding objective in mind, considering 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 will be implemented during detailed design, construction and operation of the Project.

Chapter D5 Approach to mitigation and management summarises the mitigation measures that will be implemented. The environmental performance of the Project will be managed by the implementation of the Construction Environmental Management Plan (CEMP). It will also ensure compliance with relevant legislation and mitigation measures provided in the EIS and the conditions of approval.

With the implementation of the proposed mitigation measures, the potential environmental impacts of the Project will be effectively managed.